CURRICULUM DOCUMENTS

INFORMATICS ENGINEERING D4 STUDY PROGRAM

JURUSAN TEKNOLOGI INFORMASI
POLITEKNIK NEGERI MALANG
2021

LIST OF CONTENTS

LIST OF FIGURES

CHAPTER I
STUDY PROGRAM IDENTITY

Study Program (PS)	:	D4 Informatics Engineering
Department/Department	:	Information Technology
Faculty	:	-
College	:	Malang State Polytechnic
PS establishment decree number (*)	:	SK DIKTI NO 50/D/O/2010
PS establishment decree date	:	May 21, 2010
The Signing Officer of the Decree on the Establishment of PS	:	Minister of National Education ANB. Director General of Higher Education
Month & Year Started	:	May 2010
SK Number for Operational Permit (*)	:	50/D/O/2010
Operational Permit Decree Date	:	May 21, 2010
Final Accreditation Score	:	B
SK BAN-PT number	:	1810/SK/BAN-PT/AkRED/Dipl-IV/VII/2018
PS address	:	Jalan Soekarno-Hatta No.9 Malang 65141 Po Box 04 Malang
No. PS Phone	;	+62 (0341) 404424 - 404425
No. Facsimile PS	:	+62 (0341) 404420
Homepage and Email PS	:	http://jti.polinema.ac.id D4ti@polinema.ac.id
Educational level	:	Diploma IV
Graduate Degree	:	S.ST

1.1 Vision, Mission, and Objectives of the Information Technology Department

1.1.1 Vision

The POLLINEMA Information Technology Department is a center of excellence in the field of information technology and software engineering at the national and international levels.

1.1.2 Mission

a. Implementing innovative vocational education based on an applied education system by utilizing advances in information and telecommunications technology, so as to produce graduates who are ready to work with global competitiveness.
b. Carry out applied research based on products and services in the field of informatics.
c. Carry out community service by using advances in information technology to improve welfare.
d. Realizing mutually beneficial cooperation with various parties both inside and outside the country in the field of information technology.

1.1.3 Purpose

a. To produce graduates in the field of information technology and software engineering who are godly, ethical and moral, knowledgeable and highly skilled, ready to work and/or entrepreneurs who are able to compete on a global scale;
b. Producing applied research in the field of information technology and software engineering on an international scale, increasing effectiveness, efficiency and productivity in the world of business and industry, and leading to the attainment of Intellectual Property Rights (IPR), obtaining patents and public welfare;
c. Producing community service that is carried out through the application and dissemination of science and technology and the provision of professional services in the field of information technology and software engineering so that it is directly beneficial in improving people's welfare;
d. Realization of mutually beneficial cooperation with various parties both inside and outside the country in the field of information technology to increase competitiveness.

1.2 Informatics Engineering DIV Study Program

1.2.1 Vision

Becoming an excellent study program in the field of software engineering at both national and international levels.

1.2.1 Mission

a. Implementing innovative vocational education based on an applied education system by utilizing technological advances, so as to produce graduates who have competence in the field of software engineering and are ready to compete at the national and global levels.
b. Carry out applied research based on products and services in the field of software engineering.
c. Carry out community service using advances in software engineering to improve welfare.
d. Realizing mutually beneficial cooperation with various parties both inside and outside the country in the field of software engineering

1.2.2 Purpose

a. Producing graduates in the field of software engineering who are godly, ethical and moral, knowledgeable and highly skilled, ready to work and/or entrepreneurs who are able to compete on a national and global scale.
b. Producing applied research in the field of software engineering on a national and international scale, increasing effectiveness, efficiency and productivity in the business and industrial world, and leading to the attainment of Intellectual Property Rights (IPR), obtaining patents and public welfare.
c. Producing community service that is carried out through the application and dissemination of science and technology and the provision of professional services in the field of software engineering so that it is directly beneficial in improving people's welfare.
d. Realization of mutually beneficial cooperation with various parties both inside and outside the country in the field of software engineering to increase competitiveness.

CHAPTER II
CURRICULUM EVALUATION AND STUDY TRACER

2.1 Curriculum Evaluation

The D4 Informatics Engineering Study Program has conducted curriculum reviews and evaluations held by alumni of the Informatics Engineering D4 Study Program who have worked in various industries, both telecommunications, IT and other industries. In addition, the D4 Informatics Engineering Study Program also invited several industry parties who employed alumni. Informatics Engineering D4 Study Program has held several Group Discussion Forums with related parties. In this meeting conclusions were reached in the form of evaluation points and recommendations for curriculum development, among others

2.1.1. Suggestions and Feedback regarding graduate profiles

Most of the current graduate profiles cover current industry needs. There are several additions / jobdesk that have not been included in the graduate profile. Among others:

a. What is trending and much needed, Quality Assurance or tester. Both manual and automatic testers.
b. Technical Writer
c. Systems Analyst
d. Some companies are starting to need data integrators, maintain ITL processes, process all company data displayed on a dashboard
e. System implementer, product implementation from the client
f. DevOps Engineer, setting up infrastructure, starting cloud servers, scripts for automation. Like IT Support, but DevOps support Engineer.
g. ERP background, paid or open source ERP, setup several modules.

There are many new things that can be adapted, from developments in the industrial world, including:

a. Cloud service : AWS, Alibaba, devOps will be needed in the future

b. Data Integration, which data engineers can teach (how to process data, and make goals from data)
c. QA, the scope can be broad, for example Tester Engineer.
d. Business Analyst: can discuss with the client to get the requirements from the client
e. Scrummaster: collaboration

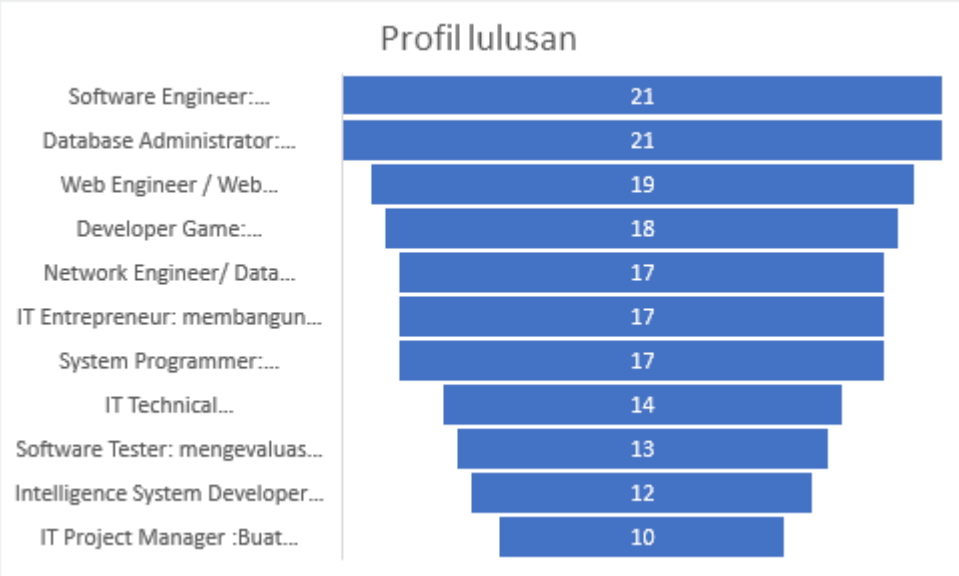
There are a number of things that need to be updated, for example data engineering is it entered into the DB administrator. At this time, data engineering is needed quite a lot, so it can be introduced, such as the ETL concept using Spark because this is quite important. For databases, it is necessary to introduce NoSQL. For Information System Engineers it is appropriate, what needs to be conveyed is best practice in engineering such as TDD and Design Patterns. The existing curriculum has reached PBO, but it needs to add several patterns used in the world of work, such as the visit pattern. While IT technical support: do not omit basic material, because it is still needed, for example communication between servers. What needs to be added is cloud service technologies.

Informatics Engineering graduates produce more software engineers (hard skills), while Information Systems produce more graduates towards business analysts, closely related to project managers. Analyzing user needs, discussing with users, working with research teams, UI/UX and developers regarding user needs. How to build a business, analyze requirements, and master software engineering too.

2.1.2 Suggestions and Feedback based on the Lecturer Questionnaire

The following is a summary of the curriculum evaluation questionnaire that has been distributed to lecturers of the Department of Information Technology, State Polytechnic of Malang. The total number of participants who filled out the questionnaire was 21 *participants* .

2.1.2.1 Profile of graduates from the Informatics Engineering D-IV Study Program



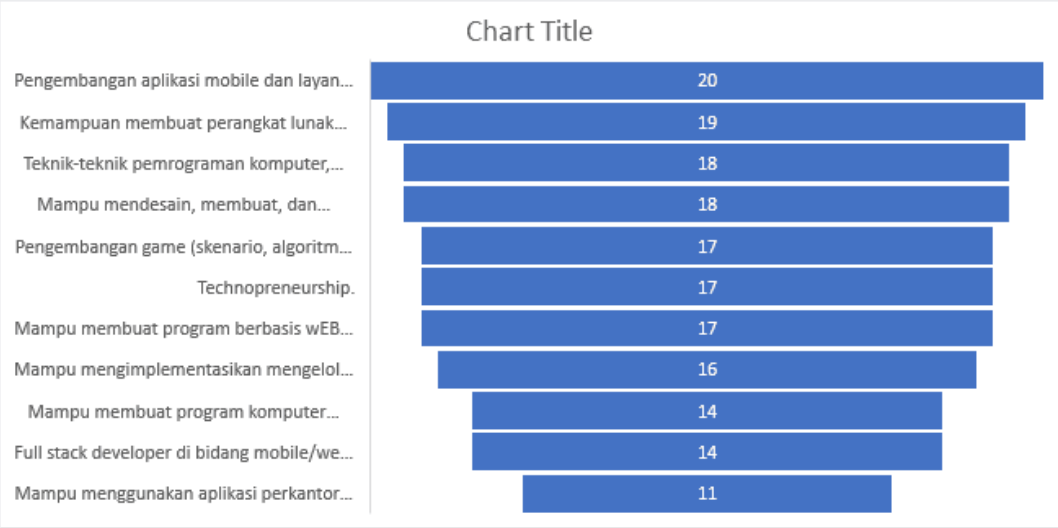
Description for each graduate profile:

Software Engineer Apply a systematic approach to software development, operation and maintenance
Database Administrators Make a database design, implement the design and perform installation Configuration, upgrade, adaptation, monitoring and maintenance of databases in an organization
Web Engineer / Web Administrator Plan, develop and maintain the website.
Game Developers Develop multimedia game software.
Network Engineer/ Data Communication Engineer Designing computer network architecture, including maintenance and management in companies or organizations.
IT Entrepreneur

Building and developing computer technology-based independent businesses that have an impact on welfare for the community.
System Programmer Analyze, design, develop and implement software solutions on mobile and Web platforms.
IT Technical Support Perform administration, repair and maintenance of IT equipment and infrastructure both in software and hardware.
Software Testers Evaluate and ensure that the software runs correctly as specified.
Intelligence Systems Developer Develop a system that can carry out learning and reasoning based on knowledge that is appropriate to the problem at hand (intelligent system)
IT Project Manager Create plans and processes to monitor project progress, manage the team.

Additional suggestions from lecturers	
Network Security Administrator: Analyze network security threats both from within and outside the range and develop the necessary security policies according to the applicable security policies	1
Information system project organizational structure: type of IS project	1
Palugada Developer (games, web, Machine Learning)	1
UX designer/researcher, QA engineer	1

2.1.2.2 Capabilities/Competencies/Learning Achievements that must be owned by graduates of the Informatics Engineering Study Program



Development of mobile applications and web-based services.	20
Ability to create software to solve problems.	19
Computer programming techniques, computer systems, computer network systems.	18
Able to design, create, and manage databases.	18
Game development (scenarios, programming algorithms, graphics, multimedia).	17
Technopreneurship.	17
Able to make web-based programs well.	17
Able to implement managing computer networks.	16
Able to make computer programs well.	14
Full stack developer in the field of mobile/web programming.	14
Able to use simple or complex office applications.	11

2.1.2.3 Courses that need to be added to the D-IV Informatics Engineering study program

As many as 12 lecturers chose that it was necessary to add new courses to the D-IV Informatics Engineering study program.

a. Courses that need to be added:

Course Name	Number of Proposers
Multimedia Coding / Multimedia Coding	1
Devops	1
Cryptography	1
Algorithmic Analysis Design	1
cybersecurity and Blockchain	1
IT Infrastructure Design	1
Advanced Mobile Programming	3
Computer network management	2
Modern database management (nosql, master-slave, replication)	1
Web Front End, Web Back End, Ui and UX	2
Computer network management and security	1
Git Material on Documentation Engineering MK	1

2.1.2.4 Subjects that are irrelevant so that they need to be deleted / reduced / merged from the D-IV Informatics Engineering study program?

As many as 10 lecturers chose that there were courses that needed to be removed/reduced

Courses that need to be removed	Courses that need to be combined
Database Management System	Database Management System combined with BDL (advanced database)

Introduction to Information Technology	cognitive computing can be merged into artificial intelligence
Project	Thesis Proposal + Research Methodology = Research Methodology
Project	Project 1 + Project 2 + Project 3 = Project
documentation technique	Advanced Database + SMBD = Advanced Database (discusses functions, triggers, db administration)
Web framework programming	Multimedia computing replaced virtual reality
E-business	The research methodology is combined with the thesis proposal
capita selecta	Merged project into one subject
multimedia computing	
Office computer applications	
Communication and organizational science	

- **Are there any courses that need to be renamed:**

71.4% no, 28.6% yes

Name of course that needs to be changed:

Previous course name	Name change suggestion
Multimedia Computing	Games Programming
Data technology	Data Science
Cognitive computing	Machine Learning
Artificial intelligence	Applied artificial intelligence (Applied AI)
Operating system	Operating System Administration (focus on administration and scripting/automation)
Web Design and Programming	Basic Web Programming (focus on html, js, css and web design and preferably taught in semester 2 the output is in the form of web template design)

Interface Design	UI/UX material is more towards Human and Computer Interaction (IMK)
Operating system	Become practicum and contain administration, no longer theory
Object based programming	Object oriented programming
Web course series	Web programming

- **Are elective courses required:**
  66.7% Yes, 33.3% No

  Elective course suggestions:

• On trend	• Network Programming	• Several Skills Courses
• Internet of things	• Software Testing	• multimedia computing
• Data Warehouses	• Network Penetration Testing	• Games programming
• Distributed system	• Games	• SPK
• Data Technology	• IoT	• Students are free to choose the school according to their wishes
• Cloud Computing	• Design Pattern	• Datamining
• Net security	• Advanced 3D modelling	• Web frameworks
• courses that are typical of each field, for example DSS, digital image processing, IoT, data warehouse, distributed systems, network management, game programming		

- **Do you need concentration (specialization):**

95.2% Yes, 4.8% No

Required concentration:

2.1.2. 5 Suggestions and input from lecturers

1) Regular discussions for curriculum development
2) If there is a specialization, it should be viewed and determined holistically (tendency of student scores in certain fields of study, filling in student specialization forms, specialization tests)
3) It is necessary to analyze the learning outcomes of each MK
4) Overall is good, only the implementation needs to be improved
5) It's good, maybe the learning method just needs to adjust to conditions during a pandemic
6) There is a need for concentration (specialization) in the curriculum and adding elective courses according to specialization
7) It's good, but the curriculum must always be updated according to industry demands
8) Please include the curriculum reference used and the curriculum development standards currently being implemented. Thank You.
9) Project deleted/merged/downsized. Network management mat kil can be replaced. So that there are more network portions and more support for IoT subjects.
10) The vocational education curriculum needs to be directed not only to be academic in nature but must be towards efforts to create competencies/skills for each graduate by providing various competency/expertise certifications, so that graduates from vocational education have added value not only on the

academic side (diploma) but are also equipped with certification. various kinds of competencies so that they are ready to work and can be directly absorbed by industrial needs. As input, this can be done one way by focusing on each skill-based course (practicum) to provide output in the form of a competency certification exam in accordance with each subject area. so that after graduating from vocational education, students not only have degrees (diplomas) but are also equipped with various competency certifications that can be obtained in accordance with skill-based courses that have been taken during the 4-year study period.

11) It's already good, please adjust the curriculum to the development of the Industrial Revolution 4.0 / Information technology era
12) In my opinion, in general the D-IV TI curriculum is good, it's just that students in the mid to late semester should be given the option to study only one concentration, so that each student has the skills that are truly mastered. Because DU/DI are currently more likely to recruit specialists than generalists.
13) It is necessary to do mapping and specialization in subjects, so that students will be more focused on studying the subjects they are interested in so that they have more abilities in this specialization. Compared to having to learn many things but lacking in depth and focus.
14) According to Pak Ludfi's suggestion, we take the D4 curriculum in a structured model with regular courses.
15) In the first semester, the courses should be more technical, maybe around 70%.
16) In reviewing the curriculum design, it might be possible to involve or share with industry.
17) Occasionally seminars are held by inviting people from the industry so that students have additional views about the industrial world
18) Please involve the industry to review the curriculum design
19) Courses in the early semester should have a technical percentage of more than 70% so as to prevent students from making the wrong majors
20) If possible, lectures/seminars from industry practitioners can be held so that there are additional perspectives from the industry
21) Overview of the changed curriculum

https://drive.google.com/file/d/1b5FIWVeLdcI792pMVod3z4Tdv3isD1N2/view?usp=sharin

22) Reference for determining the roadmap as a developer https://roadmap.sh/
23) Lecturers must master the latest technology
24) Need improvement by seeing the needs
25) There is a business incubator for students after they have graduated and are waiting for graduation, so that students are better prepared to enter the world of work
26) There is a concentration of fields, so students can choose their own field of focus. Semesters 1 to 4 students get basic courses that they must take as a knowledge base, in semester 5 there are courses that can 'take' them to the concentration they will choose. then in semesters 6 and 7 students can determine their own 'way of life' by taking certain concentrations and elective courses, but of course in that semester there are also compulsory courses.

2.1.3 Suggestions and Feedback based on FGD with Industry

Today, Friday, December 4 2020, a Focus Group Discussion (FGD) was held to obtain input from the industry on the D4 Informatics Engineering Study Program curriculum, presenting speakers:

Name : Martin Fatnuriyah
Industry : The Edge Property, Pte. Ltd
Position : Technical Director

In this meeting conclusions were reached in the form of evaluation points and recommendations for curriculum development, including:

a. The talents at The Edge Property are divided into several positions: front end developer, back end developer. Quality assurance, data engineer, and full stack developer.
b. There are 3 Polinema graduates who occupy team lead positions because they have advantages in terms of hard skills and soft skills, which initially departed from fresh graduates.
c. There are several stages of selection, all of which are carried out online:
   1) Initial interview: exploring the experience and skills mastered

2) Online assessment to find out the ability of algorithms, analytics, and see how someone determines priorities when there are several tasks that come together.
3) Project assessment, giving a project according to the position applied for
4) Final interview: the final interview to see how someone handles the hardest thing they've ever faced, time management, and project management.

d. Today's data engineers are different from DB administrators, so they don't only manage databases, but know how to do data processing, data representation, and data visualization so that they can be used for further data analytics.
e. The profile that is still not covered at universities is a graduate for a Quality Assurance position, someone whose job is to determine whether a product can be released or not based on a test plan.
f. Technologies currently used at The Edge Property:
1) Backend: node js, python, mico service technology, and PHP Laravel.
2) Front end: angular js, next js, native javascript and jquery.
3) Fullstack: expected to have backend and front end capabilities.
4) Databases: MySql and NoSql
g. After going through the selection process and being accepted, there is an on boarding process which is a process of adjusting to the working environment for 2 weeks. In the on boarding process, new engineers will be given project documentation to explore, and also given light tasks for the introduction process.
h. The section that develops mobile apps is called the mobile engineer, divided into mobile apps that use native Android, iOS use Swift, and mobile apps that use React Native.
i. There are no specific requirements for the D3 or D4 level, the priority is ability. For Information Systems graduates, the target is to later be able to enter the product team, which will prepare business process flows and planning. The product team is divided into several positions: UI/UX which is tasked with translating user needs from the product owner and visualizing them into a design.
j. One of the drawbacks is communication problems, due to lack of confidence when communicating with other divisions and speaking in English, and sometimes being reluctant to refuse assignments given.

k. Soft skills that must be prepared are: communication skills, presentation skills, and leadership skills.

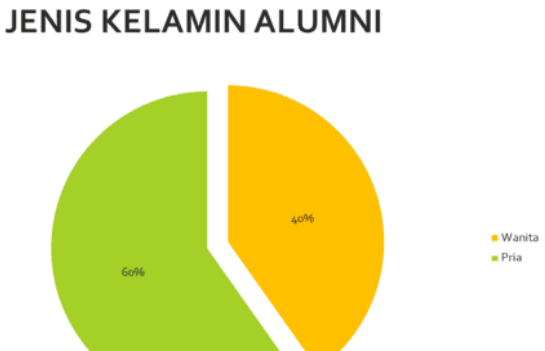
2.2 Tracer Study of D4 Informatics Engineering Alumni

Tracer study is an activity carried out to find out the profile of graduates of the D4 Informatics Engineering study program who have completed their studies or have been declared graduated. This tracer study data is data from alumni of D4 Informatics Engineering Study Program taken for the last 3 years, namely graduates from 2017 to 2019. The total number of *participants* was 199 *participants* from alumni of D4 Informatics Engineering Study Program. Data obtained from *the Job Arrangement System* , survey method, by conducting interviews and sending alumni performance questionnaires by telephone, by postal mail, e-mail, study program websites, Social Networking, Chatting, Telephone and questionnaires *brought* by students during practical work at companies from 2017/2018 to 2019/2020.

The following is the result of tracer study data analysis that has been carried out:

1. The waiting time for alumni to get a job is that 36% got a job before graduating, 9% less than 1 month, 23% 1 to 6 months, and the rest more than 6 months.
2. The average salary earned each month is around less than 2 million and not more than 4 million rupiah.
3. Placement of alumni who work in accordance with the IT field is 55.91%.
4. The advantage of graduates of the D4 Informatics Engineering study program is 80% analytical ability.
5. The advantages of graduates in terms of soft skills consist of 5 aspects, namely norms, integrity, discipline, responsibility, and efficiency.
6. Only 1.01% of alumni/graduates stated that their weaknesses were in areas of expertise based on knowledge, English, communication, and a willingness to continue learning.

2. 3 Tracer Study Results of Graduates from 2017/2018 to 2019/2020.



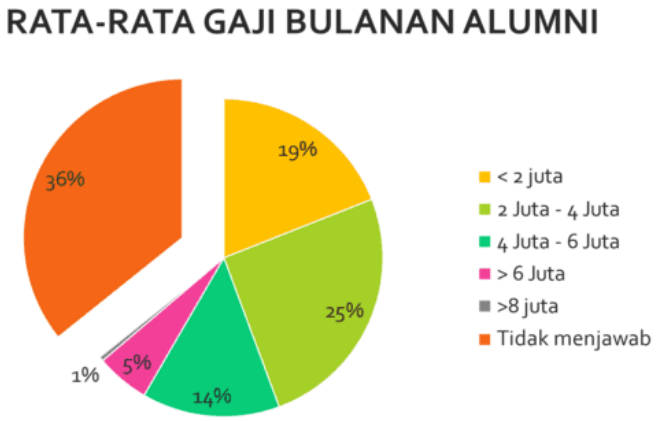


Figure 2 Percentage of Average Monthly Salary of Alumni

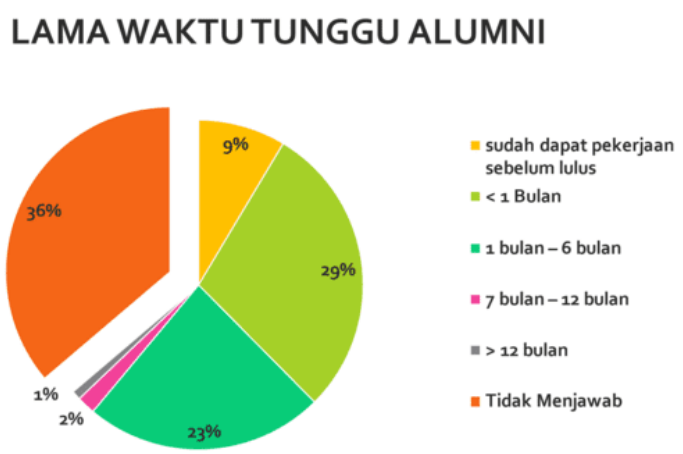


Figure 3 Percentage of alumni waiting time

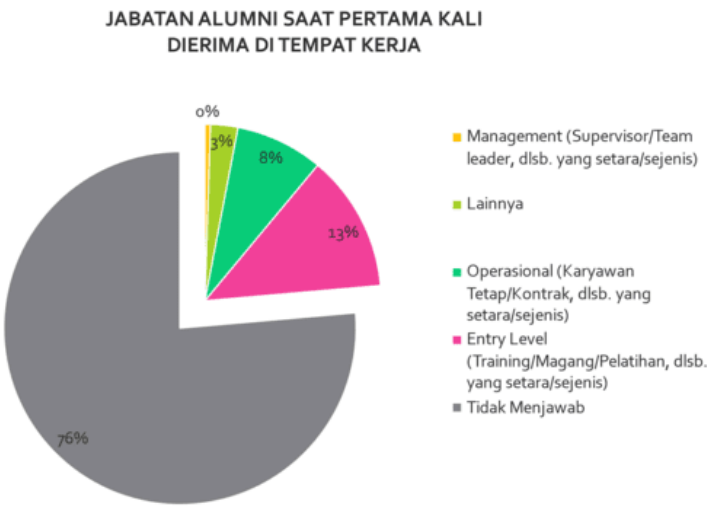
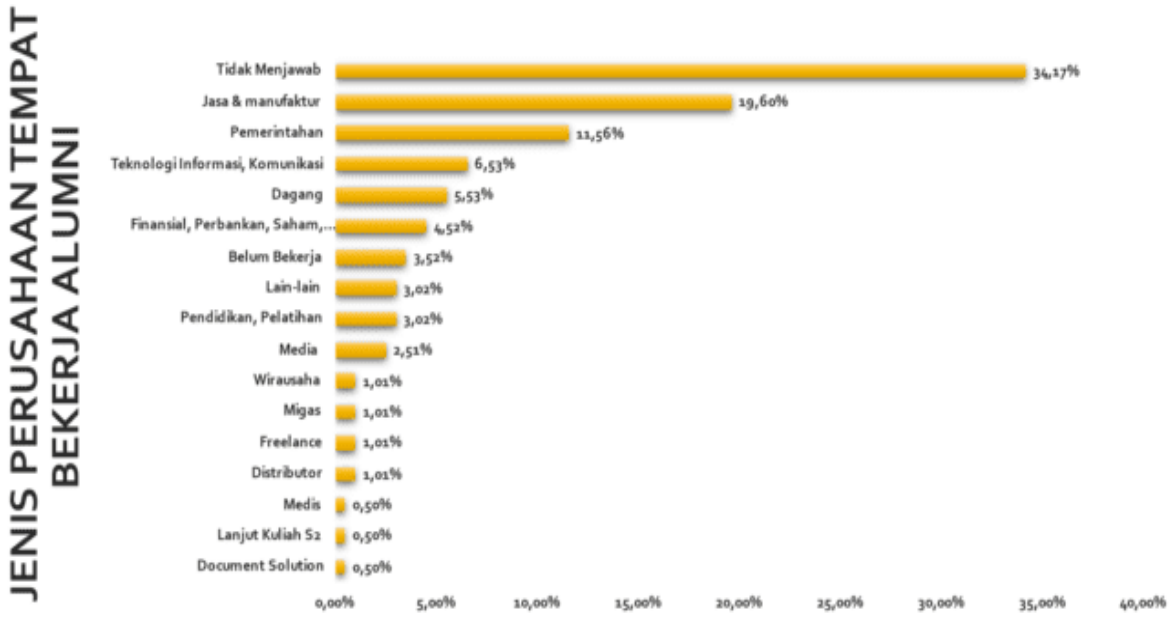


Figure 4 Position Percentage of alumni when they first started working



Gambar SEQ Gambar * ARABIC 5 Jenis perusahaan tempat bekerja alumi

20 BESAR PERUSAHAAN TEMPAT BEKERJA ALUMNI

PERINGKAT KE-	NAMA PERUSAHAAN	JUMLAH ALUMNI
1	Dinas Komunikasi dan Informasi	6
2	PT. Indosat Tbk	4
3	IDN Media	3
4	Politeknik Negeri Malang	3
5	PT Pelabuhan Indonesia III (Persero)	3
6	PT. Astra Daihatsu Motor	3
7	PT. BANK BRI	3
8	Rumah Sakit Umum Daerah	3
9	United Tractors Tbk	3
10	Universitas Brawijaya Malang	3
11	Wiraswasta	3
12	SMK	3
13	Champion Motor	2
14	Dinas Kependudukan dan Pencatatan Sipil	2
15	Followers Indo	2
16	Kampus Akademi Keperawatan	2
17	PT Infosys Solusi Terpadu	2
18	PT Petrokimia Gresik	2
19	PT. IDN MEDIA NUSANTARA	2
20	PT. Pos Indonesia (Persero)	2

Figure 6 Top 20 companies where alumni work

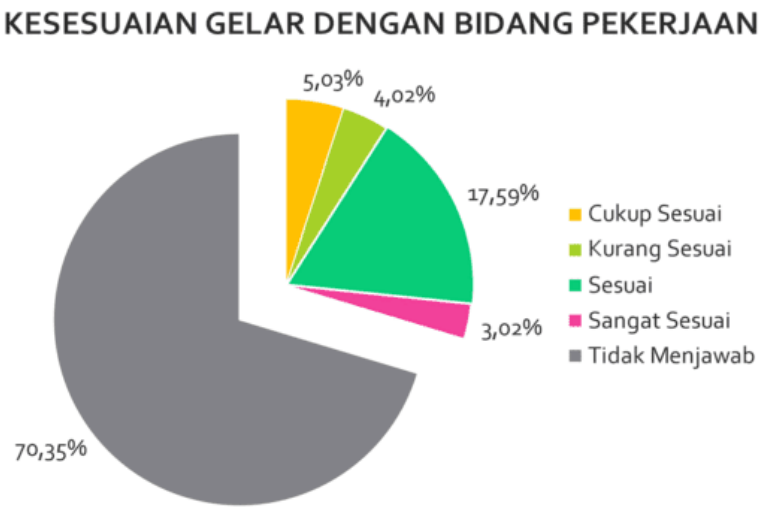


Figure 7 Percentage of degree conformity with alumni's field of work

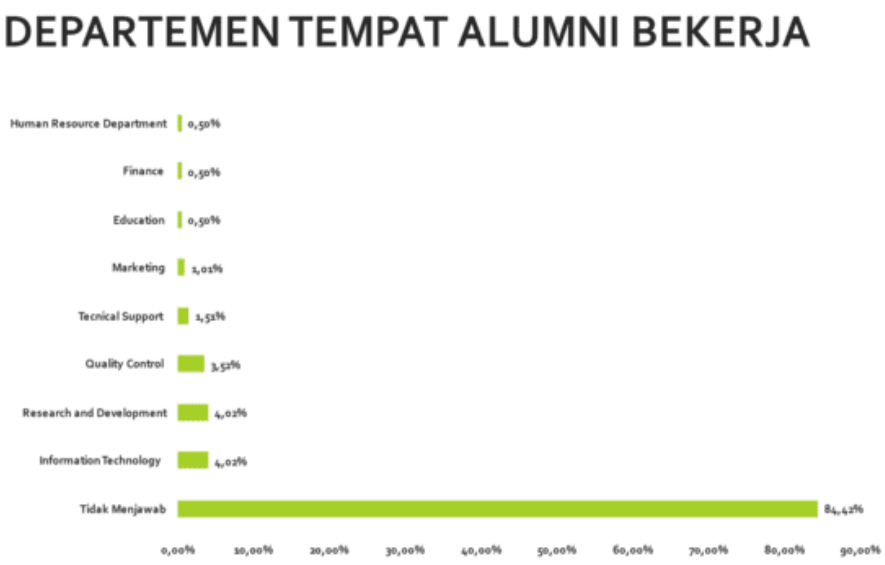


Figure 8 Department where alumni work

Figure 9 Placement of positions where alumni work

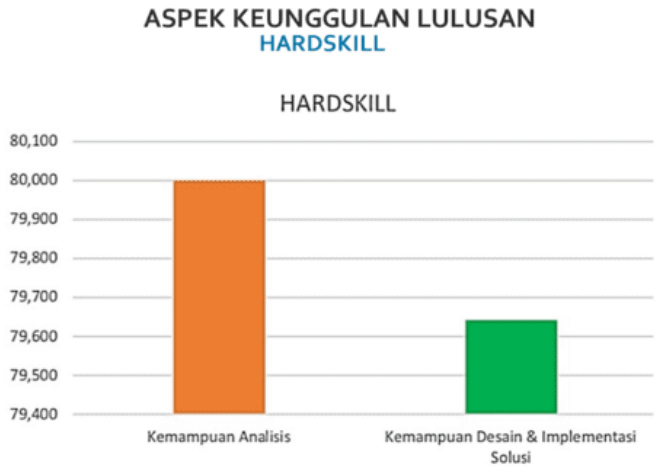
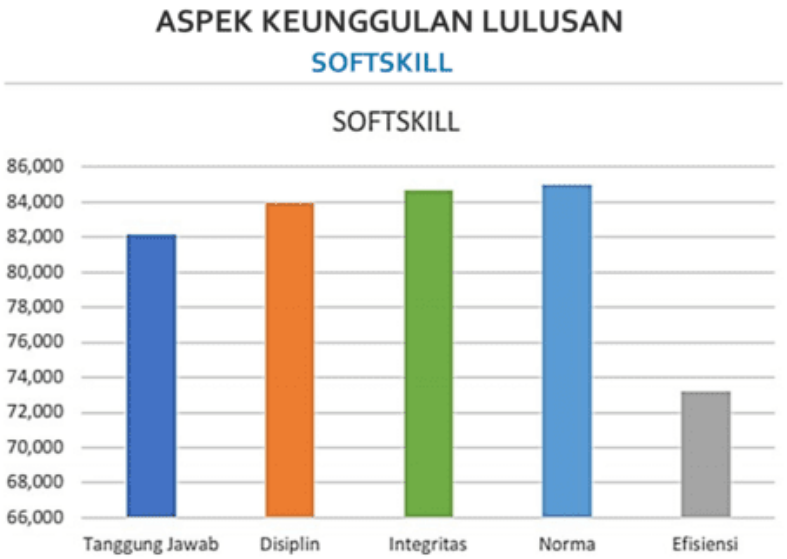


Figure 10 Aspects of alumni hard skills advantage



Picture 11 Aspects of the advantages of alumni soft skills graduates

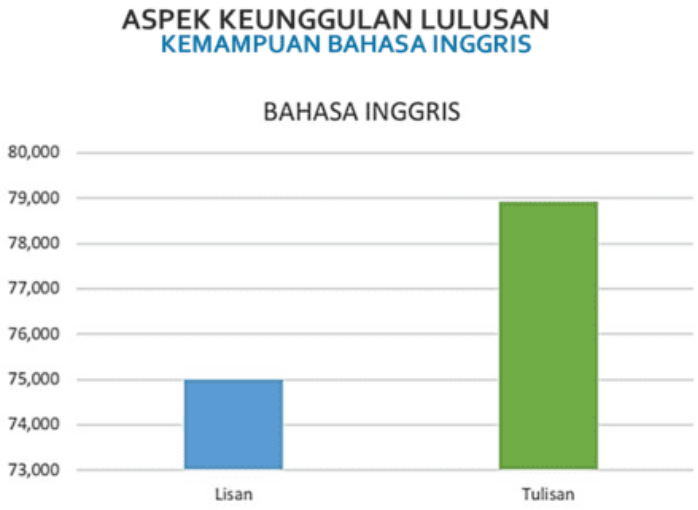


Figure 12 Aspects of excellence in alumni's English skills

Figure 13 Aspects of alumni soft skills weaknesses

CHAPTER III
FOUNDATION OF DESIGN AND CURRICULUM DEVELOPMENT

3.1 Philosophical Basis

Learning is the core of the curriculum while the curriculum is the core of education, in other words the operationalization of education and curriculum is in learning activities. Education requires a curriculum and learning that is able to prepare the future of a nation, not only able to survive in order to continue to exist, but must be able to take a dignified role in various dimensions of life both at the national and international levels. In essence, education and curriculum require learning efforts that position professional educators in facilitating the learning process for students (not teaching).

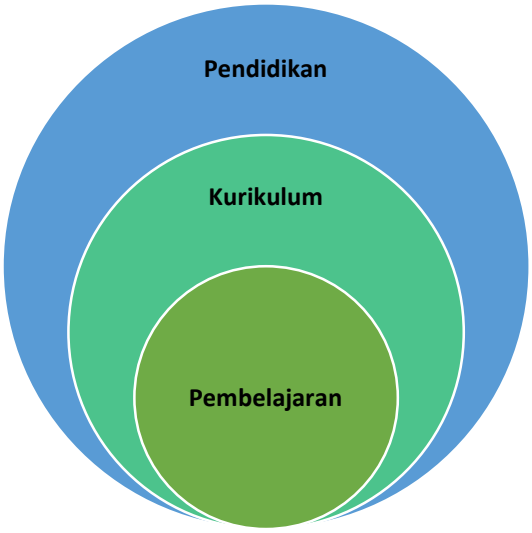


Figure 14 Learning Position in Educational Context

The main goal of education, curriculum and learning is the optimization of human potential. Paulo Freire, an Education Democracy figure, views that humans are in a process, which means that humans are not finished (not yet complete). Then how to form a complete human being. The desired human is a human who is autonomous towards himself, free from pressure and has a clear basis of life and reality. On the other hand, in Freire's view, humanization is an ideal human description. The ideal man is that man obtains wholeness. The wholeness that is obtained to become an ideal human being

(humanization) requires a human being who is self-aware. The existence of awareness in humans is obtained by freedom (Freire, 2001).

The Implementation of Free Learning (Nadiem, 2019) is in line with the philosophy of Educational Democracy (Freire, 2001). In its activities involved interactions between students with a number of learning resources. Lecturers as educators also play a role as **a** source of learning and students as students, are essentially no different, both are in a dynamic process of "to become" (*on becoming*). Lecturers as a source of learning means that there are many other learning resources that students can choose from and consequently lecturers have an obligation to provide flexibility to students in determining the choice of other sources as well as ways and places of learning that suit their interests. This was emphasized by Freire that " *The purpose of adult education is to help them to learn, not to teach them all you know and thus stop them from learning* ".

a. The philosophical assumption that needs to be developed in this context is that learning is a process of thinking to seek and find (not to be taught). The implementation of the learning process is directed at; (1) Formation of certain mental skills (*Teaching of thinking*) such as critical thinking skills, creative thinking.
b. Efforts to create a learning environment that can encourage cognitive development, such as creating an atmosphere of democratic openness, creating a pleasant climate (*teaching for thinking*).
c. Efforts to help students become more aware of their thinking processes (teaching about thinking). Therefore, the mind and intelligence of students must be well developed. Because educational institutions do not function to transfer knowledge (*transfer of knowledge*), but also function as transfer of value (*transfer of value*), so that students become skilled, intellectually good, and have internalized values in the form of character. They must be given the freedom to act in accordance with their

respective ways and abilities in an effort to increase their intelligence and creativity based on standard values.

3.2 Sociological Basis

Sociologically, education is rooted in national culture to build the present and future life of the nation. In line with this view, the curriculum is developed based on the diverse cultures of the Indonesian nation, directed to build present life, and to build the foundation for a better nation's life in the future. The curriculum should be believed to be an educational plan to prepare the life of the nation's young generation. The sociological basis for curriculum development for the Informatics Engineering DIV Education study program has the following foundations:

a. The curriculum is able to respond to social changes from the development of society which is influenced by the philosophy of life, values, science and technology, and the needs that exist in society. The development of society demands the availability of relevant educational processes.
b. The curriculum is composed of a progressive system that includes the quality of education in the context of input, process, output and outcome in order to create students who are skilled, productive, loyal and adaptive.
c. 21st century skills as the demands of the international environment that have a shared vision to improve literacy, numeracy, scientific literacy, ICT literacy, financial literacy, cultural and civic literacy skills.
d. Learners have the freedom to develop themselves by enriching their competencies through new learning experiences with various practical environments in a structured and systematic way. This program is embodied in the Merdeka Learning Campus Merdeka (MBKM) curriculum of the Informatics Engineering DIV study program

3.3 Psychological Basis

The Freedom to Learn Policy is temporarily used as the right solution in order to create an autonomous and flexible learning process in tertiary institutions so as to create a learning culture that is innovative, not restrictive, and in accordance with the needs of students. This policy also aims to increase links and matches with the

business world and the industrial world, as well as to prepare students for the world of work from the start. However Nadiem (2020) confirms that; "Through the Merdeka Learning - Merdeka Campus policy, higher education institutions are required to design and implement innovative learning processes so that students can achieve optimal learning outcomes.

Students are given the freedom to take learning credits outside the study program for three semesters, which can be taken from outside the study program in one

tertiary institution (PT) and/or outside PT. This means that learning outcomes as a whole

are the orientation of this policy. Anticipating the failures that occurred in previous policies, Freedom Learning is based on the Strengthening Character Education (PPK) policy as stipulated in the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 20 of 2020 concerning Strengthening Character Education in Formal Education Units.

Strengthening Character Education is mandatory for Merdeka Melajar in anticipation of the failure of the link and match policy in the past. this policy emphasizing the six characters that must be the basis of learning; 1) computational thinking, 2) creative, 3) critical thinking, 4) collaboration, 5) communication, and 6) compassion.

Strengthening character education is carried out based on local wisdom as a strategy to revitalize Pancasila values to strengthen national character and identity based on: (a) integration of local cultural wisdom originating from the core values of respect, harmony, and mutual help as a value revitalization strategy - Pancasila values and character values, (b) to prepare students as smart and good citizens, learning is done by learning by doing, learning to solve social problems, learning through social engagement, and learning through habituation and socio-cultural interaction, (c) Implementation of the learning model developed in the independent campus curriculum is carried out using the Problem Based Learning, Project Based Learning, and Value Clarification learning approaches

3.4 Juridical Basis

Merdeka Learning is one of the government's strategic efforts related to the education sector. A number of policies under its umbrella are 1. The 1945 Constitution of the Republic of Indonesia CHAPTER XIII Article 31 (1) Every citizen has the right to education. Each of the main points of the Merdeka Campus policy has been strengthened by the Minister of Education Regulation (Permendikbud) as the legal basis. The legal basis for the Merdeka Campus Program is as follows:

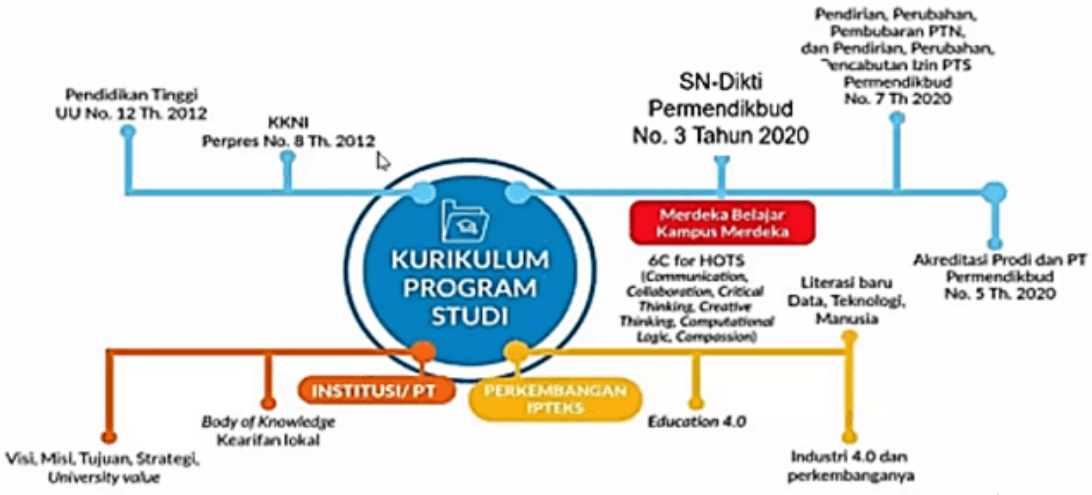


Figure 15 Legal Basis for Curriculum Development

1) The 1945 Constitution of the Republic of Indonesia CHAPTER XIII Article 31 (1) Every citizen has the right to education.
2) Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning National Higher Education Standards Chapter I Article 3 concerning standards of learning content:
   a. The National Standards for Higher Education aim to ensure the achievement of Higher Education goals which play a strategic role in educating the nation's life, advancing science and technology by applying humanities values as well as cultivating and empowering the Indonesian people in a sustainable manner.
   b. Ensure that Learning in Study Programs, research, and Community Service organized by

Higher Education Institutions in all jurisdictions of the Unitary State of the Republic of Indonesia achieves quality in accordance with the criteria set out in the National Higher Education Standards;

c. Encouraging Higher Education in all jurisdictions of the Unitary State of the Republic of Indonesia to achieve the quality of Learning, Research and Community Service beyond the criteria stipulated in the National Higher Education Standards in a sustainable manner. 4. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 20 of 2018 concerning Strengthening Character Education in Formal Education Units article 1 (1) Strengthening Character Education, hereinafter abbreviated as PPK, is an educational movement under the responsibility of an education unit to strengthen the character of students through harmonization of the heart. , exercise of taste, exercise of thought, with sports with involvement with cooperation between educational units, families, and the community as part of the National Mental Revolution Movement (GNRM).

3) Law Number 12 of 2012, concerning Higher Education.

a. A national education system that increases faith, piety to God Almighty, and noble character in order to educate the nation's life and advance science and technology by upholding religious values and national unity for the advancement of civilization and the welfare of mankind

b. Higher education as part of the national education system has a strategic role in educating the nation's life and advancing science and technology by paying attention to and applying humanities values as well as cultivating and empowering the Indonesian people in a sustainable manner.

c. Higher education capable of developing science and technology as well as producing intellectuals, scientists and/or professionals who are cultured and creative, tolerant, democratic, have strong character, and dare to defend the truth for the benefit of the nation

d. Higher education that is of good quality and relevant to the interests of the community for progress, independence and prosperity requires a planned, directed and sustainable arrangement of higher education by taking into account demographic and geographical aspects

4) Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 7 of 2020 Concerning the Establishment, Change, Dissolution of State Universities, and the Establishment, Amendment, Revocation of Licenses for Private Universities

5) Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 5 of 2020 concerning Accreditation of Study Programs and Higher Education

6) Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 Article 11 concerning standard learning processes;

a. The characteristics of the learning process as referred to in Article 10 paragraph (2) letter a consist of interactive, holistic, integrative, scientific, contextual, thematic, effective, collaborative, and student-centered characteristics.
b. Interactive as referred to in paragraph (1) states that graduate learning outcomes are achieved by prioritizing a two-way interaction process between students and lecturers
c. Holistic as referred to in paragraph (1) states that the Learning process encourages the formation of a comprehensive and broad mindset by internalizing local and national excellence and wisdom. (4) Integrative as referred to in paragraph (1) states that graduate learning outcomes are achieved through an integrated learning process to fulfill graduate learning outcomes as a whole in one program unit through an interdisciplinary and multidisciplinary approach.

d. Scientific as referred to in paragraph (1) states that graduate learning outcomes are achieved through a learning process that prioritizes a scientific approach so as to create an academic environment that is based on a system of values, norms and principles of science and upholds religious and national values.
e. Contextual referred to in paragraph (1) states that the learning outcomes of graduates are achieved through a learning process that is adapted to the demands of the ability to solve problems in the realm of expertise.
f. The thematic referred to in paragraph (1) states that graduate learning outcomes are achieved through a learning process that is adapted to the scientific characteristics of the Study Program and linked to real problems through a transdisciplinary approach.
g. Effective as referred to in paragraph (1) states that the learning outcomes of graduates are achieved effectively by prioritizing the internalization of the material properly and correctly within the optimum period of time.
h. Collaborative as referred to in paragraph (1) states that graduate learning outcomes are achieved through a joint learning process that involves interaction between individual learners to produce capitalization of attitudes, knowledge and skills.
i. Student-centered as referred to in paragraph (1) states that graduate learning outcomes are achieved through a learning process that prioritizes developing creativity, capacity, personality and student needs, as well as developing independence in seeking and finding knowledge

CHAPTER IV

GRADUATE COMPETENCE STANDARD

4.1 Graduate Profile

4.1.1 IT Project Manager

Graduate profile competencies in this field are:

a. Graduates are able to adapt project completion to traditional (waterfall) or Agile frameworks/tools
b. Graduates are able to estimate the time (timing) in the project plans made.
c. Graduates have the ability to direct and motivate project team members Graduates have negotiation, problem solving communication, and interpersonal skills
d. Graduates implement strategy and industry knowledge Graduates have good communication skills with all parties involved in projects such as clients, vendors, and team members
e. Graduates are able to predict problems that may arise and their solutions, have alternative or backup plans when encountering problems (problem solving)
f. Graduates have knowledge of project cost analysis
g. Graduates have the ability to identify, plan and manage project risks
h. Graduates understand project management methods

4.1.2 IT Team Leader

Graduate profile competencies in this field are:

a. Graduates have the ability to coordinate and delegate IT team responsibilities
b. Graduates can inspire teams with open, honest, and transparent discussions focused on technology strategy and vision
c. Graduates have knowledge and experience in projects that are carried out, related to methods, tools, and software
d. Graduates have the ability to determine project work time, report results, and how a problem must be resolved

e. Graduates have good communication skills with all parties involved in the project
f. Graduates are able to translate the business process of a project to be implemented into applications (software)
g. Graduates have technical skills which include tools, programming languages, and databases used when developing a project
h. Graduates are able to provide solutions to technical / non-technical problems related to projects faced by their team members Graduates have the ability to think critically
i. Graduates have the ability to bridge the needs between product teams and development teams
j. Graduates are able to analyze specifications and requests from product teams
k. Graduates are able to explain technically the tasks that need to be carried out by the Backend Engineer, Frontend Engineer and Quality Assurance teams to continue the project according to the expectations of the product team
l. Graduates have the ability and understanding in terms of coding Graduates have the ability in the field of system architecture
m. Graduates have an understanding of the structure of the data base
n. Graduates have insight into the tech stack that can be applied to bring projects according to the desired requirements

4.1.3 Programmers (Web, Desktop, Mobile, Multimedia)

a. Graduates have the ability to write software programs
b. Graduates have the ability to transform program designs created by software designers/engineers/system analysts into instructions that can be executed by computers
c. Graduates can read the source code (program code) of an application that will be/is being developed Graduates have the ability to find bugs or errors from a program that has been made before
d. Graduates have the ability to read documentation which functions to get to know each code of each programming language used to create programs
e. Graduates have the ability to learn several programming languages

f. Graduates have multitasking abilities in terms of integrating various layers of technology
g. Graduates have good English skills to be able to understand error messages, read documentation, ask questions on global forums and search from the English-speaking web
h. Graduates are able to learn concepts and apply them to other problems
i. Graduates have an understanding of algebra and arithmetic
j. Graduates have the ability to identify problems and find the most efficient ways to solve them through programming
k. Graduates have good communication skills
l. Graduates are able to work together in a team Graduates have a plan in designing the program structure so that typing the first line of code can be successful
m. Graduates have a willingness to continue learning about new things

4.1.4 System Analyst

n. Graduates have knowledge of common operating systems, programming languages and hardware platforms
o. Graduates have knowledge of Business process mapping, Software development, and Project management
p. Graduates have the ability to identify problems, consider solutions, implement plans and evaluate existing improvements
q. Graduates are able to communicate technical information so that clients can understand it Graduates have the ability to analyze product choices and find system innovations that are also the most economical for companies or what kind of security is right and can protect company data
r. Graduates are able to outline a plan of how the product will look like and ensure all the details of the plan and the different stages are executed to perfection
s. Graduates are able to Master System Development Methodology Graduates are able to predict external factors such as rising device prices or the emergence of competitors

t. Graduates master the latest software and hardware, and know the advantages and limitations of these technologies Graduates have expertise in communication or interpersonal skills
u. Graduates have knowledge and skills in computer technology, programming languages and data processing techniques
v. Graduates have knowledge of quantitative methods such as linear programming, dynamic programming, regression, network, decision tree, trend, and simulation
w. Graduates have the ability to analyze problems and provide solutions Graduates have communication skills (verbal and written) and the ability to build and maintain relationships

4.2 Graduate Learning Outcomes

4.2.1 Attitude Aspect

Code	Achievement of Attitude Learning
S1	Fear of God Almighty and able to show religious attitude.
S2	Upholding human values in carrying out duties based on religion, morals and ethics.
S3	Contributing to improving the quality of life in society, nation, state, and the advancement of civilization based on Pancasila.
S4	Act as a citizen who is proud and loves the motherland, has nationalism and a sense of responsibility to the state and nation.
S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
S6	Working together and having social sensitivity and concern for society and the environment.
S7	Obey the law and discipline in the life of society and the state.
S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.

S10	Internalize the spirit of independence, struggle and entrepreneurship.

4.2.2 Knowledge Aspect

Code	Knowledge Learning Outcomes
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains in depth.
PP3	Mastering documentation techniques and ICT product quality assurance in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in the development of ICT products in depth.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
PP7	Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field in depth.

4.2.3 Aspects of Specific Skills

Code	Achievement of Specific Skills Learning
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).

KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products that are innovative and applicable according to applicable standards by taking into account ethical, social, legal and economic factors.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / Science and Technology products using applicable standards.
KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT / science and technology products.
KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software and paying attention to Occupational Safety and Health (K3).
KK6	Able to use the latest technology and analyze the impact of computing on individuals, organizations and society.

4.2.4 Aspects of General Skills

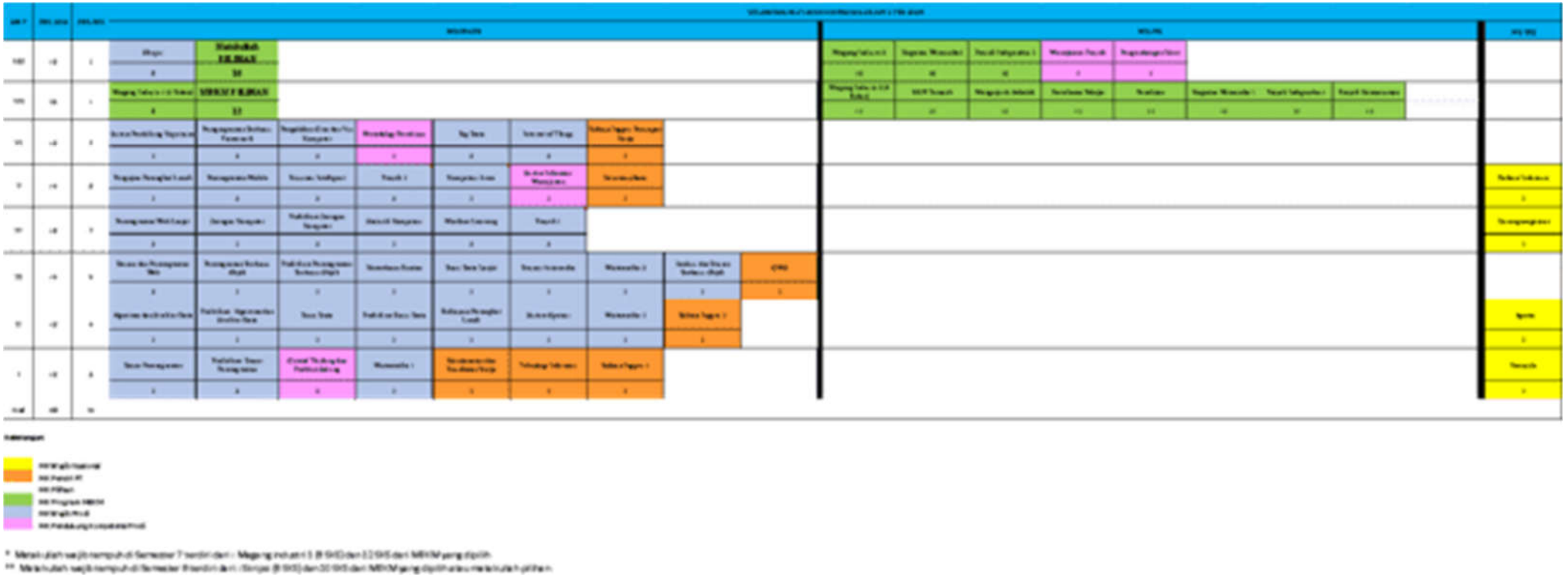
Code	General Skills Learning Outcomes
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.
KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.

KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.
KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
KU11	Able to communicate using international languages orally and in writing.

CHAPTER V

COURSE DISTRIBUTION MATRIC

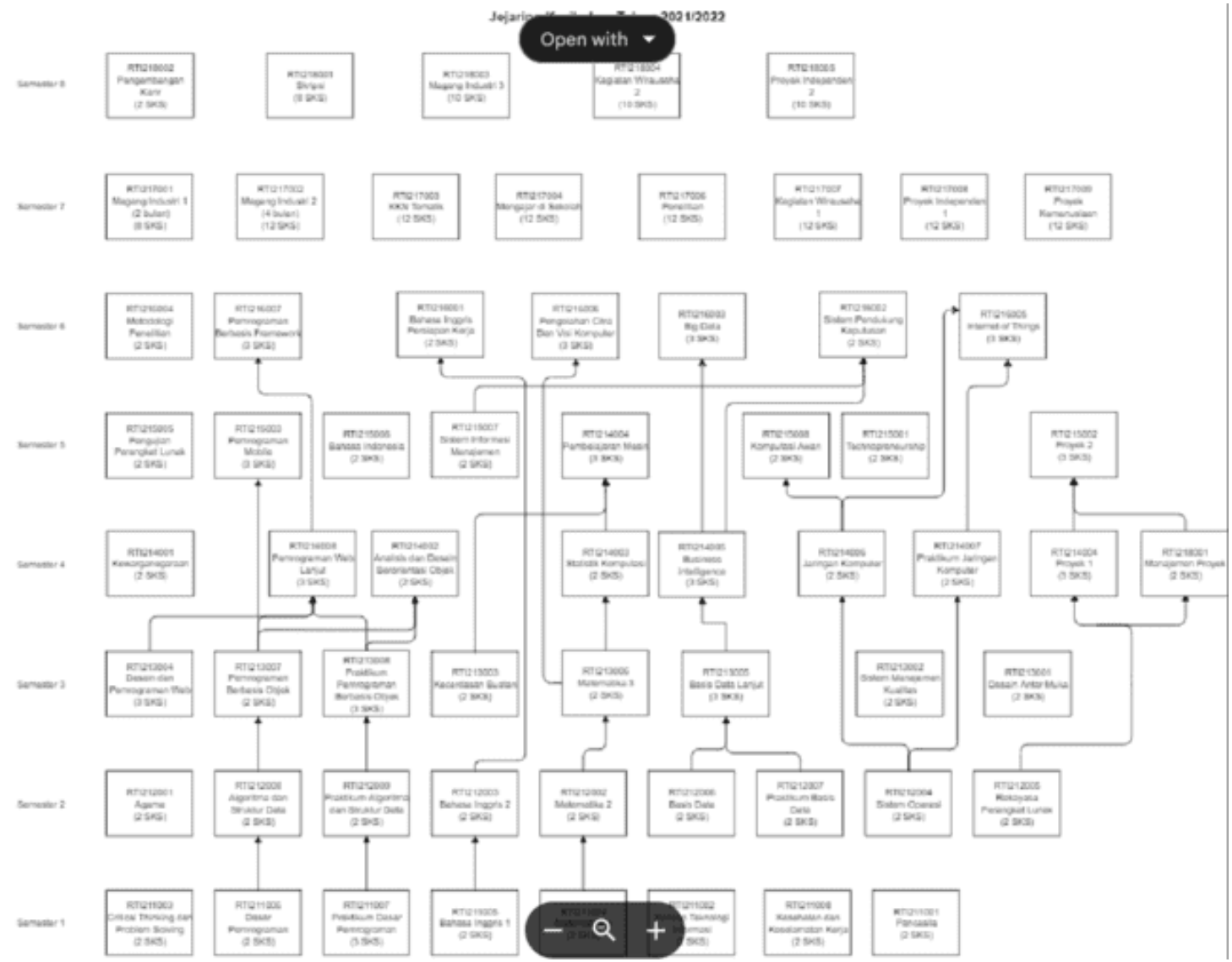
5.1 Course Organizational Matrix in Curriculum Structure



5.2 Organizational Matrix for the 2021 MBKM Study Program Details

5.3 Map of the Informatics Engineering DIV Study Program with the Implementation of the MBKM Program

5.4 Curriculum Tree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CHAPTER VI

IMPLEMENTATION CURRICULUM DESIGN

INDEPENDENT LEARNING INDEPENDENT CAMPUS

6.1 Distribution of 2021 MBKM Curriculum Courses

The distribution of courses in the 2021 Curriculum of the D4 Informatics Engineering Study Program consists of eight semesters, namely:

SEMESTER 1

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI211001	Pancasila	WN	2		2	2		2
2	RTI211002	Information Technology	WP	2		2	4		4
3	RTI211003	Critical thinking and problem solving	WP	2		2	4		4
4	RTI211004	Mathematics 1	WP	3		3	6		6
5	RTI211005	English 1	WP-PT	2		2	4		4
6	RTI211006	Basic Programming	WP	2		2	4		4
7	RTI211007	Programming Basic Practicum	WP		3	3		6	6
8	RTI211008	Occupational Health and Safety	WP-PT	2		2	4		4
TOTAL HOURS / SKS PER WEEK				**15**	**3**	**18**	**28**	**6**	**34**

SEMESTER 2

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI212001	Religion	WN	2		2	2		2
2	RTI212002	Mathematics 2	WP	2		2	4		4
3	RTI212003	English 2	WP-PT	2		2	4		4
4	RTI212004	Operating system	WP	2		2	4		4
5	RTI212005	Software engineering	WP	2		2	4		4
6	RTI212006	Database	WP	2		2	4		4
7	RTI212007	Database Practicum	WP		2	2		4	4
8	RTI212008	Algorithms And Data Structures	WP	2		2	4		4
9	RTI212009	Practicum Algorithms and Data Structures	WP		2	2		4	4
TOTAL HOURS / SKS PER WEEK				14	4	18	26	8	34

3RD SEMESTER

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI213001	Interface Design	WP	2		2	4		4
2	RTI213002	Object Oriented Analysis And Design	WP		2	2		4	4
3	RTI213003	Artificial intelligence	WP	2		2	4		4
4	RTI213004	Web Design & Programming	WP		3	3		6	6
5	RTI213005	Advanced Database	WP		2	2		4	4

6	RTI213006	Math 3	WP	2		2	4		4
7	RTI213007	Object Based Programming	WP	2		2	4		4
8	RTI213008	Object-Based Programming Practicum	WP		2	2		4	4
9	RTI213009	QMS	WP-PT	2		2	4		4
TOTAL HOURS / SKS PER WEEK				10	9	19	20	18	38

SEMESTER 4

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI214001	Citizenship	WN	2		2	2		2
2	RTI214002	Project 1	WP		3	3		6	6
3	RTI214003	Computational Statistics	WP	2		2	4		4
4	RTI214004	Machine Learning	WP		3	3		6	6
5	RTI214005	Advanced Web Programming	WP		3	3		6	6
6	RTI214006	Computer network	WP	2		2	4		4
7	RTI214007	Computer Network Practicum	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				6	12	18	10	24	34

5TH SEMESTER

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI215001	Entrepreneurship	WP-PT	2		2	4		4
2	RTI215002	Project 2	WP		3	3		6	6
3	RTI215003	Mobile Programming	WP		3	3		6	6

4	RTI215004	business intelligence	WP		3	3		6	6
5	RTI215005	Software Testing	WP	2		2	4		4
6	RTI215006	Indonesian	WN	2		2	2		2
7	RTI215007	Management information System	WP	2		2	4		4
8	RTI215008	Cloud Computing	WP		2	2		4	4
TOTAL HOURS / SKS PER WEEK				8	11	19	14	22	36

6TH SEMESTER

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI216001	Job Preparation English	WP-PT	2		2	4		4
2	RTI216002	Decision Support System	WP		2	2		4	4
3	RTI216003	Big Data	WP		3	3		6	6
4	RTI216004	Research methodology	WP	2		2	4		4
5	RTI216005	Internet Of Things	WP		3	3		6	6
6	RTI216006	Image Processing And Computer Vision	WP		3	3		6	6
7	RTI216007	Framework Based Programming	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				4	14	18	8	28	36

MK of choice **7TH SEMESTER**

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI217001	Industrial Internship 1 (2 months)	WP		8	8		16	16
2	RTI217002	Industrial Internship 2 (4 months)	P		12	12		24	24

3	RTI217003	Thematic KKN	P		12	12		24	24
4	RTI217004	Teaching in schools	P		12	12		24	24
5	RTI217005	Student exchange	P		12	12		24	24
6	RTI217006	Study	P		12	12		24	24
7	RTI217007	Entrepreneurial Activities 1	P		12	12		24	24
8	RTI217008	Independent Project 1	P		12	12		24	24
9	RTI217009	Humanity Project	P		12	12		24	24
TOTAL HOURS / MANDATORY SKS PER WEEK					**20**	**20**		**40**	**40**

MK must be taken **20 credits**

SEMESTER 8

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI218001	Thesis	WP		8	8		16	16
1	RTI218001	Project management	P	2		2	4		4
2	RTI218002	Career development	P	2		2	4		4
3	RTI218003	Industrial Internship 3	P		10			20	20
4	RTI218004	Entrepreneurial Activities 2	P		10			20	20
5	RTI218005	Independent Project 2	P		10			20	20
TOTAL HOURS / MANDATORY SKS PER WEEK						**12**			**24**

MK must be traveled at a minimum **12 credits**

MK must be taken to the maximum **18 credits**

TOTAL HOURS/CREDITS PER WEEK OVERALL	CREDITS WEIGHT		TOTAL SKS	HOURS / WEEK		TOTAL HOURS
	THEORY	PRACTICE		THEORY	PRACTICE	
	57	81	14 4	106	162	276

PERCENTAGE OF OVERALL HOURS/CREDITS PER WEEK	PSKS		HOURS/SUNDAY	
	THEORY	PRACTICE	THEORY	PRACTICE
	0.40	0.57	0.38	0.59

a. Subjects removed in the 2021 Curriculum Reconstruction

MK code	Subject
RTI201002	Documentation Techniques
RTI201003	Communication and Organizational Science
RTI201004	Office Computer Applications
RTI201007	Discrete mathematics
RTI202006	Linear Algebra
RTI204003	Project management
RT20I4007	Database Management System
RTI205001	E-Business
RTI205007	Network Programming
RTI206001	Digital Entrepreneurship
RTI206004	Multimedia Computing
RTI207001	Capita Selecta
RTI207003	Thesis proposal
RTI207004	Distributed Systems
RTI207006	Games Programming
RTI208002	IT Professional Ethics

b. Courses that change their names in the 2021 Curriculum Reconstruction

MK code	Subject	New MK name
RTI201006	Information Technology Concept	Information Technology
RTI204001	Information Systems	Management information System
RTI205004	Data Warehouses	business intelligence
RTI206003	Data Technology	Big Data

c. New Course in Curriculum Reconstruction 2021

MK code	Subject
RTI211003	Critical thinking and problem solving
RTI211004	Mathematics 1
RTI212002	Mathematics 2
RTI213006	Math 3
RTI213009	QMS
RTI215008	Cloud Computing
RTI217001	Industrial Internship 1 (2 months)
RTI217002	Industrial Internship 2 (4 months)
RTI217003	Thematic KKN
RTI217004	Teaching in schools
RTI217005	Student exchange
RTI217006	Study
RTI217007	Entrepreneurial Activities 1
RTI217008	Independent Project 1
RTI217009	Humanity Project
RTI218001	Project management
RTI218002	Career development
RTI218003	Industrial Internship 3
RTI218004	Entrepreneurial Activities 2
RTI218005	Independent Project 2

CHAPTER VII
RECONSTRUCTION OF 2021 MBKM CURRICULUM WITH 2020-2018 CURRICULUM

7 .1 2018 MBKM Curriculum Structure

SEMESTER 1

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI181001	Pancasila	WN	2		2	3		3
2	RTI182002	Documentation Techniques	WP	2		2	3		3
3	RTI181003	Communication and Organizational Science	WP	2		2	3		3
4	RTI181004	Office Computer Applications	WP		2	2		6	6
5	RTI181005	English 1	WP-PT	2		2	3		3
6	RTI181006	Information Technology Concept	WP-PT	2		2	3		3
7	RTI181007	Discrete mathematics	WP	2		2	4		4
8	RTI181008	Occupational Health and Safety	WP-PT	2		2	3		3
9	RTI181009	Basic Programming	WP	2		2	4		4
10	RTI181010	Programming Basic Practicum	WP		2	2		6	6
TOTAL HOURS / SKS PER WEEK				**16**	**4**	**20**	**26**	**12**	**38**

SEMESTER 2

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI182001	Religion	WN	2		2	3		3
2	RTI181002	Citizenship	WN	2		2	3		3
3	RTI182003	English 2	WP-PT	2		2	3		3
4	RTI182004	Operating system	WP	2		2	3		3
5	RTI182005	Software engineering	WP	2		2	4		4
6	RTI182006	Linear Algebra	WP	2		2	4		4
7	RTI182007	Database	WP	2		2	3		3
8	RTI182008	Database Practicum	WP		2	2		6	6
9	RTI182009	Algorithms And Data Structures	WP	2		2	3		3
10	RTI182010	Practicum Algorithms and Data Structures	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**16**	**5**	**21**	**26**	**12**	**38**

SEMESTER 3

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI183001	Interface Design	WP	2		2	3		3
2	RTI183002	Computational Statistics	WP	2		2	3		3
3	RTI183003	Artificial intelligence	WP		2	2		4	4
4	RTI183004	Web Design & Programming	WP		2	2		5	5
5	RTI183005	Advanced Database	WP		3	3		6	6
6	RTI183006	Computer network	WP	2		2	3		3

7	RTI183007	Computer Network Practicum	WP		2	2		5	5
8	RTI183008	Object Based Programming	WP	2		2	3		3
9	RTI183009	Object-Based Programming Practicum	WP		2	2		6	6
TOTAL HOURS / SKS PER WEEK				**8**	**11**	**19**	**12**	**26**	**38**

SEMESTER 4

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI184001	Information Systems	WP	2		2	3		3
2	RTI184002	Object Oriented Analysis And Design	WP		3	3		6	6
3	RTI184003	Project management	WP	2		2	3		3
4	RTI184004	Project 1	WP		3	3		9	9
5	RTI184005	Machine Learning	WP		2	2		5	5
6	RTI184006	Advanced Web Programming	WP		3	3		6	6
7	RTI184007	Database Management System	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**4**	**14**	**18**	**6**	**32**	**38**

SEMESTER 5

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI186001	E-Business	WP	2		2	3		3
2	RTI186002	Project 2	WP		4	4		12	12
3	RTI186003	Mobile Programming	WP		3	3		8	8
4	RTI186004	Data Warehouses	WP		3	3		6	6
5	RTI186005	Software Testing	WP	2		2	3		3
6	RTI186006	Network Programming	WP		3	3		6	6

TOTAL HOURS / SKS PER WEEK	4	13	17	6	32	38

6TH SEMESTER

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI186001	Digital Entrepreneurship	WP	2		2	4		4
2	RTI186002	Decision Support System	WP		3	3		6	6
3	RTI186003	Data Technology	WP		3	3		6	6
4	RTI186004	Multimedia Computing	WP	2		2	4		4
5	RTI186005	Internet Of Things	WP		3	3		6	6
6	RTI186006	Image Processing And Computer Vision	WP		3	3		6	6
7	RTI186007	Framework Based Programming	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				4	15	19	8	30	38

SEMESTER 7

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI187001	Industrial Internship 1 (2 months)	WP		8	8		16	16
2	RTI187002	Industrial Internship 2 (4 months)	P		12	12		24	24
3	RTI187003	Project 3	P		6	6		12	12

4	RTI187004	IT Project Management	P	2		2	4		4
5	RTI187005	Research methodology	P	2		2	4		4
6	RTI187006	Career development	P	2		2	4		4
TOTAL HOURS / MANDATORY SKS PER WEEK						**20**			**40**

MK must be taken **20 credits**

SEMESTER 8

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI188001	Job Preparation English	P	2		2	4		4
2	RTI188002	Indonesian	WN	2		2	4		4
3	RTI188003	Industrial Internship 3	P		10	10		20	20
4	RTI188004	Thesis	WP		8	8		16	16
TOTAL HOURS / SKS PER WEEK						**22**			**44**

MK must be traveled at a minimum **12 credits**

MK must be taken to the maximum **20 credits**

	CREDITS WEIGHT			HOURS / WEEK		TOTAL HOURS
	THEORY	PRACTICE	TOTAL SKS	THEORY	PRACTICE	
TOTAL HOURS/CREDITS PER OVERALL WEEK (INTERNATIONAL)	**52**	**94**	**146**	**84**	**220**	**304**

	PSKS		HOURS/SUNDAY	
	THEORY	PRACTICE	THEORY	PRACTICE
PERCENTAGE OF HOURS/CREDITS PER WEEK OVERALL (INTERNATIONAL)	0.36	0.64	0.28	0.72

	CREDITS WEIGHT			HOURS / WEEK		TOTAL HOURS
	THEORY	PRACTICE	TOTAL SKS	THEORY	PRACTICE	
TOTAL HOURS / SKS PER WEEK OF ENTIRE COURSE	**62**	**84**	**146**	**104**	**188**	**292**

	PSKS		HOURS/SUNDAY	
	THEORY	PRACTICE	THEORY	PRACTICE
PROCENTAGE OF HOURS/CREDITS PER WEEK OF ENTIRE COURSE	0.42	0.58	0.36	0.64

a. Subjects deleted in the 2018 Curriculum Reconstruction

MK code	Subject
RTI187001	Capita Selecta
RTI187003	Thesis proposal
RTI187004	Distributed Systems
RTI187006	Games Programming
RTI188002	IT Professional Ethics

b. New Course in Curriculum Reconstruction 2018

MK code	Subject
RTI187001	Industrial Internship 1 (2 months)
RTI187002	Industrial Internship 2 (4 months)
RTI187004	IT Project Management
RTI187006	Career development
RTI188003	Industrial Internship 3

7.2 2019 MBKM Curriculum Structure

2019 MBKM CURRICULUM
INFORMATICS ENGINEERING DIV STUDY PROGRAM
INFORMATION TECHNOLOGY DEPARTMENT

SEMESTER 1

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI191001	Pancasila	WN	2		2	3		3
2	RTI191002	Documentation Techniques	WP	2		2	3		3
3	RTI191003	Communication and Organizational Science	WP	2		2	3		3
4	RTI191004	Office Computer Applications	WP		2	2		6	6
5	RTI191005	English 1	WP-PT	2		2	3		3
6	RTI191006	Information Technology Concept	WP-PT	2		2	3		3
7	RTI191007	Discrete mathematics	WP	2		2	4		4
8	RTI191008	Occupational Health and Safety	WP	2		2	3		3
9	RTI191009	Basic Programming	WP	2		2	4		4
10	RTI1910010	Programming Basic Practicum	WP		2	2		6	6
TOTAL HOURS / SKS PER WEEK				**16**	**4**	**20**	**26**	**12**	**38**

SEMESTER 2

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI192001	Religion	WN	2		2	3		3
2	RTI192002	Citizenship	WN	2		2	3		3
3	RTI192003	English 2	WP-PT	2		2	3		3
4	RTI192004	Operating system	WP	2		2	3		3
5	RTI192005	Software engineering	WP	2		2	4		4
6	RTI192006	Linear Algebra	WP	2		2	4		4
7	RTI192007	Database	WP	2		2	3		3
8	RTI192008	Database Practicum	WP		2	2		6	6
9	RTI192009	Algorithms And Data Structures	WP	2		2	3		3
10	RTI1920010	Practicum Algorithms and Data Structures	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**16**	**5**	**21**	**26**	**12**	**38**

SEMESTER 3

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI193001	Interface Design	WP	2		2	3		3
2	RTI193002	Computational Statistics	WP	2		2	3		3
3	RTI193003	Artificial intelligence	WP		2	2		4	4
4	RTI193004	Web Design & Programming	WP		2	2		5	5
5	RTI193005	Advanced Database	WP		3	3		6	6
6	RTI193006	Computer network	WP	2		2	3		3
7	RTI193007	Computer Network Practicum	WP		2	2		5	5

8	RTI193008	Object Based Programming	WP	2		2	3		3
9	RTI193009	Object-Based Programming Practicum	WP		2	2		6	6
TOTAL HOURS / SKS PER WEEK				**8**	**11**	**19**	**12**	**26**	**38**

SEMESTER 4

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI194001	Information Systems	WP	2		2	3		3
2	RTI194002	Object Oriented Analysis And Design	WP		3	3		6	6
3	RTI194003	Project management	WP	2		2	3		3
4	RTI194004	Project 1	WP		3	3		9	9
5	RTI194005	Machine Learning	WP		2	2		5	5
6	RTI194006	Advanced Web Programming	WP		3	3		6	6
7	RTI194007	Database Management System	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**4**	**14**	**18**	**6**	**32**	**38**

SEMESTER 5

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI195001	Entrepreneurship	WP-PT	2		2	4		4
2	RTI195002	Project 2	WP		3	3		6	6
3	RTI195003	Mobile Programming	WP		3	3		6	6
4	RTI195004	Business Intelligence	WP		3	3		6	6
5	RTI195005	Software Testing	WP	2		2	4		4

6	RTI195006	Indonesian	WN	2		2	2		2
7	RTI195007	QMS	WP-PT	2		2	4		4
8	RTI195008	Cloud Computing	WP		2	2		4	4
TOTAL HOURS / SKS PER WEEK				**8**	**11**	**19**	**14**	**22**	**36**

6TH SEMESTER

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI196001	Job Preparation English	WP-PT	2		2	4		4
2	RTI196002	Decision Support System	WP		2	2		4	4
3	RTI196003	Big Data	WP		3	3		6	6
4	RTI196004	Research methodology	WP	2		2	4		4
5	RTI196005	Internet Of Things	WP		3	3		6	6
6	RTI196006	Image Processing And Computer Vision	WP		3	3		6	6
7	RTI196007	Framework Based Programming	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**4**	**14**	**18**	**8**	**28**	**36**

SEMESTER 7

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI197001	Industrial Internship 1 (2 months)	WP		8	8		16	16
2	RTI197002	Industrial Internship 2 (4 months)	P		12	12		24	24
3	RTI197003	Thematic KKN	P		12	12		24	24
4	RTI197004	Teaching in schools	P		12	12		24	24
5	RTI197005	Student exchange	P		12	12		24	24
6	RTI197006	Study	P		12	12		24	24
7	RTI197007	Entrepreneurial Activities 1	P		12	12		24	24
8	RTI197008	Independent Project 1	P		12	12		24	24
9	RTI197009	Humanity Project	P		12	12		24	24
TOTAL HOURS / MANDATORY SKS PER WEEK					**20**	**20**		**40**	**40**

MK must be taken **20 credits**

SEMESTER 8

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI198001	Thesis	WP		8	8		16	16
2	RTI198002	Project management	P	2		2	4		4
3	RTI198003	Career development	P	2		2	4		4
4	RTI198004	Industrial Internship 3	P		10			20	20
5	RTI198005	Entrepreneurial Activities 2	P		10			20	20
6	RTI198006	Independent Project 2	P		10			20	20
TOTAL HOURS / MANDATORY SKS PER WEEK						**12**			**24**

MK must be traveled at a minimum **12 credits**

MK must be taken to the maximum **18 credits**

	CREDITS WEIGHT		TOTAL SKS	HOURS / WEEK		TOTAL HOURS
	THEORY	PRACTICE		THEORY	PRACTICE	
TOTAL HOURS/CREDITS PER WEEK OVERALL	**56**	**87**	**147**	**92**	**188**	**288**

	PSKS		HOURS/SUNDAY	
	THEORY	PRACTICE	THEORY	PRACTICE
PERCENTAGE OF OVERALL HOURS/CREDITS PER WEEK				

	0.38	0.59	0.32	0.65

a. Subjects deleted in the 2019 Curriculum Reconstruction

MK code	Subject
RTI195001	E-Business
RTI195007	Network Programming
RTI196001	Digital Entrepreneurship
RTI196004	Multimedia Computing
RTI197001	Capita Selecta
RTI197003	Thesis proposal
RTI197004	Distributed Systems
RTI197006	Games Programming
RTI198002	IT Professional Ethics

b. Courses that changed their names in the 2019 Curriculum Reconstruction

MK code	Subject	New MK name
RTI195004	Data Warehouses	business intelligence
RTI196003	Data Technology	Big Data

c. New Course in Curriculum Reconstruction 2019

MK code	Subject
RTI195007	QMS
RTI195008	Cloud Computing
RTI197001	Industrial Internship 1 (2 months)
RTI197002	Industrial Internship 2 (4 months)
RTI197003	Thematic KKN
RTI197004	Teaching in schools
RTI197005	Student exchange
RTI197006	Study
RTI197007	Entrepreneurial Activities 1
RTI197008	Independent Project 1
RTI197009	Humanity Project
RTI198002	Project management
RTI198003	Career development
RTI198004	Industrial Internship 3
RTI198005	Entrepreneurial Activities 2
RTI198006	Independent Project 2

7.3 Structure of the 2020 MBKM Curriculum

SEMESTER 1

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI201001	Pancasila	WN	2		2	3		3
2	RTI201002	Documentation Techniques	WP	2		2	3		3
3	RTI201003	Communication and Organizational Science	WP	2		2	3		3
4	RTI201004	Office Computer Applications	WP		2	2		6	6
5	RTI201005	English 1	WP-PT	2		2	3		3
6	RTI201006	Information Technology Concept	WP-PT	2		2	3		3
7	RTI201007	Discrete mathematics	WP	2		2	4		4
8	RTI201008	Occupational Health and Safety	WP	2		2	3		3
9	RTI201009	Basic Programming	WP	2		2	4		4
10	RTI2010010	Programming Basic Practicum	WP		2	2		6	6
TOTAL HOURS / SKS PER WEEK				**16**	**4**	**20**	**26**	**12**	**38**

SEMESTER 2

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI202001	Religion	WN	2		2	3		3
2	RTI202002	Citizenship	WN	2		2	3		3
3	RTI202003	English 2	WP-PT	2		2	3		3
4	RTI202004	Operating system	WP	2		2	3		3
5	RTI202005	Software engineering	WP	2		2	4		4
6	RTI202006	Linear Algebra	WP	2		2	4		4
7	RTI202007	Database	WP	2		2	3		3
8	RTI202008	Database Practicum	WP		2	2		6	6
9	RTI202009	Algorithms And Data Structures	WP	2		2	3		3
10	RTI2020010	Practicum Algorithms and Data Structures	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**16**	**5**	**21**	**26**	**12**	**38**

SEMESTER3

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI203001	Interface Design	WP	2		2	4		4
2	RTI204002	Object Oriented Analysis And Design	WP		2	2		4	4
3	RTI203003	Artificial intelligence	WP	2		2	4		4
4	RTI203004	Web Design & Programming	WP		3	3		6	6
5	RTI203005	Advanced Database	WP		2	2		4	4
6	RTI203006	Math 3	WP	2		2	4		4
7	RTI203007	Object Based Programming	WP	2		2	4		4
8	RTI203008	Object-Based Programming Practicum	WP		2	2		4	4

9	RTI203009	QMS	WP-PT	2		2	4		4
TOTAL HOURS / SKS PER WEEK				**10**	**9**	**19**	**20**	**18**	**38**

SEMESTER 4

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI204001	Critical Thinking and Problem Solving	WP	2		2		4	4
2	RTI204002	Project 1	WP		3	3		6	6
3	RTI204003	Computational Statistics	WP	2		2	4		4
4	RTI204004	Machine Learning	WP		3	3		6	6
5	RTI204005	Advanced Web Programming	WP		3	3		6	6
6	RTI204006	Computer network	WP	2		2	4		4
7	RTI204007	Computer Network Practicum	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**6**	**12**	**18**	**8**	**28**	**36**

SEMESTER 5

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI205001	Entrepreneurship	WP-PT	2		2	4		4
2	RTI205002	Project 2	WP		3	3		6	6
3	RTI205003	Mobile Programming	WP		3	3		6	6
4	RTI205004	Business Intelligence	WP		3	3		6	6
5	RTI205005	Software Testing	WP	2		2	4		4

6	RTI205006	Indonesian	WN	2		2	2		2
7	RTI205007	Management Information System	WP	2		2	4		4
8	RTI205008	Cloud Computing	WP		2	2		4	4
TOTAL HOURS / SKS PER WEEK				**8**	**11**	**19**	**14**	**22**	**36**

SEMESTER 6

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI196001	Job Preparation English	WP-PT	2		2	4		4
2	RTI196002	Decision Support System	WP		2	2		4	4
3	RTI196003	Big Data	WP		3	3		6	6
4	RTI196004	Research methodology	WP	2		2	4		4
5	RTI196005	Internet Of Things	WP		3	3		6	6
6	RTI196006	Image Processing And Computer Vision	WP		3	3		6	6
7	RTI196007	Framework Based Programming	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**4**	**14**	**18**	**8**	**28**	**36**

SEMESTER 7

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI207001	Industrial Internship 1 (2 months)	WP		8	8		16	16
2	RTI207002	Industrial Internship 2 (4 months)	P		12	12		24	24
3	RTI207003	Thematic KKN	P		12	12		24	24
4	RTI207004	Teaching in schools	P		12	12		24	24

5	RTI207005	Student exchange	P		12	12		24	24
6	RTI207006	Study	P		12	12		24	24
7	RTI207007	Entrepreneurial Activities 1	P		12	12		24	24
8	RTI207008	Independent Project 1	P		12	12		24	24
9	RTI207009	Humanity Project	P		12	12		24	24
TOTAL HOURS / MANDATORY SKS PER WEEK					**20**	**20**		**40**	**40**

MK must be taken **20 credits**

SEMESTER 8

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI208001	Thesis	WP		8	8		16	16
2	RTI208002	Project management	P	2		2	4		4
3	RTI208003	Career development	P	2		2	4		4
4	RTI208004	Industrial Internship 3	P		10			20	20
5	RTI208005	Entrepreneurial Activities 2	P		10			20	20
6	RTI208006	Independent Project 2	P		10			20	20
TOTAL HOURS / MANDATORY SKS PER WEEK						**12**			**24**

MK must be traveled at a minimum **12 credits**

MK must be taken to the maximum **18 credits**

	CREDITS WEIGHT			HOURS / WEEK		TOTAL HOURS
	THEORY	PRACTICE	TOTAL SKS	THEORY	PRACTICE	
TOTAL HOURS/CREDITS PER WEEK OVERALL	**60**	**83**	**147**	**102**	**176**	**286**

	PSKS		HOURS/SUNDAY	
	THEORY	PRACTICE	THEORY	PRACTICE
PERCENTAGE OF OVERALL HOURS/CREDITS PER WEEK	0.41	0.56	0.36	0.62

a. **Subjects deleted in the 2020 Curriculum Reconstruction**

MK code	Subject
RTI204003	Project management
RT20I4007	Database Management System
RTI205001	E-Business
RTI205007	Network Programming
RTI206001	Digital Entrepreneurship
RTI206004	Multimedia Computing
RTI207001	Capita Selecta
RTI207003	Thesis proposal
RTI207004	Distributed Systems
RTI207006	Games Programming
RTI208002	IT Professional Ethics

b. **Courses that change their names in the 2020 Curriculum Reconstruction**

MK code	Subject	New MK name
RTI204001	Information Systems	Management information System
RTI205004	Data Warehouses	business intelligence
RTI206003	Data Technology	Big Data

c. **New Course in Curriculum Reconstruction 2020**

MK code	Subject
RTI203006	Math 3
RTI203009	QMS
RTI204001	Critical Thinking and Problem Solving
RTI205001	Entrepreneurship
RTI205008	Cloud Computing
RTI207001	Industrial Internship 1 (2 months)
RTI207002	Industrial Internship 2 (4 months)
RTI207003	Thematic KKN
RTI207004	Teaching in schools

RTI207005	Student exchange
RTI207006	Study
RTI207007	Entrepreneurial Activities 1
RTI207008	Independent Project 1
RTI207009	Humanity Project
RTI208002	Project management
RTI208003	Career development
RTI208004	Industrial Internship 3
RTI208005	Entrepreneurial Activities 2
RTI208006	Independent Project 2

Appendix I Academic Handbook

VISION AND MISSION
INFORMATICS ENGINEERING D-IV STUDY PROGRAM
INFORMATION TECHNOLOGY DEPARTMENT
ACADEMIC YEAR 2021/2022

Study Program Vision

Becoming an excellent study program in the field of **software engineering** at both national and international levels.

Study Program Mission

1. Implementing innovative vocational education based on an applied education system by utilizing technological advances, so as to produce graduates who have competence in the field of software engineering and are ready to compete at the national and global levels.
2. Carry out applied research based on products and services in the field of software engineering.
3. Carry out community service using advances in software engineering to improve welfare.
4. Realizing mutually beneficial cooperation with various parties both inside and outside the country in the field of software engineering

Study Program Objectives

1. To produce graduates in the field of software engineering who are godly, ethical and moral, knowledgeable and highly skilled, ready to work and/or entrepreneurs who are able to compete on a national and global scale.
2. Producing applied research in the field of software engineering on a national and international scale, increasing effectiveness, efficiency and productivity in the business and industrial world, and leading to the attainment of Intellectual Property Rights (IPR), obtaining patents and public welfare.
3. Producing community service that is carried out through the application and dissemination of science and technology and the provision of professional services in the field of software engineering so that it is directly beneficial in improving people's welfare.
4. Realization of mutually beneficial cooperation with various parties both inside and outside the country in the field of software engineering to increase competitiveness.

2021 CURRICULUM

INFORMATICS ENGINEERING DIV STUDY PROGRAM

INFORMATION TECHNOLOGY DEPARTMENT

ACADEMIC YEAR 2021/2022

SEMESTER 1

No	MK CODE	SUBJECT	GROUP MK	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI211001	Pancasila	WN	2		2	2		2
2	RTI211002	Information Technology Concept	WP	2		2	4		4
3	RTI211003	Critical thinking and problem solving	WP	2		2	4		4
4	RTI211004	Mathematics 1	WP	3		3	6		6
5	RTI211005	English 1	WP-PT	2		2	4		4
6	RTI211006	Basic Programming	WP	2		2	4		4
7	RTI211007	Programming Basic Practicum	WP		3	3		6	6
8	RTI211008	Occupational Health and Safety	WP-PT	2		2	4		4
TOTAL HOURS / SKS PER WEEK				**15**	**3**	**18**	**28**	**6**	**34**

SEMESTER 2

No	MK CODE	SUBJECT	GROUP MK	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI212001	Religion	WN	2		2	2		2
2	RTI212002	Mathematics 2	WP	2		2	4		4
3	RTI212003	English 2	WP-PT	2		2	4		4
4	RTI212004	Operating system	WP	2		2	4		4
5	RTI212005	Software engineering	WP	2		2	4		4
6	RTI212006	Database	WP	2		2	4		4
7	RTI212007	Database Practicum	WP		2	2		4	4
8	RTI212008	Algorithms And Data Structures	WP	2		2	4		4
9	RTI212009	Practicum Algorithms and Data Structures	WP		2	2		4	4
10	RTI212010	Communication and Organizational Science	WP	2		2	4		4

TOTAL HOURS / SKS PER WEEK		16	4	20	30	8	38

SEMESTER 3

No	MK CODE	SUBJECT	GROUP MK	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI213001	Interface Design	WP	2		2	4		4
2	RTI213002	Quality Management System	WP-PT	2		2	4		4
3	RTI213003	Artificial intelligence	WP	2		2	4		4
4	RTI213004	Web Design & Programming	WP		3	3		6	6
5	RTI213005	Advanced Database	WP		3	3		6	6
6	RTI213006	Math 3	WP	2		2	4		4
7	RTI213007	Object Based Programming	WP	2		2	4		4
8	RTI213008	Object-Based Programming Practicum	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**10**	**9**	**19**	**20**	**18**	**38**

SEMESTER 4

No	MK CODE	SUBJECT	GROUP MK	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI214001	Citizenship	WN	2		2	2		2
2	RTI214002	Object Oriented Analysis And Design	WP		2	2		4	4
3	RTI214003	Project management	WP	2		2	3		3
4	RTI214004	Project 1	WP		3	3		6	6
5	RTI214005	business intelligence	WP		2	2		4	4
6	RTI214006	Computer network	WP	2		2	4		4
7	RTI214007	Computer Network Practicum	WP		2	2		4	4
8	RTI214008	Advanced Web Programming	WP		3	3		6	6
9	RTI214009	Computational Statistics	WP	2		2	4		4
TOTAL HOURS / SKS PER WEEK				**8**	**12**	**20**	**13**	**24**	**37**

SEMESTER 5									
No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI215001	Technopreneurship	WP-PT	2		2	4		4
2	RTI215002	Project 2	WP		3	3		6	6
3	RTI215003	Mobile Programming	WP		3	3		6	6
4	RTI215004	Machine Learning	WP		3	3		6	6
5	RTI215005	Software Testing	WP	2		2	4		4
6	RTI215006	Indonesian	WN	2		2	2		2
7	RTI215007	Management information System	WP	2		2	4		4
8	RTI215008	Cloud Computing	WP		2	2		4	4
TOTAL HOURS / SKS PER WEEK				**8**	**11**	**19**	**14**	**22**	**36**

SEMESTER 6									
No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI216001	Job Preparation English	WP-PT	2		2	4		4
2	RTI216002	Decision Support System	WP		2	2		4	4
3	RTI216003	Big Data	WP		3	3		6	6
4	RTI216004	Research methodology	WP	2		2	4		4
5	RTI216005	Internet Of Things	WP		3	3		6	6
6	RTI216006	Image Processing And Computer Vision	WP		3	3		6	6
7	RTI216007	Framework Based Programming	WP		3	3		6	6
TOTAL HOURS / SKS PER WEEK				**4**	**14**	**18**	**8**	**28**	**36**

SEMESTER 7									
No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI217001	Industrial Internship 1	WP		8	8		16	16
2	RTI217002	Industrial Internship 2	P		12	12		24	24

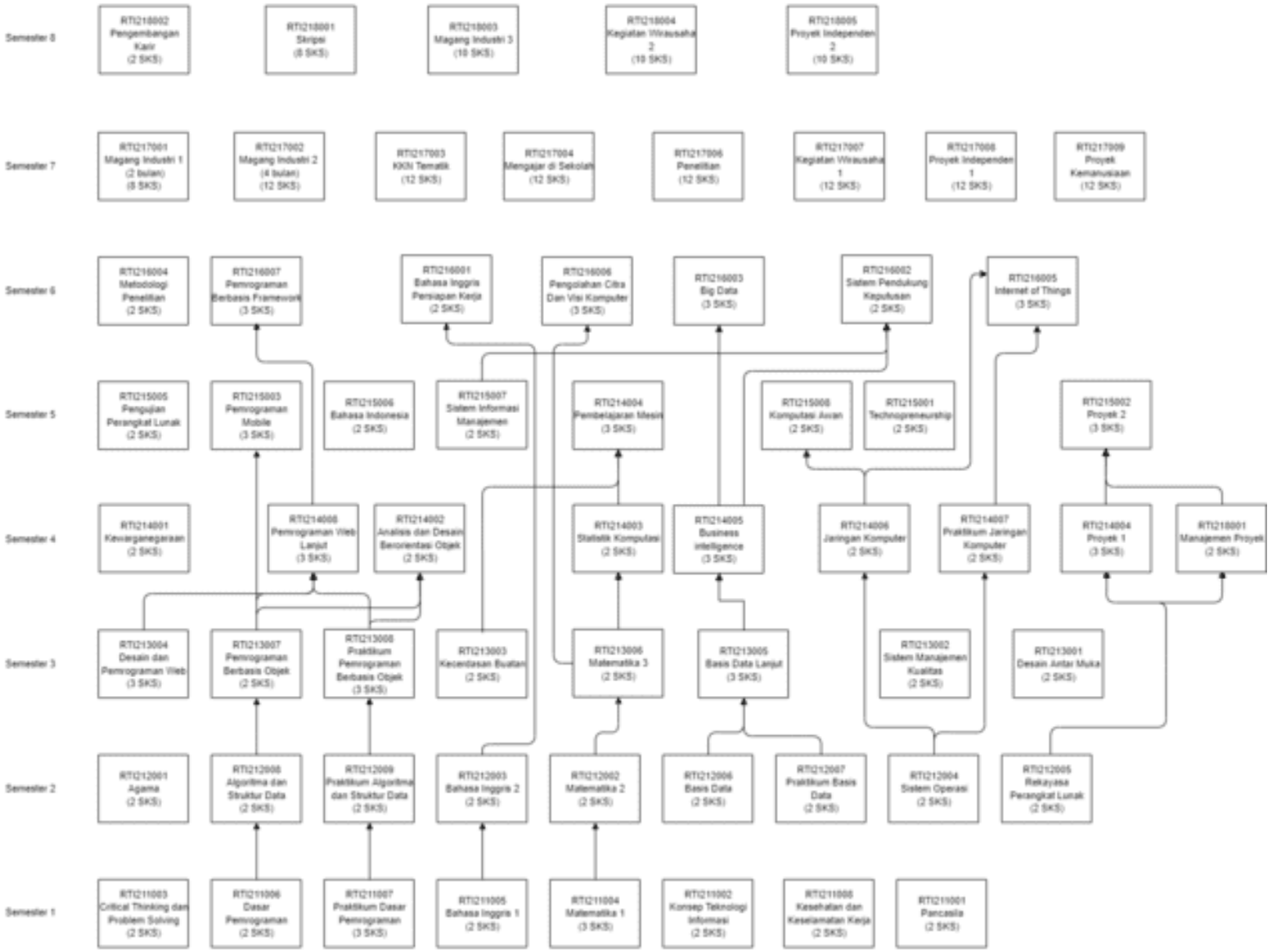
3	RTI217003	Thematic KKN	P		12	12		24	24
4	RTI217004	Teaching in schools	P		12	12		24	24
5	RTI217005	Study	P		12	12		24	24
6	RTI217006	Entrepreneurial Activities 1	P		12	12		24	24
7	RTI217007	Independent Project 1	P		12	12		24	24
8	RTI217008	Humanity Project	P		12	12		24	24
TOTAL HOURS / MANDATORY SKS PER WEEK					**20**	**20**		**40**	**40**

SEMESTER **8**

No	MK CODE	SUBJECT	MK GROUP	CREDITS WEIGHT		SKS	HOURS / WEEK		TOTAL HOURS
				THEORY	PRACTICE		THEORY	PRACTICE	
1	RTI218001	Thesis	WP		8	8		16	16
2	RTI218002	Career development	P	2		2	4		4
3	RTI218003	Industrial Internship 3	P		10	10		20	20
4	RTI218004	Entrepreneurial Activities 2	P		10	10		20	20
5	RTI218005	Independent Project 2	P		10	10		20	20
TOTAL HOURS / MANDATORY SKS PER WEEK						**10**			**20**

TOTAL HOURS/CREDITS PER WEEK OVERALL	CREDITS WEIGHT		TOTAL SKS	HOURS / WEEK		TOTAL HOURS
	THEORY	PRACTICE		THEORY	PRACTICE	
	63	**81**	**144**	**117**	**162**	**279**

Jejaring Kurikulum Tahun 2021/2022



SHORT SYLLABUS IN 2021

INFORMATICS ENGINEERING D-IV STUDY PROGRAM

INFORMATION TECHNOLOGY DEPARTMENT

ACADEMIC YEAR 2021/2022

Subject	:	**Pancasila**
Course Code	:	**RTI211001**
Credits / Hour	:	**2 Credits (2 Hours per Week)**
Semester	:	**1**
Graduate Learning Outcomes	:	**S2** Upholding human values in carrying out duties based on religion, morals and ethics.
		S3 Contributing to improving the quality of life in society, nation, state, and the advancement of civilization based on Pancasila.
		S4 Act as a citizen who is proud and loves the motherland, has nationalism and a sense of responsibility to the state and nation.
		S5 Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
		S6 Working together and having social sensitivity and concern for society and the environment.
		S7 Obey the law and discipline in the life of society and the state.
		S8 Internalize academic values, norms, and ethics.
		KU2 Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Mastering the concepts of ideology, institutions and rules in the state; demonstrate an attitude of nationalism, concern for society and the environment, respect for cultural diversity, views, religions and beliefs, uphold human values, and obey the law; able to demonstrate independent performance in completing assignments by taking into account academic values, norms and ethics
Subject	:	
Pancasila education in historical, cultural, juridical, philosophical view, Pancasila in the context of the history of the struggle of the Indonesian nation, Pancasila as a philosophical system, the 1945 Constitution of the Republic of Indonesia, Amendments to the 1945 Constitution of the Republic of Indonesia, Trias Politica in the Republic of Indonesia, State Institutions according to the 1945 Constitution of the Republic of Indonesia, Pancasila as ideology nationalism, Other Ideologies that are developing in the world, Pancasila and Human Rights, Implementation of Human Rights in the 1945 Constitution of the Republic of Indonesia, Corruption Crimes, Pancasila as a Development Paradigm		
Reference	:	
1. Pancasila Teaching Module		

	Sri Hudiarini, et al, Pancasila Education in the Historical and State Administration
2.	Perspective of the Republic of Indonesia Revised Edition, Aditya Media Publishing, 2016, Yogyakarta
3.	Muhammad Noor Syam, Translation of Pancasila Philosophy in Legal Philosophy (As the Foundation for Development of the National Legal System), Pancasila Laboratory, State University of Malang, 2000, Malang

Subject	**:**	**Information Technology Concept**
Course Code	**:**	**RTI211002**
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**
Semester	**:**	**1**
Graduate Learning Outcomes	**:**	**S8** Internalize academic values, norms, and ethics. **PP1** Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth. **PP7** Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field. **KU2** Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Mastering ICT Concepts, Technology Innovation, Scientific and ICT developments and the latest issues, Engineering Ethics, Computer Systems, Computer Systems Concepts, Data Representation, Boolean Algebra, Flowcharts, Computer Networks and the Internet, IT Applications in Various Fields, IT Field Certification; able to demonstrate independent performance in completing tasks related to the concept of information technology.
Subject	**:**	

Technology Concepts, Technological Innovations, Science and Technology Developments, ICT Developments, Computer Systems Concepts, Application Software Development Concepts, Collaboration and Repository Tools, Engineering Ethics, Database Concepts, Computer Networks and the Internet, Network Security Concepts, IS Concepts, IT Applications in Various Fields, IT Field Certification, careers in the IT field, social media networks in the career field

Reference :

1. Glen J. Coulthard, 2012, Computing Now, McGraw-Hill Book.
2. Brian Williams and Stacey Sawyer, 2009, Using Information Technology: A Practical Introduction to Computer & Communications, 6th Edition, McGraw-Hill
3. Munir, Curriculum based on Information and Communication technology, Cet.II. Bandung. 2009, p.9
4. Davis, WS Computers and Information Systems: An Introduction. West Publishing Company
5. Khalili, TM Management of Technology: The Key to Competitiveness and Wealth Creation. McGraw-Hill. 2000

6.	Samuel, A. Weir, J. Introduction to Engineering Design. Elsevier Science & Technology Books. 1999.

Subject	**: Critical thinking and problem solving**		
Course Code	**: RTI211003**		
Credits / Hour	**: 2 Credits (4 Hours per Week)**		
Semester	**: 1**		
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes	: Mastering the concept of thinking and problem solving; independently able to identify problems and needs, perform analysis, gather information, think logically, critically, and innovatively in solving simple problems by considering values, norms, and ethics		
Subject	:		
Thinking and reasoning, Critical thinking: the basics ,Problem solving: basic skills, Applied critical thinking, Advanced problem solving, Problem solving: further techniques, Critical reasoning: Advanced Level.			
Reference	:		
1.	Butterworth, J., & Thwaites, G. (2013). Thinking skills: Critical thinking and problem solving. Cambridge UniversityPress.		
2.	Cohen, M. (2015). Critical thinking skills for dummies. John Wiley & Sons.		

Subject	**: Mathematics 1**		
Course Code	**: RTI211004**		
Credits / Hour	**: 3 Credits (6 Hours per Week)**		
Semester	**: 1**		
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer

			networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Mastering the concepts of mathematics and applied mathematics; able to be responsible for solving mathematical problems independently by taking into account academic values, norms, and ethics	
Subject	:		
Types of numbers, factors and prime numbers, powers, number systems, Introduction to Algebra, Algebraic powers, Algebraic Factoring, Solving linear and polynomial equations, Graphs, Combinatorial (factorials, combinations, permutations, opportunities), Trigonometry, Number Series			
Reference	:		
1. Stroud, KA and Dexter J., Engineering Mathematics, Palgrave Macmillan, 2013			
2. Munir, Rinaldi, "Discrete Mathematics Ed. 5th Revision", Informatics Bandung, 2012.			

Subject	:	**English 1**	
Course Code	:	**RTI211005**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**1**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU11	Able to communicate using international languages orally and in writing.
Course Learning Outcomes	:	Mastering knowledge of oral and written communication techniques using English in the context of Informatics Engineering; Able to communicate independently using English orally and in writing in the context of Informatics Engineering by taking into account values, norms and ethics;	
Subject	:		
Topic 1: Computer Applications, Topic 2: Computer Architecture, Topic 3: Multimedia ,Topic 4: Networking, Topic 5: Websites, Topic 6: Careers in IT, Topic 7: IT Support Staff, Topic 8: Workstation Health and Safety			
Reference	:		
1. Asri, Atiqah Nurul. 2018. English for Informatics 1: Fourth Edition. The module has not been published yet.			
2. Esteras, Santiago Remacha. (2010). Infotech English for Computer Users Workbook. Cambridge: Cambridge University Press.			
3. Esteras, Santiago Remacha. (2011). Infotech English for Computer Users Student's Book. Cambridge: Cambridge University Press.			

4. Glendinning, Eric H and McEwan, John. (2012). Basic English for Computing Revised and Updated. Oxford: Oxford University Press.
5. Olejniczak, Maja. (2011). English for Information Technology 1 Vocational English Course Book. Essex: Pearson Education Limited.

Subject	:	**Basic Programming**
Course Code	:	**RTI211006**
Credits / Hour	:	**2 Credits (4 Hours per Week)**
Semester	:	**1**
Graduate Learning Outcomes	:	**S8** Internalize academic values, norms, and ethics. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently. **PP1** Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth. **KU2** Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Mastering the basic concepts of programming in the form of data types, variables, sequences, selection, looping, arrays and functions; Able to create algorithms using flowcharts or natural language to solve case studies or simple problems independently with full responsibility and prioritizing academic values, norms and ethics
Subject	:	
Concept of Algorithms, Programming Languages, Case Analysis, Data Types, Variables, Constants, Input-Output Expression Values, Sequences, Branching, Looping, Arrays, Functions/Procedures		
Reference	:	

1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ.
2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ.
3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.
4. Rinaldi Munir, 2015, Algorithm and Programming, Informatics Publisher

Subject	:	**Programming Basic Practicum**
Course Code	:	**RTI211007**
Credits / Hour	:	**3 Credits (6 Hours per Week)**
Semester	:	**1**
Graduate Learning Outcomes	:	**S8** Internalize academic values, norms, and ethics. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently.

	KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
	KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
	KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Able to apply the basic concepts of programming, namely sequences, selections, looping, arrays and functions; Able to create quality programs according to case studies of simple problems independently with responsibility and prioritizing academic values, norms and ethics
Subject	:	
Programming language, Installing Java programming tools, Case Analysis on computational thinking-based story problems, Data Types, Variables, Constants, Values, Expressions, Input-Output, Flowcharts, Branching, Looping, Arrays, Functions/Procedures.		
Reference	:	
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ.		
2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ.		
3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.		
4. Rinaldi Munir, 2015, Algorithm and Programming, Informatics Publisher		

Subject	:	**Occupational Health and Safety**
Course Code	:	**RTI211008**
Credits / Hour	:	**2 Credits (4 Hours per Week)**
Semester	:	**1**
Graduate Learning Outcomes	: **S8**	Internalize academic values, norms, and ethics.
	PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
	KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Mastering the knowledge of the principles of occupational safety and health (K3); Able to implement good and quality theories, concepts and principles of occupational safety and health (K3) in order to improve the health status of workers by taking into account values, norms and ethics.
Subject	:	

K3 Concept (History of Occupational Health and Safety, Definition of K3, K3 Goals), K3 Law (laws underlying K3, Government Regulations), Basic public health regulations, Pre-work health checks, After-work checks) Work environment (Environment physical and non-physical work), work safety (influencing factors, sources of danger, prevention of work accidents, work safety equipment) K3 organization (purpose and organizational goals and objectives of the K3 organization), insurance (basic principles, types and claims insurance, BPJS)
Reference :
1. Budi Harijanto, K3 teaching module, 2012
2. Law no. 1 of 1970 concerning work safety
3. Law no.13 of 2003 concerning employment
4. Law no.3 of 1992 (Social security for workers)
5. PP no. 33 of 1977
6. Tresnaningsih, Erna (2008). Occupational Health and Safety. Secretary General of the Indonesian Ministry of Health. Available from; http://www.depkes.go.id. accessed on March 2008.

Subject	**:**	**Religion**	
Course Code	**:**	**RTI212001**	
Credits / Hour	**:**	**2 Credits (2 Hours per Week)**	
Semester	**:**	**2**	
Graduate Learning Outcomes	**:**	**S1**	Fear of God Almighty and able to show religious attitude.
		S2	Upholding human values in carrying out duties based on religion, morals and ethics.
		S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
		S6	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Showing religious attitude and piety to God Almighty; Be able to explain the relationship between humans and God; Able to explain human relations by upholding human values and respecting cultural diversity, religious views, beliefs, and other people's opinions; Be able to explain the relationship between humans and the environment; Able to present the results of studies related to human relations with God, fellow humans, and the environment both individually and in groups by prioritizing values, norms, ethics both religious and academic.	
Subject	**:**		
Human Relations with God, Human Relations with others, Human Relations with the environment			
Reference	**:**		
1.	Al-Qur'an and al-Hadith;		
2.	Abdul Chalim, et al. Islamic Religious Education Book, State Polytechnic of Malang.		

3.	Quraih Shihab, Doing Business with Allah, Jakarta: Lantern of the Heart, 2008
4.	Quraish Shihab, Heart Lantern, Bandung: Mizan, 2008
5.	Muhammad 'Alawi al-Maliki, Understandings that Must Be Corrected, Yogyakarta: Student Library, 2013

Subject	**:**	**Mathematics 2**	
Course Code	**:**	**RTI212002**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**2**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Mastering the concept of sets, relations, functions, matrices and solving systems of equations (linear and non-linear); Able to solve mathematical problems independently with responsibility and pay attention to academic values, norms and ethics	
Subject	**:**		
Sets, Relations, Functions, Matrices and Solving Systems of Equations (Linear and Non-Linear)			
Reference	**:**		
1.	Stroud, KA and Dexter J., Engineering Mathematics, Palgrave Macmillan, 2013		
2.	Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.		

Subject	**:**	**English 2**	
Course Code	**:**	**RTI212003**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**2**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU11	Able to communicate using international languages orally and in writing.

Course Learning Outcomes	:	Mastering knowledge of oral and written communication techniques using English in the context of Informatics Engineering; Able to communicate using English orally and in writing in the context of Informatics Engineering (programming, databases, computer security, electronic publishing, E-Commerce, Recent Development on Information Technology); Able to convey opinions, arguments, questions, and answers using English in discussion activities or academic presentations independently by prioritizing academic values, norms, and ethics	
Subject	:		
Topic 1: Programming (Stages in Programming, Flowcharting, Programming Language, Grammar Study: Describing objects and their functions, Describing Process, and Reporting Screen Messages), Topic 2: Database (Database Basics, Grammar Study: Expressing Certainty, Using If-Clause , Data Processing, Data Storage and Backup), Topic 3: Computer Security, Computer Threats, Grammar Study: Simple Past Tense, Computer Crime, Grammar Study: Analyzing Problems and Their Solutions, and Writing Short Reports), Topic 4: Electronic Publishing(Electronic Publishing, Grammar Study: Expressing Agreement/Disagreement, The Infinitives), Topic 5: E-Commerce(E-commerce Types, E-commerce Features, Grammar Study: Adverbs of Quantities, Linking Words (and, so, or, but) , Online Transaction, Transaction Security), Topic 6: Recent Development on Information Technology (Current Changes in Interactions, Recent Developments in Computing, Grammar Study: Future Tense, Making a Summary of an Article)			
Reference	:		
1.	Asri, Atiqah Nurul. 2018. English for Informatics 2: Fifth Edition. The module has not been published yet.		
2.	Esteras, Santiago Remacha. (2010). Infotech English for Computer Users Workbook. Cambridge: Cambridge University Press.		
3.	Esteras, Santiago Remacha. (2011). Infotech English for Computer Users Student's Book. Cambridge: Cambridge University Press.		
4.	Fabre, Elena Marco, and Esteras, Santiago Remacha. (2007). Professional English in Use: ICT. Cambridge: Cambridge University Press.		
5.	Glendinning, Eric H and McEwan, John. (2012). Basic English for Computing Revised and Updated. Oxford: Oxford University Press.		
6.	Hills, David. (2012). English for Information Technology Vocational English Course Book 2. Essex: Pearson Education Limited.		
7.	Hills, David. (2012). English for Information Technology Vocational English Course Book 2. Essex: Pearson Education Limited.		
Subject	:	**Operating system**	
Course Code	:	**RTI212004**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**2**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.

			PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		:	Mastering basic ICT knowledge regarding operating systems, processes, scheduling, synchronization, memory, I/O; Be able to explain the work mechanism of process management in the operating system, the working mechanism of memory management in the operating system, the working mechanism of memory and I/O management in the operating system in the form of tasks with full responsibility and prioritizing academic values, norms and ethics.	
Subject		:		
Basic Concepts of Operating Systems, Processes, Scheduling, Synchronization, Memory, I/O				
Reference		:		
1.	MDGR, Introduction to Computer Operating Systems, 2006			
2.	Tannenbaum, Andrew S. Modern Operating Systems, Issue 4, Pearson Education, 2015.			
3.	Satllings, William, Internal Operating Systems and Design Principles, 7th Edition, Prentice Hall, 2012.			
4.	Iwan Binanto, Operating System, 2005.			

Subject		:	**Software engineering**	
Course Code		:	**RTI212005**	
Credits / Hour		:	**2 Credits (4 Hours per Week)**	
Semester		:	**2**	
Graduate Learning Outcomes		:	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
			PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		:	Mastering the concepts of software engineering, software development life cycle (SDLC), UML and basic testing (testing) in software development (ICT products); able to operate supporting tools for software development; Able to make software designs using the principles of software development life cycle (SDLC) and design the required tests with full responsibility and independently and pay attention to academic values, norms and ethics.	
Subject		:		

Introduction to RPL, Systems Engineering, Software Models, Software Requirements Analysis, Software Design, SDLC, Software Implementation and UML, Use Case Diagrams, Activity + Sequence Diagrams, Class Diagrams, White Box and Black Box Testing, Testing in terms of Integration , Validation, and System Testing			
Reference	**:**		
1	Ian Sommerville, 2015, Software Engineering, 10th Edition, Pearson		
2	William R. King , 2015, Planning for Information Systems, Routledge.		
3	Sprague, RH and McNurlin, BC, Information Systems Management in Practice, 5th edition, Prentice-Hall, 2002.		
4	Ward, J et al., Strategic Planning for Information Systems Practice, 2nd edition, Wiley, 1996		

Subject	**:**	**Database**	
Course Code	**:**	**RTI212006**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**2**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Mastering concepts and development methods on databases; Able to design relational databases with independent, correct and quality performance by taking into account academic values, norms and ethics;	
Subject	**:**		
Database concept, relational database, data modeling, ERD, relational model mapping, database normalization, SQL language, DDL language, DML language, Select language (filtering, shorting, grouping, aggregating, set, join, sub query)			
Reference	**:**		
1.	Elmasry, R. and S. Navathe, 2016, Fundamentals of Database Systems, 3nd edition, Addison Wesley.		
2.	Andrew J. Oppel, 2010, Databases Demystified, McGraw-Hill/Osborne.		
3.	Fathansyah, 2015, Basic Data Base, Bandung Informatics.		

Subject	:	**Database Practicum**	
Course Code	:	**RTI212007**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**2**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		KK 1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Able to demonstrate independent and responsible performance in designing database designs using ERD or normalization correctly and with quality according to database standards and implementing designs that have been made into the MySQL DBMS by taking into account academic values, norms and ethics; Able to use data modeling software in designing databases; Able to manage database using SQL language;	
Subject	:		
Database software (DBMS), data modeling software, DDL language implementation, DML implementation, Select implementation (filtering, shorting, grouping, aggregating, set, join, sub query)			
Reference	:		
1.	Elmasry, R. and S. Navathe, 2016, Fundamentals of Database Systems, 3nd edition, Addison Wesley.		
2.	Andrew J. Oppel, 2010, Databases Demystified, McGraw-Hill/Osborne.		
3.	Fathansyah, 2015, Basic Data Base, Bandung Informatics.		

Subject	:	**Algorithms And Data Structures**
Course Code	:	**RTI212008**
Credits / Hour	:	**2 Credits (4 Hours per Week)**
Semester	:	**2**

Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Mastering the concept of algorithms and data structures such as Object, Array of Object, Bruteforce, Divide-Conquer, Searching, Sorting, Queue, Stack , Single Linked List, Double Linked List, Tree, Graph; Able to solve simple problems that require data structure concepts and choose the right data structures according to problems independently and with full responsibility and prioritize academic values, norms and ethics	
Subject	:		
Searching, Sorting, Queue, Stack, Linked List, Tree, Graf, Bruteforce, Divide-Conquer, Depth First Search, Breadth First Search			
Reference	:		
1.	Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education		
2.	Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher		
3.	Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher		
4.	Hariyanto, B. 2007. Data Structure. Bandung: Informatics		
5.	Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher		
6.	Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher		

Subject	:	**Practicum Algorithms and Data Structures**	
Course Code	:	**RTI212009**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**2**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		KK 1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision -

				graphics, embedded , Information Systems, Intelligent systems, Business Intelligence, etc).
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to apply algorithm concepts and data structures such as Searching, Sorting, Queue, Stack, Linked List, Double Linked List, Tree, Divide and Conquer, Graph using the Java programming language; Able to create good and quality simple programs with full responsibility and promote academic values, norms and ethics.	
Subject		**:**		
Searching, Sorting, Queue, Stack, Linked List, Tree, Graf, Bruteforce, Divide-Conquer, Depth First Search, Breadth First Search				
Reference		**:**		
1.	Goodrich, Michael T. Tamassia, Roberto. Data Structures & Algorithms in Java 4th Edition. John Wiley & Sons, Inc.			
2.	Nugroho, Adi. 2008. Algorithms and Data Structures in the Java Language. Andi-Yogyakarta.			
3.	Hariaynto, Bambang, 2007, Data Structure, Informatics Publisher-Bandung.			
7.	Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher			
8.	Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher			
9.	NetBeans IDE Java Quick Start Tutorial (https://netbeans.org)			

Subject	**:**	**Interface Design**	
Course Code	**:**	**RTI213001**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**3**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.

Course Learning Outcomes	:	Mastering interface design concepts in the ICT field, namely Introduction to IMK, Human Factors, Variety of Dialogues, Input Output Devices, Display Design, Ergonomic Aspects, Evaluation Techniques; Able to make good and quality interactive interface designs with full responsibility and pay attention to values, norms and ethics.
Subject	:	
Introduction to Human and Computer Interaction, Human Factors, Various Dialogues, Interactive Tools, Making Display Worksheets and Display Semantic Nets, Storyboards and Prototyping, Ergonomic Aspects, Interface Design Evaluation Techniques.		
Reference	:	
1.	Schneiderman, Ben. (1998). Designing the User Interface: Strategies for Effective Human-Computer Interaction, 3/E. Addison-Wesley.	
2.	Santosa I. (2004), Human and computer interaction, theory and practice, Andi Offset, Yogyakarta	

Subject	:	**Quality Management System**	
Course Code	:	**RTI213002**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**3**	
Graduate Learning Outcomes	:	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S10	Internalize the spirit of independence, struggle and entrepreneurship.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Students are able to analyze globalization and its impact; develop self-qualifications (initiatively, creatively, and innovatively); build an effective work team, so that they can solve problems properly; apply the principles of a Quality Management System (QMS) to organizations/companies according to international standards	
Subject	:		
Globalization, Self-development and organization, Introduction to quality.			
Reference	:		
1.	Entrepreneurship & Quality Management System Skill Development Program, Bandung, 2007.		
2.	Foster. 2001. Managing Quality, an Interactive Approach. Prentice Hall		
3.	Gitlow, Howard S. 2001. Quality Management System: A Practical Guide. Florida USA: CRC Press LLC.		
4.	Kawase, T. 2001. Human Centered Problem Solving: The Management Of Improvement. Tokyo: Asian Productivity Organization		

Subject	:	**Artificial intelligence**
Course Code	:	**RTI213003**

Credits / Hour		**:**	**2 Credits (4 Hours per Week)**	
Semester		**:**	**3**	
Graduate Learning Outcomes		**:**	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
			PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
			KK 1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
			KK 4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to understand Problem Solving, Knowledge Representation, Expert Systems, Natural Language Processing, Uncertainty, Fuzzy Logic, Neural Networks, Searching, Planning (C2); Understand various kinds of artificial intelligence algorithms and their application to solve problems in various fields; Able to analyze appropriate artificial intelligence techniques to solve problems with full responsibility and ethics;	
Subject		**:**		
Introduction to Artificial Intelligence, (Reasoning) : Fuzzy tsukamoto, sukamoto, mamdani ,(Problem Solving) : Breadth-First Search, Depth-First Search, Best-First Search, Hill Climbing, A*, (Knowledge Representation) : Introduction to Knowledge representation, Agent, (Knowledge Representation) : Forwards and Backward Chaining, (Knowledge Representation) : Uncertainty Bayes theorem, (Machine Learning/JST) : Introduction to Supervised, Unsupervised and Reinforcement Learning, Perceptron + application examples, perceptron, Deep Learning, (Machine Learning/ ANN) : Decision Tree, Machine Learning/ANN): Evolutionary Algorithm Genetic Algorithm, (NLP): Introduction.				
Reference		**:**		
1.	Artasanchez, A, Joshi, P. 2020. Artificial Intelligence with Python,Second Edition. UK: Packt Publishing			
2.	Harris C, Michael, 2011, Artificial Intelligence. Marshall Cavendish Benchmark			
3.	Joshi, P. 2017. Artificial Intelligence with Python. UK: Packt Publishing			

4.	Norvig, Peter, 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp.			
Subject		**:**	**Web Design & Programming**	
Course Code		**:**	**RTI213004**	
Credits / Hour		**:**	**3 Credits (6 Hours per Week)**	
Semester		**:**	**3**	
Graduate Learning Outcomes		**:**	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
			KK 1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to make an attractive interface design; Able to distinguish static web and dynamic web; Able to distinguish dynamic applications on the user side and server side; Able to create applications using PHP, MySQL Database, jQuery and AJAX with full responsibility and ethics.	
Subject		**:**		
Introduction to Internet and Web Design, HTML, CSS, Java Script, JQuery, PHP Programming Fundamentals, Form Processing and Form Upload, Cookies, Session and Mysql, Database Programming in PHP, Multiuser Login and Report, Datatables, AJAX, Bootstrap, Web Hosting				
Reference		**:**		
1.	Responsive Web Design with HTML5 and CSS: Develop future-proof responsive websites using the latest HTML5 and CSS techniques, 3rd Edition			
2.	Jason Beaird, The principles of Beautiful Web Design			
3.	Rian Ariona, Learn HTML and CSS (Fundamental Tutorial on learning HTML and CSS)			
4.	Adi Hadisaputra, HTML and CSS Fundamentals from Roots to Leaves			
5.	John Duckett,HTML and CSS design and build websites			
6.	Glenn Johnson, Programming in HTML 5 with Javascript and CSS 3			
7.	Desrizal, Javascript Guide			
8.	Tutorials Point Simply Easy Learning, Java Script Language			
9.	Jonathan Caffer and Karl Swedberg, Learning Jquery 1.3 (Better Interaction Design and Web development with simple Jawa Script Techniques)			
10.	Andre Pratama, PHP Uncover – PHP Learning Guide for beginners			

11.	Endy Muhardin, PHP Programming Fundamentals and MySql Fundamentals
12.	Bootstrap Tutorial (Simply Easy Learning by Tutorials.com)

Subject	:	**Advanced Database**	
Course Code	:	**RTI213005**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**3**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KK 1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Understand Transact SQL - Select, Data Type, Built In Function, Sub Query, Table Expression (View, Scalar Function, Inline Table Value Function, Derived Table, Common Table Expression), Set Operator, Window Rank, Pivoting, Stored Procedure, non database relational. Able to apply logical and critical thinking in using transaction SQL and stored procedures appropriately, responsibly, and prioritizing academic ethics, values, and norms.	
Subject	:		
ReView Database, Introduction to SMBD, Installation and configuration of Microsoft SQL Server., Introduction to Transact-SQL and the SELECT Statement. ,Join, Sorting, and Filtering data.,Data types, and Built-in Functions,Subquery, Grouping, and Aggregating,Table Expressions,Set and Trigger Operations,SQL Windowing: Function, Ranking, Offset, & Aggregate,Pivot and Groupping Sets ,Query against Metadata,Stored Procedure and dynamic SQL,T-SQL programming and error handling,Introduction to NoSQL,NoSQL			
Reference	:		
1.	Microsoft Press, Querying Microsoft® SQL Server® 2012, 2012		
2.	Microsoft Press, Administering Microsoft® SQL Server® 2012, 2012		

Subject	:	**Math 3**	
Course Code	:	**RTI213006**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**3**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Able to read and understand general formulas, understand the concept of mean, median mode, know the definition of Graph, Tree and Vector; able to understand and solve mathematical problems / mathematical models in accordance with case studies given with full responsibility and prioritizing academic values, norms and ethics.	
Subject	:		
General formula case study 1, General formula case study 2 ,Introduction to Statistics (data, mean, median, mode), Graphs, Trees, Introduction: Scalars and Vector Quantities, Vector Representation, Components of a Given Vector, Vector Spaces, Cosine Directions, Scalar Product of Two Vectors, Vector Product of Two Vectors, Angle Between Two Vectors, Ratio of Directions, Eigenvalues and Eigenvectors, Case study of general formula 3, Case study of general formula 4.			
Reference	:		
1.	Stroud, KA and Dexter J., Engineering Mathematics, Palgrave Macmillan, 2013		
2.	Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.		

Subject	:	**Object Based Programming**	
Course Code	:	**RTI213007**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**3**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		KU2	Able to demonstrate independent, quality and measurable performance.

Course Learning Outcomes	:	Mastering the concepts of OOP, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, database (JDBC), and Java API; Able to understand the difference between OOP and structural; Able to design applications using OOP concepts and principles with full responsibility and taking into account academic values, norms and ethics.	
Subject	:		
Object Oriented Programming Concepts, Class, Object, Encapsulation, Inheritance, Polymorphism, Abstract Class, Interface, Introduction to GUI and database (JDBC), Introduction to Java API			
Reference	:		
1.	Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall.		
2.	Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall.		
3.	Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.		

Subject	:	**Object-Based Programming Practicum**	
Course Code	:	**RTI213008**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**3**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		KK 1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Mastering the concepts of OOP, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, database (JDBC), and Java API; able to understand the difference between object-based programming and structural programming; Able to apply logical and critical thinking in making applications based on object-based programming principles with full responsibility and taking into account academic values, norms and ethics.	
Subject	:		

OOP concept, class and object, encapsulation, class relation, inheritance, polymorphism, abstract class, interface, Java Basic Programming, introduction to GUI, introduction to Java API.			
Reference	**:**		
1.	Horstmann, CS (2018). Core Java Volume I–Fundamentals, Eleventh Edition. Network Circle, Santa Clara: Prentice Hall.		
2.	Horstmann, CS (2019). Core Java Volume II–Advanced Features, Eleventh Edition. Network Circle, Santa Clara: Prentice Hall.		
3.	Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset		

Subject	**:**	**Citizenship**	
Course Code	**:**	**RTI214001**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**4**	
Graduate Learning Outcomes	**:**	**S3**	Contributing to improving the quality of life in society, nation, state, and the advancement of civilization based on Pancasila.
		S4	Act as a citizen who is proud and loves the motherland, has nationalism and a sense of responsibility to the state and nation.
		S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
		S6	Working together and having social sensitivity and concern for society and the environment.
		S7	Obey the law and discipline in the life of society and the state.
		S8	Internalize academic values, norms, and ethics.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Able to understand the real contribution that can be made to the progress of the nation by becoming citizens who have a spirit of nationalism and love for the motherland; Able to work together in a group as a representation of social life by respecting diversity, differences of opinion, and applying existing norms and ethics; Able to master the application of the concept of citizenship to become law-abiding citizens, disciplined, and able to work independently in accordance with Pancasila values.	
Subject	**:**		
National Identity, State and Constitution, State and Citizen Relations, State Law, Democracy, Human Rights, Archipelagic Outlook, National Resilience, National Integration.			
Reference	**:**		

1.	UPT MKU-Malang State Polytechnic, 2016. Citizenship Education, , Aditya Media Publishing, Malang.
2.	Azra Azyumardi, Prof.Dr, Human Rights Democracy and Civil Society, Prenata Media. Jakarta, 2003.
3.	Bertrand Russel, History of Western Philosophy and its Connection Political and Social Circumstances from the present day, (edited by Kamdani), History of Western Philosophy and its relation to socio-political conditions from ancient times to the present, Student Library. yogyakarta, 2004.
4.	Bintoro Tjokroaminoto, Prof. MA. Introduction to Development Administration, LP3ES Jakarta, 1985
5.	Desi Fernanda, Drs. M.Soc.Sc. Ethics of Government Organizations, LAN. Jakarta, 2003.
6.	Inu Kencana Syafiie, Drs. M.Sc. Indonesian Government System, Rineka Cipta. Jakarta, 2002.
7.	Idup Suhady, National Insight in the Unitary State of the Republic of Indonesia, National Competitiveness and Character Building, LAN. Jakarta, 2003
8.	Kaelan, MS (editor), Citizenship Education for Higher Education, Paradigm. Jakarta, 2002.
9.	Suparlan Al Hakim, MSi, Citizenship Education for Higher Education, UM PRESS, 2002.
10.	LEMHANAS, Nusantara Outlook, PT Ismoyojati. Jakarta, 1995
11.	_____ Anthology of National Resilience (conception and theory) I, PT Ripres Utama. Jakarta, 1980.
12.	Amended 1945 Constitution

Subject	**:**	**Object Oriented Analysis And Design**	
Course Code	**:**	**RTI214002**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**4**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Able to master the concept of software analysis and design with an object-oriented approach in depth; Able to analyze a problem and make software design designs in certain application domains as a form of quality solutions, which are carried out with full	

		responsibility and pay attention to academic values, norms, and ethics; Able to apply various UML diagram models used in the process of developing ICT products independently.	
Subject	**:**		
Domain Modeling, Use Case Modeling, Activity Diagrams, State Machine Diagrams, Robustness Analysis, Sequence Diagrams, Interaction Overview Diagrams, Class Diagrams, Deployment Diagrams, Design Patterns.			
Reference	**:**		
1.	Use Case Driven Object Modeling with UML (Dough Rosenbergh and Matt Stephens) - 2007		
2.	Software Engineering (Ian Sommerville) - 2003		
3.	Object Oriented Design with UML and Java (K. Barclay and J. Savage) - 2004		
4.	Systems Analysis and Design with UML (David Tegarden, Alan Dennis, Barbara Haley Wixom) - 2013		

Subject	**:**	**Computational Statistics**	
Course Code	**:**	**RTI214009**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**4**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
		KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Able to master the basic concepts of statistics and knowledge in the fields of forecasting, clustering, and classification in depth, taking into account values, norms and academic ethics; Able to implement the concept of computational statistics to solve problems with effective, quality, and measurable solutions; Able to determine the appropriate method of computational statistics to solve problems	

		based on analysis carried out independently and with a responsible attitude.	
Subject	**:**		
Initial concept of statistics, Frequency distribution; Statistical measures, probability (including permutation combinations, and naive bayes), discrete probability distribution, continuous probability distribution, parameter sampling and estimation, hypothesis testing, analysis of variance, correlation regression, clustering and classification with SPSS, forecasting.			
Reference	**:**		
1.	Walpole, Ronald E. Raymond H. Myers, 2016, Probability & Statistics for Engineers & Scientists, 10th Edition, Prentice-Hall Inc.		
2.	Gentle, James E, 2002, Elements of Computational Statistics, Springer Dordrecht Heidelberg London New York		
3.	Gentle, James E. Hardle W. Mori Y, 2004. Handbook of Computational Statistics-Concept and Methods, Springer Berlin Heidelberg New York		
4.	Gentle, James E, 2009, Elements of Computational Statistics, Springer Dordrecht Heidelberg London New York		
5.	Martinez, Wendy L. Martinez, Angel R, 2002, Computational Statistics Handbook with MATLAB, CHAPMAN & HALL/CRC, Boca Raton London New York Washington, DC		
6.	Santoso Singgih, 2007, Complete Guide to Mastering Statistics with SPSS 17, Elex Media Komputindo Indonesia		
7.	Suharjo, B. 2013. Applied Statistics Accompanied by Application Examples with SPSS. Science House		
8.	Santoso Singgih, 2016, Complete Guide to Mastering Statistics with SPSS 23, Elex Media Komputindo Indonesia		
9.	Spiegel, MR Stephens, LJ 1999. Schaum's Outlines of Theory and Statistical Problems, 3rd ed. Erlangga Publisher		

Subject	**:**	**Project 1**	
Course Code	**:**	**RTI214004**	
Credits / Hour	**:**	**3 Credits (6 Hours per Week)**	
Semester	**:**	**4**	
Graduate Learning Outcomes	**:**	**S5**	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
		S6	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.

			PP3	Mastering documentation techniques and quality assurance of ICT products.
			PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
			PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
			KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
			KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
			KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
			KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to apply the concept of requirements engineering and its modeling with logical, critical, quality thinking as a form of solution; Able to identify and analyze needs, as well as apply software design concepts using UML appropriately based on standard procedures and design specifications; Able to apply the concept of software implementation by paying attention to resource management in the	

		form of time, human resources, and costs; Able to apply the concept of software testing as a form of ICT product quality assurance, and perform documentation on each development process; Able to work together in building software that is not too complex by applying software engineering principles with a responsible attitude and paying attention to academic values, norms, and ethics.	
Subject	**:**		
Submission of project ideas, Determination of project scope, Requirements exploration, System design, Implementation, Testing.			
Reference	**:**		
1.	Ian Sommerville, 2016, Software Engineering, 10th Edition, Pearson		
2.	Roger S. Pressman, 2010, Software Engineering 7th Edition, Higher Education		

Subject	**:**	**business intelligence**	
Course Code	**:**	**RTI214005**	
Credits / Hour	**:**	**3 Credits (6 Hours per Week)**	
Semester	**:**	**4**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP7	Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KK6	Able to use the latest technology related to the field of ICT / science and technology to present information technology solutions.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.

			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		:	Able to master the basic concepts of data warehouse as well as ETL concepts and components in depth, taking into account technological developments and the latest issues related to the ICT field; Able to design a data warehouse structure by applying logical, critical, quality, and measurable thinking; Able to carry out ETL data processes from several data sources to a data warehouse database that has been designed independently with a responsible attitude and pays attention to academic norms and ethics; Able to use tools to visualize data as a solution for problem solving analysis; Able to apply knowledge of the basic concepts of data warehouse and ETL in software development.	
Subject		:		
Data Warehouse Fundamentals, ETL Concepts & Components, Data Warehouse Solutions, Data Warehouse Schema Design, ETL Logic Execution (SQL Server Integration Services), ETL Logic Execution Automation (SQL Server Agent), Complex ETL Logic Design (SQL Server Data Tools), Control Flow & Data Flow, Advanced Tasks, Variables and Event Handler, Extracting Data Source & Load to Dimension Table, Transform, Load to Fact Table, Multi-type Data Source, Visualization				
Reference		:		
1.	Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ.			
2.	Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ.			
3.	T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.			
4.	Rinaldi Munir, 2015, Algorithm and Programming, Informatics Publisher			

Subject		:	**Computer network**	
Course Code		:	**RTI214006**	
Credits / Hour		:	**2 Credits (4 Hours per Week)**	
Semester		:	**4**	
Graduate Learning Outcomes		:	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
			PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.

			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to master the concept of Computer Networks in the field of ICT in depth; Able to master the method in the process of network communication; Able to apply the concept of Computer Network independently, quality, measurable, and with a responsible attitude; Able to use assistive devices in implementing network communication by taking into account academic values, norms, and ethics.	
Subject		**:**		
Network Communication, Protocol, Model, Address, Application Layer, Application Protocol, Transport Layer, Network Layer, IPv4, Subnetting, Data Link Protocol, Physical Layer.				
Reference		**:**		
1.	James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011			
2.	Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007			

Subject		**:**	**Computer Network Practicum**	
Course Code		**:**	**RTI214007**	
Credits / Hour		**:**	**3 Credits (6 Hours per Week)**	
Semester		**:**	**4**	
Graduate Learning Outcomes		**:**	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded , Information Systems, Intelligent systems, Business Intelligence, etc).
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to master the concept of computer networks; Able to carry out the process of identifying Network Hardware, Cabling, Configuring IP, DNS, FTP and Remote Service, Netstat-nmap, PING & Route, Subnetting, Traceroute, ARP, Wireless by applying logical, critical	

		and quality thinking in accordance with competency standards; Able to perform Network Design Analysis and Router Configuration by taking into account academic values, norms and ethics; Able to use assistive devices in implementing computer network concepts independently and with a responsible attitude.	
Subject	:		
Network Hardware Identification, Cabling, Config IP, DNS, FTP and Remote Service, Netstat-nmap, PING & Route, Subnetting, Traceroute, ARP, Wireless, Network Design Analysis, Router Config.			
Reference	:		
1.	James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011		
2.	Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007		
3.	Raphael Hertzog & Roland Mas, "The Debian Administrator's Handbook";.Freexian, October 2015.		

Subject	:	**Advanced Web Programming**	
Course Code	:	**RTI214008**	
Credits / Hour	:	**3 Credits (6 Hours per Week)**	
Semester	:	**4**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Able to master website-based application development methods as a problem solving solution; Able to apply website-based application	

		development tools in the form of a Web Framework with logical, critical, and measurable thinking; Able to make quality website-based applications, with a responsible attitude, and pay attention to academic values, norms, and ethics.
Subject	**:**	
Basic Web Framework, MVC, Authentication, Object Relational Mapping (ORM), CRUD and RESTful API.		
Reference	**:**	
1.	Muhammad Azamuddin, Hafid Mukhlasin, 2019. Laravel the PHP framework for web artisans, Kungfu Koding.	
2.	Laravel Documentation - https://laravel.com/docs/8.x	
3.	Dayle Rees, 2016. Laravel: Code Smart. Leanpub	

Subject	**:**	**Technopreneurship**	
Course Code	**:**	**RTI215001**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S10	Internalize the spirit of independence, struggle and entrepreneurship.
		KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**		
Course Learning Outcomes		Able to improve student competency in independent and quality entrepreneurship; Able to work together to design a place of business, type of business, marketing plan, implement, initiate and develop entrepreneurship with a fighting spirit; Able to understand the behavior of an entrepreneur who has values, norms, and ethics; Being able to find out the driving factors for the development of a business, as well as knowing the success and failure stories of entrepreneurs in the field, thus encouraging students to pursue the entrepreneurial profession with social sensitivity.	
Subject	**:**		
Introduction to Digital Entrepreneurship (DE), Identification of DE opportunities and Ideas, Feasibility analysis of DE ideas, Marketing and sales in DE, Financial management in DE, Business models in DE, Guide to creating a business plan in DE, Validation of business models			

in DE, Innovation of business models in DE, Legal Aspects and Intellectual Property in Business Based Growth Strategy.			
Reference	**:**		
1	Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition.		
2	Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons.		
3	McGrath, Rita; and Ian Mac Millan. (2000). The Entrepreneurial Mindset : Strategies form Continuously Creating Opportunity in an Age of Uncertainty. Harvard Business School Press, Cambridge, MA		
4	Baron, Robert. (1998). Cognitive Mechanisms in Entrepreneurship: Why and When Entrepreneurs Think Differently than Other People.		
5	Coviello, Nicole E ; and Marian V Jones. (2004). Methodological Issues in International Entrepreneurship Research.		

Subject	**:**	**Project 2**	
Course Code	**:**	**RTI215002**	
Credits / Hour	**:**	**3 Credits (6 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S5**	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
		S6	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		PP3	Mastering documentation techniques and quality assurance of ICT products.
		PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).

			KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
			KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
			KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
			KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to apply software engineering principles and software project management according to best practice through a one semester long project, which includes proposal preparation, project planning, software design and implementation, testing, quality control, and user delivery	
Subject		**:**		

Formation of project group A, preparation of project proposal A, evaluation of proposals and design of product A, evaluation of results of implementation of product A, evaluation of results of implementation and testing of product A, evaluation of product results A, formation of groups and preparation of project proposals B, evaluation of project proposals B, evaluation progress of Product B (design), Evaluation of the progress of product B implementation (Version Control System + prototype), Evaluation of progress and implementation of product B (product), Evaluation of product B progress (testing), Evaluation of Product B results + peer assessment			
Reference	**:**		
1.	Shit, Daniel. 2012. Needs Analysis in Software Engineering. Yogyakarta: Andi.		
2.	Heryanto, Priest., Triwibowo, Totok. 2013. Information Technology-Based Project Management. Bandung: Informatics.		
3.	Tantara, Rudy. 2012. Information System Project Management. Yogyakarta: Andi.		

Subject	**:**	**Mobile Programming**	
Course Code	**:**	**RTI215003**	
Credits / Hour	**:**	**3 Credits (6 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Able to understand programming concepts on mobile devices; Able to master ICT product development methods to provide the right solutions through mobile-based applications; Able to apply logical and critical thinking in developing mobile-based applications according to the various case studies given; Able to use mobile-based	

		application development tools independently with a responsible attitude, and still pay attention to academic values, norms, and ethics.	
Subject	**:**		
Introduction to Mobile Programming Using Flutter, Case Study of Simple Mobile Project Quiz Application, Case Study of Simple Mobile Project Expense Manager, Case Study of Adaptive UI Mobile Project, Case Study of Project Mobile with Multiple Screen, Case Study of Project Shop App, Case Study of Project with native android features .			
Reference	**:**		
1.	Flutter & Dart - The Complete Guide [2021 Edition] (https://www.udemy.com/course/learn-flutter-dart-to-build-ios-android-apps/)		
2.	lessandria, S. (2020). Flutter Projects: A practical, project-based guide to building real-world cross-platform mobile applications and games. Packt Publishing Ltd.		
3.	Biessek, A. (2019). Flutter For Beginners An Introductory Guide to Building cross-platform Mobile Applications with Flutter and Dart 2. Packt Publishing Ltd.		
4.	Napoli, ML (2019). Beginning Flutter A Hands On Guide To App Development. https://doi.org/10.1002/9781119550860		

Subject	**:**	**Machine Learning**	
Course Code	**:**	**RTI215004**	
Credits / Hour	**:**	**3 Credits (6 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.

Course Learning Outcomes	:	Able to understand the basic concepts and various methods of Machine Learning; Able to apply Machine Learning methods with logical and critical thinking as a form of utilizing intelligent computing in the process of solving problems based on the results of analyzes that are carried out independently, measurably, and with a responsible attitude; Able to use assistive devices to implement machine learning methods by taking into account academic values, norms and ethics.	
Subject	:		
Basic Machine Learning, Feature Extraction, Classification and Regression using KNN, Simple and Multiple Linear Regression, Logistic Regression, Naive Bayes, Decision Tree, Support Vectot Machine, Artificial Neural Network, Ensemble Method, K-means, Principal Component Analysis.			
Reference	:		
1.	Konnor Cluster. (2019). Python Machine Learning: A Step-by-Step Guide to Scikit-Learn and TensorFlow (Includes a Python Programming Crash Course). Kindle		
2.	Hacking, G. (2017). Mastering Machine Learning with scikit-learn. Packt Publishing Ltd.		
3.	Müller, air conditioning & Guido, S. (2016). Introduction to machine learning with Python: a guide for data scientists. " OReilly Media, Inc.;.		
4.	Swamynathan, M. (2019). Mastering machine learning with python in six steps: A practical implementation guide to predictive data analytics using python. Apress.		

Subject	:	**Software Testing**	
Course Code	:	**RTI215005**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**5**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		PP3	Mastering documentation techniques and quality assurance of ICT products.
		PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.

			KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
			KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to master the concepts and methods of testing software in depth as a form of quality assurance/quality of ICT products; Able to make documentation and carry out quality assurance in every process of developing, using, modifying, and maintaining ICT/IPTEKS products independently with a responsible attitude; Able to use supporting software to create software testing scenarios automatically as the right solution through one or more application domains; Able to analyze software testing in a measurable manner by taking into account academic values, norms and ethics.	
Subject		**:**		
Software Testing Flow, Software Testing Methods, Software Testing Planning, Test Cases, Test Scenarios, Automatic Software Testing, Software Testing Results Reporting.				
Reference		**:**		
1.	Myers, GJ; Sandler, C. & Badgett, T. (2012), The art of software testing , John Wiley & Sons , Hoboken and NJ			
2.	Sommerville, I. (2016). Software Engineering, 10th edition. Essex: Pearson.			
3	IEEE Computer Society. (2014). SWEBOK, Guide to the Software Engineering Body of Knowledge version 3.0.			

Subject	**:**	**Indonesian**	
Course Code	**:**	**RTI215006**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.

Course Learning Outcomes	:	Able to master the Indonesian language, both official and unofficial, independently, qualified and measurable; Able to use Indonesian as the national language for oral and written communication by taking into account academic values, norms and ethics; Able to apply insights about the Indonesian language in making job applications, writing scientific papers, as well as job interviews and presentations.
Subject	:	
Insights about the Indonesian language, official and unofficial language, Indonesian spelling and effective sentences, Writing formal and telephonic short messages, Writing job applications and job interviews, Presentations, Scientific writing (research proposals, theses, and scientific articles), Quoting , Research proposal writing, Self-editing.		
Reference	:	
1.	Ramadhani, Rizki Putri. 2019. Indonesian for Business and Industry. Malang: Polinema Press.	
2.	Ministry of Education and Culture of the Republic of Indonesia. 2001. Big Indonesian Dictionary. Jakarta: Balai Pustaka.	
3.	HP Achmad and Alek. 2016. Indonesian for Higher Education: Substance of Study and Its Application. Jakarta: Erlangga Publisher.	
4.	Kasali, Rhenald. 2006. Making Successful Presentations. Jakarta: PT Gramedia Pustaka Utama.	
5.	Ministry of Education and Culture. 2016. General Guidelines for Indonesian Spelling. Jakarta: Language Development and Development Agency.	
6.	Trim, Bambang. 2017. 200+ Script Editing and Publishing Solutions. Jakarta: Earth Script.	

Subject	**:**	**Management information System**	
Course Code	**:**	**RTI215007**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	**:**	Able to master the concepts of systems, information systems, management information system life cycle in depth; Able to understand the role of information systems to support businesses and organizations by keeping abreast of today's developments in the modern world of organizations and businesses to provide the right solutions through one or more application domains; Able to apply management information system concepts independently and measurably, taking into account academic values, norms and ethics.	
Subject	**:**		
Introduction to Management Information Systems, System Concepts, Information Concepts, Information Processing, Information System Design, E-business and E-commerce, E-commerce and E-payment, M-Commerce, Databases, Evolution and Application of Computer-based Information Systems, Impact IT usage.			
Reference	**:**		
1.	MRob, Peter and Coronel, Carlos. 2008. Database Systems: Design, Implementation, and Management. Massacusset : Thomson Course Technology, 2008.		
2.	Stair, Raphlh, Reynolds, George. 2006. Fundamentals of Information Systems. 3rd Edition. sl : Thomson Course Technology, 2006.		

Subject	**:**	**Cloud Computing**	
Course Code	**:**	**RTI215008**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**5**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.

			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
			PP7	Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.
			KK6	Able to use the latest technology related to the field of ICT / science and technology to present information technology solutions.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to master the concept of cloud computing and its services in depth by taking into account the latest technological developments and issues; Able to use devices in the form of a number of virtual machines as a quality and scalable solution, so as to produce High Availability infrastructure; Able to apply concepts and solutions in a cloud computing environment independently with a responsible attitude and pay attention to academic norms and ethics.	
Subject		**:**		
Cloud Environments, Cloud Services ,IaaS, Virtual Cloud Network, PaaS, SaaS, Cloud Storage, Container, CI/CD, Serverless Computing, High Availability.				
Reference		**:**		
1.	Tomasz, Michal., “Practical Oracle Cloud Infrastructure”, Apress, 2020			
2.	Ramklass, Roopesh. Oracle Infrastructure Architect Associate. McGraw-Hill Education, 2020			

Subject		**:**	**Job Preparation English**	
Course Code		**:**	**RTI216001**	
Credits / Hour		**:**	**2 Credits (4 Hours per Week)**	
Semester		**:**	**6**	
Graduate Learning Outcomes		**:**	**S8**	Internalize academic values, norms, and ethics.
			PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU11	Able to communicate using international languages orally and in writing.
Course Learning Outcomes		**:**	Able to read and understand job advertisements; Able to understand the words used in job advertisements;	

		Able to mention and explain the strengths and weaknesses possessed; Able to read and understand how to make a job application letter; Able to write a job application letter; Able to read and understand how to make a Curiculum Vitae; Able to write Curriculum Vitae; Able to read and understand how to conduct a test interview and its kinds; Able to practice test interviews; Able to read and understand how to make an effective presentation; Able to practice effective presentations; Able to understand how to do TOEIC ® questions; Able to practice the TOEIC ® test;	
Subject	**:**		
Reading Job Advertisement 1.1 Assessing Yourself 1.2. Parts of Job Advertisement 1.3. Questions to Ask Yourself after Reading Job Ads 1.4. Terms and Abbreviations Usually Found in Job Advertisement Writing a Job Application Letter 2.1. Things to Consider Before Writing A Job Application Letter 2.2. Online Application Letter 2.3. Job Application Letter Template 2.4. Sample of Job Application Letter Writing Curriculum Vitae 3.1. Things to Consider Before Writing a Curriculum Vitae 3.2. Information a CV Should Include 3.3. Curriculum Vitae Template 3.4. Sample of CV Conducting a Job Interview 4.1. Kinds of Job Interview 4.2. Things to Prepare before Having a Job Interview 4.3. Things Supposed to Do on a D Day (of the Job Interview) 4.4. Common Questions Asked by the Interviewer Delivering an Effective Presentation 5.1. Factors Make People Irritated during Presentation 5.2. Things to Consider before Presentation 5.3. Things to Consider in Making Power Point Slides 5.4. Things to Do during Presentation Preparing for TOEIC ® Preparing for Listening Test Preparing for Reading Test			
Reference	**:**		
1.	Asri, Atiqah Nurul, et.al. 2018. English for Job Preparation: Fourth Edition. Polynema Press		
2	Downes, Colm. 2012. Cambridge English for Job Hunting. Cambridge: Cambridge University Press.		
3	Grussendorf, Marion. 2011. Oxford English for Presentations. Oxford: Oxford University Press.		
4	Moss, James, Lee, Clayton, and Atkinson, Peter. 2007. Presenting for Success. Business English Pod.		
5	Pledger, Path. 2015. Oxford English for Human Resources. Oxford: Oxford University Press.		
6	Trew, Grant. 2008. Tactics for TOEIC ® Listening and Reading Strategies. Oxford: Oxford University Press.		

Subject	**:**	**Decision Support System**	
Course Code	**:**	**RTI216002**	
Credits / Hour	**:**	**2 Credits (4 Hours per Week)**	
Semester	**:**	**6**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.

			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
			PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
			KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
			KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to understand the concepts and applications of Introduction to SPK, Characteristics and Components of SPK, Weighted Product, Analytic Hierarchy Process, Profile Matching, TOPSIS, ELECTRE, Introduction to Fuzzy, Fuzzy Inference System, Group Decision Support System; Be able to apply the DSS algorithm that has been taught in a few simple case study examples; Be able to design simple applications that apply decision support concepts systematically;	
Subject		**:**		
Introduction to SPK, Characteristics and Components of SPK, Weighted Product, Analytic Hierarchy Process, Profile Matching, TOPSIS, ELECTRE, Introduction to Fuzzy, Fuzzy Inference System, Group Decision Support System.				
Reference		**:**		
1	Turban, E., 1995, Decision Support and Expert Systems, Prentice Hall			
2	Turban, E. Aroson, Jay E. Liang, Ting-Peng., 2007, Decision Support System and Intelligent System Seventh Edition, Prentice Hall, India.			
3	Shard, Ramesh., Delen, Dursun., Turban E., 2014. Business Intelligence And Analytics System for Decision Support Tenth Edition, Pearson.			
4	Dyczkowski, Krzysztof., 2018. Decision Support System Based on Imperfect Information The Case of Ovarian Tumor Diagnosis, Springer.			
5	Nofriansyah, D., Delfit, S., 2017, Multi Criteria Decision Making on Decision Support Systems. Deepublish Education.			
6	Kusrini, 2016. Concepts and Applications of Decision Support Systems. Andi Publisher and AMIKOM.			

7	Basuki, Ari., Cahyani, Andharini D., 2016., Decision Support System, Deepublish Education.

Subject	:	**Big Data**	
Course Code	:	**RTI216003**	
Credits / Hour	:	**3 Credits (6 Hours per Week)**	
Semester	:	**6**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP7	Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KK6	Able to use the latest technology related to the field of ICT / science and technology to present information technology solutions.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:		Able to understand the concept of Big Data, its current needs, trends and relevance; Able to understand professions related to Big Data; Able to understand the architecture, Hadoop ecosystem and its components; Able to understand the concept of MapReduce, install Hadoop, work with HDFS, Hive, Pig, and Spark; Able to select and carry out Data Analytics activities according to the context of the business problems encountered;
Subject	:		
Big data history, Big Data Concept, Trends, and Profession. Big data sources (dataset) Big Dataset Analysis. Basic Hadoop and HDFS. (Big data Technology) Hadoop Architecture and Components. Hadoop installation. Map Reduce Hive & Pig (Basic) Hive & Pig (Advanced). NoSQL database, Apache HBase Apache Sqoop and Flume Modern Data Architecture (Data Lake). Pipeline Data. sparks. Introduction to Big Data Analytics.			

Reference		**:**		
1.	Nataraj Dasgupta. 2018. "Practical Big Data Analytics".			
2.	Buyya, Rajkumar. Calheiros, Rodrigo N. Dastjerdi, Amir Vahid. 2016."Big Data Principles and Paradigms".			
3.	Morgan Kaufmann., J. Lescovec, A. Rajaraman, and J. Ullman, “Mining of Massive Datasets”.			

Subject		**:**	**Research methodology**	
Course Code		**:**	**RTI216004**	
Credits / Hour		**:**	**2 Credits (4 Hours per Week)**	
Semester		**:**	**6**	
Graduate Learning Outcomes		**:**	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.
Course Learning Outcomes		**:**	Able to understand the concept of introductory research; Able to choose research topics and preliminary studies; Able to formulate problems and hypotheses; Be able to choose a research approach; Being able to choose variables; Able to determine data sources; Able to determine and arrange research instruments; Able to collect data, analyze data, and draw conclusions; Able to compile research reports in a systematic, quality and measurable manner;	
Subject		**:**		
Big data history, Big Data Concept, Trends, and Profession, Big data sources (dataset), Big Dataset Analysis, Basic Hadoop and HDFS (Big data Technology), Hadoop Architecture and Components, Hadoop Installation, Map Reduce, Hive & Pig (Basic), Hive & Pig (Advanced), NoSQL Databases, Apache HBase, Apache Sqoop and Flume, Modern Data Architecture (Data Lake), Data Pipeline, Spark				
Reference		**:**		
1.	Suhardjono, 1982, 135 questions and answers regarding the introduction of scientific research, UPT publication of FT UB.			
2.	Suharsimi Arikuntoro, Research Procedure, A Practice Approach.			
3	Suparmoko, M, Practical Research Methodology, BPFE, 1999			
2.	Day, R. (1975). How to write a scientific paper. IEEE Transaction on Professional Communication, 41(7), 486-494.			

4	Klein, G., Jiang, J., and Saunders, C. (2006). Leading the horse to water. Communications of the Association for Information Systems, 18(1). Available at: http://aisel.aisnet.org/cais/vol18/iss1/13.
2.	Achmad Arifin, M.Eng [JPTK Editor] , Ethics and Code of Ethics of Scientific Writing
5	Dr. Ade Gafar Abdullah, DP2M DIKTI Scientific Article Writing Training Stimulus Program Material, Writer's Code of Ethics and Writing Ethics in Scientific Articles
2.	Dr. Sutopo Purwo Nugroho, MSi., APU ; (Head of Information Data Center and Public Relations of BNPB) Paper Ethics of Scientific Writing.
6	Setiawan, TOT Materials for Writing Scientific Papers, 2011, Papers on the Code of Ethics for Writing Scientific Papers.
2.	Umar Khasan, KTI Writing Technical Workshop, 2019, Ethics of Writing Scientific Papers
7	Permendiknas No. 17 of 2010 concerning Prevention and Management of Plagiarism in Higher Education

Subject	:	**Internet Of Things**	
Course Code	:	**RTI216005**	
Credits / Hour	:	**3 Credits (6 Hours per Week)**	
Semester	:	**6**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Be able to explain the IoT architecture which consists of device constraints, edge computing and IoT cloud computing and how to implement them;	

		Able to make microcontroller hardware control programs that are controlled locally or remotely (remote control);	
Subject	:		
IoT Architecture, Microcontroller Unit (Arduino & NodeMCU), Hardware communication interfacing (I2C, SPI, UART), Edge Computing, IoT Server Cloud, Implementing IoT.			
Reference	:		
1.	Arduino Programming For Beginners, 2019, Jasakom		
2.			

Subject	:	**Image Processing And Computer Vision**	
Course Code	:	**RTI216006**	
Credits / Hour	:	**3 Credits (6 Hours per Week)**	
Semester	:	**6**	
Graduate Learning Outcomes	:	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
		PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
		KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
		KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
		KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
		KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes	:	Able to understand techniques for performing operations on images/images and perform recognition of images/images; Able to apply techniques to carry out operations on images/images and perform image recognition; Able to apply the use of image operations to carry out problem solving/projects that use image/video data as input data;	
Subject	:		

The basics of image processing include image capture, image modeling, and image processing; Introduction to human and computer vision systems, structure of the human eye, adaptation and discrimination of brightness, contrast sensitivity, Weber ratio, Brightness as a function of intensity, mach band patterns, simultaneous contrast, signal time, spatial and spatial temporal, analog and digital, sampling and quantization , image representation, light intensity function. gray level, number of bits and resolution, checkerboard effect and false counting, non-uniform sampling, non-uniform quantization; Image quality improvement: types of image quality improvement techniques, pixel processing, negative images, contrast stretching, thresholding, gray level transformation, gray level slicing, bit plane slicing, histogram equalization, specific equalization histogram, image quality improvement with logical and arithmetic operations.; Image filtering: filtering principles, convolution. ; Noise reduction in images: low pass filter, uniform noise, Gaussian noise, salt n paper noise, speckle noise. ; Image edge detection: high pass filter, robert operator, prewit operator, sobel operator. ; Color image: color concept, color space, color gamut, and color conversion; Extraction of color features in images: understanding image color features, obtaining color histograms, RGB histograms, HSV histograms, CMYK hstograms; Image shape feature extraction: edge detection, projection histogram, angle histogram, LBP, and LTP; Morphology: the notion of image morphology, element structure, dilation, erosion, opening, closing, hit or miss transform, thinning.; Image recognition application projects with color features or shape features: selecting project themes that can be completed by image processing, creating system block diagrams, performing feature extraction, carrying out the matching process, observing				
Reference		**:**		
1.	Rafael C. Gonzales, Richard E. Woods," Digital Image Processing 3rd edition ", Prentice Hall, 2010.			
2	Rosa Andrie Asmara, "Digital image processing: theory, practice and exercises", ISBN: 978-602-6695-90-1, Polinema Press 2018			
3	Wanasanan Thongsongkrit, "Lecture Notes Digital Image Processing Chapter 1,2,9", Department of Computer Engineering			
4	Faculty of Engineering Chiang Mai University			
5	Prof. Dr. Aniati Murni, Dina Chahyati, SKom, "Image Processing Lecture Notes", Fasilkom UI			
6	Achmad Basuki, Nana Ramadijanti, Fadilah Fahrul, "Image Processing Practicum Module With C# 2012", EEPIS-2013			
7	Nana Ramadijanti, Achmad Basuki, Fadilah Fahrul, "Image Processing Textbook", EEPIS-2014			

Subject		**:**	**Framework Based Programming**	
Course Code		**:**	**RTI216007**	
Credits / Hour		**:**	**3 Credits (6 Hours per Week)**	
Semester		**:**	**6**	
Graduate Learning Outcomes		**:**	**S8**	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.

			KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
			KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
			KU2	Able to demonstrate independent, quality and measurable performance.
Course Learning Outcomes		**:**	Able to understand the concept of mvc in a web framework; Able to create a website using the codeigniter web framework;	
Subject		**:**		
Install and configure Codeigniter 3 and Twitter Bootstrap, Create static pages with CodeIgniter 3, Create CRUD with CodeIgniter 3, Create Authentication with CodeIgniter 3, Create RBAC (Role Based Access Controll), Create Reporting with CodeIgniter 3				
Reference		**:**		
1.	Lonnie Ezell, Practical Codeigniter 3. 2016			
2.	David Upton, CodeIgniter for Rapid PHP Application Development. 2007			

Subject	**:**	**Industrial Internship 1 (2 months)**	
Course Code	**:**	**RTI217001**	
Credits / Hour	**:**	**8 Credits (16 Hours per Week)**	
Semester	**:**	**7**	
Graduate Learning Outcomes	**:**	**S8**	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP3	Mastering documentation techniques and quality assurance of ICT products.
		PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
		KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
		KU2	Able to demonstrate independent, quality and measurable performance.

			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to recognize, adapt and work together with individuals and work groups in the corporate environment; able to identify the company's business functions; be responsible in the process of developing high quality ICT products according to the stages of ICT product development based on the specifications of the company's needs; Documenting the processes and results of ICT product development verbally and in writing independently by internalizing academic values, norms and ethics	
Subject		**:**		
Introduction to the environment and company activities, company business functions, company work rules, problem identification/submission of IT project descriptions, IT project design, IT project design presentations, IT project development process, IT project documentation, IT project dissemination, industrial internship reports				
Reference		**:**		
1.	Malang State Polytechnic Industrial Internship Guidelines			
2.	Industrial Internship Guide D4 Informatics Engineering Malang State Polytechnic			

Subject	**:**	**Industrial Internship 2 (4 months)**	
Course Code	**:**	**RTI217002**	
Credits / Hour	**:**	**12 Credits (24 Hours per Week)**	
Semester	**:**	**7**	
Graduate Learning Outcomes	**:**	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
		KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
		PP3	Mastering documentation techniques and quality assurance of ICT products.

			PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
			PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to recognize, adapt and work together with individuals and work groups in the corporate environment; able to identify the company's business functions; be responsible in the process of developing high quality ICT products according to the stages of ICT product development based on the specifications of the company's needs; Documenting the processes and results of ICT product development verbally and in writing independently by internalizing academic values, norms and ethics	
Subject		**:**		
Problem exploration/submission of IT project description, IT project design, IT project design presentation, IT project development process, IT project documentation, IT project dissemination, industrial internship reports				
Reference		**:**		
1.	Malang State Polytechnic Industrial Internship Guidelines			
2.	Industrial Internship Guide D4 Informatics Engineering Malang State Polytechnic			

Subject	**:**	**Thematic KKN**	
Course Code	**:**	**RTI217003**	
Credits / Hour	**:**	**12 Credits (24 Hours per Week)**	
Semester	**:**	**7**	
Graduate Learning Outcomes	**:**	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.

			KU2	Able to demonstrate independent, quality and measurable performance.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to see village potential, recognize needs, identify problems and find solutions to increase potential and become an independent village; able to work together to develop and make Long Term Development Plans (RPJMDes), Village Development Activity Plans (RKPDes), and other strategic programs in the village; able to apply the knowledge they have collaboratively with the Village Government and community elements to develop the village; able to utilize the knowledge, technology, and skills they have in the field they like; able to communicate, make decisions, behave, show independent performance, self-evaluate and groups, and develop good cooperation networks by taking into account the values and norms in society	
Subject		**:**		
Local community wisdom, village development and empowerment, village governance, ethics in society				
Reference		**:**		
1.	Guidelines for Thematic KKN Malang State Polytechnic			
2.	Guidelines for D4 Thematic KKN Informatics Engineering Malang State Polytechnic			

Subject	:	**Teaching in schools**	
Course Code	:	**RTI217004**	
Credits / Hour	:	**12 Credits (24 Hours per Week)**	
Semester	:	**7**	
Graduate Learning Outcomes	:	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
		KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
		KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
		KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
		KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes	:	Able to deepen, demonstrate and teach skills and knowledge possessed; able to work with educational units to design, implement and evaluate learning programs; able to communicate, make decisions, behave, show independent performance, be responsible, evaluate themselves and groups, and develop good cooperation networks by taking into account the values and norms in society	
Subject	:		
National Education Standards, governance of education units, learning strategies			
Reference	:		
1.	Teaching Guidelines at Malang State Polytechnic Schools		
2.	Teaching Guidelines at D4 Informatics Engineering Schools, State Polytechnic of Malang		

Subject	:	**Study**	
Course Code	:	**RTI217005**	
Credits / Hour	:	**12 Credits (24 Hours per Week)**	
Semester	:	**7**	
Graduate Learning Outcomes	:	**S6**	Working together and having social sensitivity and concern for society and the environment.

			S8	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			PP3	Mastering documentation techniques and quality assurance of ICT products.
			PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
			PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
			KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
			KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
			KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Mastering research methodology and writing scientific papers; mastering research ethics; explore problems, needs, think critically in finding solutions and research ideas in the form of prototypes or ICT product designs by considering validity, values, norms and ethics; able to write down ideas in research proposals; deliver and verbally present research proposals; cooperate and be responsible for developing research according to the stages of research; making documentation, reports in the form of working papers,	

		demonstrating and presenting the process and results of work independently and in working groups; able to communicate, make decisions, show independent performance, be responsible, evaluate themselves and groups, and develop good cooperation networks by taking into account the values and norms in society	
Subject	:		
Research methodology, writing of scientific papers, research outcomes, intellectual property rights, product innovation, ethics in research, plagiarism			
Reference	:		
1.	MBKM Guidelines for Malang State Polytechnic Research Activities 2021		
2.	Guidelines for MBKM Research Activities D4 Informatics Engineering Malang State Polytechnic 2021		

Subject	:	**Entrepreneurial Activities 1**	
Course Code	:	**RTI217006**	
Credits / Hour	:	**12 Credits (24 Hours per Week)**	
Semester	:	**7**	
Graduate Learning Outcomes	:	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		S10	Internalize the spirit of independence, struggle and entrepreneurship.
		PP3	Mastering documentation techniques and quality assurance of ICT products.
		PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
		KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
		KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
		KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
		KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.

		KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes	:	Able to master the principles of leadership and entrepreneurship in various types of organizations; mastering business ethics and value creation; exploring ICT product needs and ideas; conduct market research inside and outside the institution; write down ideas in ICT product development proposals; deliver and verbally present ICT product development proposals; develop ICT products according to the stages of ICT product development based on pre-made specifications; create documentation, reports and present work processes and results independently and in work groups by taking into account academic values, norms and ethics.	
Subject	:		
Business value creation, idea validation, consumer validation, financing sources and strategies, intellectual property, company management, ICT product development			
Reference	:		
1.	Malang State Polytechnic Entrepreneurial Activity Guidelines 2021		
2.	Guidelines for D4 Entrepreneurial Activities in Informatics Engineering Malang State Polytechnic 2021		
3.	Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition.		
4.	Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons.		
5.	Coviello, Nicole E ; and Marian V Jones. (2004). Methodological Issues in International Entrepreneurship Research.		

Subject	:	**Independent Project 1**	
Course Code	:	**RTI217007**	
Credits / Hour	:	**12 Credits (24 Hours per Week)**	
Semester	:	**7**	
Graduate Learning Outcomes	:	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP3	Mastering documentation techniques and quality assurance of ICT products.
		PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
		KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products

		KU2	Able to demonstrate independent, quality and measurable performance.
		KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
		KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.
		KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
		KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
		KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
		KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
		KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes	**:**	Able to explore problems, needs, think critically in finding innovative solutions and ideas that can be submitted in national and international competitions by considering validity, values, norms and ethics; able to write down ideas in the form of project proposals; deliver and verbally present project proposals; cooperate and be responsible for realizing the idea as planned; making documentation, reports in the form of working papers, demonstrating and presenting the process and results of work independently and in working groups; able to communicate, make decisions, show independent performance, be responsible, evaluate themselves and groups, and develop good working networks.	
Subject	**:**		
Project management, scientific paper writing, innovative ideas, project development			
Reference	**:**		
1.	Guide to MBKM Independent Project Activities Malang State Polytechnic		
2.	Guidelines for MBKM Independent Project Activities D4 Informatics Engineering Malang State Polytechnic 2021		

Subject	**:**	**Humanity Project**
Course Code	**:**	**RTI217008**

Credits / Hour	**:**	**12 Credits (24 Hours per Week)**	
Semester	**:**	**7**	
Graduate Learning Outcomes	**:**	**S2**	Upholding human values in carrying out duties based on religion, morals and ethics.
		S6	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
		KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
		KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
		KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
		KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes	**:**	Able to apply the knowledge possessed collaboratively in collaboration with official organizations to determine humanitarian project programs; able to explore and explore problems, provide solutions, plan and implement humanitarian project programs according to their interests and expertise based on religion, morals, and ethics; able to communicate, make decisions, behave, show independent performance, self-evaluate and in groups, and develop good cooperation networks by taking into account the values, norms and ethics in society	
Subject	**:**		
Humanitarian principles, humanitarian organizations, ethics in society			
Reference	**:**		
1.	Guidelines for MBKM Malang State Polytechnic Humanity Project 2021		
2.	Guidelines for MBKM Humanitarian Project D4 Informatics Engineering Malang State Polytechnic 2021		

Subject	**:**	**Thesis**	
Course Code	**:**	**RTI218001**	
Credits / Hour	**:**	**8 Credits (16 Hours per Week)**	
Semester	**:**	**8**	
Graduate Learning Outcomes	**:**	**S5**	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.

S6	Working together and having social sensitivity and concern for society and the environment.
S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.
KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.
KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).

Course Learning Outcomes	:	Able to explore problems in society and the environment, explore needs, think critically and innovatively in finding solutions and thesis ideas by paying attention to validity and originality; able to write down ideas in a thesis proposal; deliver and verbally present the thesis proposal; cooperate and be responsible for realizing thesis ideas and producing prototypes, standard procedures, designs, or other ICT products; making documentation, reports in the form of working papers, demonstrating and presenting the process and results of work independently; able to communicate, make decisions, show independent performance, be responsible, self-evaluate, and develop good cooperation networks by taking into account academic values, norms and ethics
Subject	:	
Thesis proposal, thesis proposal selection, thesis report, thesis seminar results, thesis output, thesis rules		
Reference	:	
1.	Malang State Polytechnic Academic Guidelines	
2.	Guidelines for Thesis D4 Informatics Engineering State Polytechnic of Malang	

Subject	:	**Career development**	
Course Code	:	**RTI218002**	
Credits / Hour	:	**2 Credits (4 Hours per Week)**	
Semester	:	**8**	
Graduate Learning Outcomes	:	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
		KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
		KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
		KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
		KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes	:	Understanding, identifying, and categorizing a career according to the stages in Career Development theory; able to apply and implement on their own; able to communicate, work	

		independently, collaborate, demonstrate results and evaluate oneself and groups by taking into account academic values, norms and ethics in completing tasks related to career development;	
Subject	**:**		
Personal Branding, Informatics Profession, Career in Organization, Career of a Freelancer, Career Management, Public Speaking, Career Planning, Career Development, John Holland's Career Orientation Theory, Edgar Schien's Career Anchor Theory, Protean Career, Career in the Industrial Age 4.0, Internationalization of Career , Managerial Cultural Differences Between Countries			
Reference	**:**		
1.	Widyanti, R. (2021). Career Management (Theory, Concept and Practice). Indonesian Science Media		
2.	Sinambela, LP (2021). Human Resource Management: Building a solid work team to improve performance. Script Earth		

Subject	**:**	**Industrial Internship 3**	
Course Code	**:**	**RTI218003**	
Credits / Hour	**:**	**10 Credits (20 Hours per Week)**	
Semester	**:**	**8**	
Graduate Learning Outcomes	**:**	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
		PP3	Mastering documentation techniques and quality assurance of ICT products.
		PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
		PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
		KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
		KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
		KU2	Able to demonstrate independent, quality and measurable performance.
		KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
		KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
		KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.

			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to recognize, adapt and work together with individuals and work groups in the corporate environment; able to identify the company's business functions; be responsible in the process of developing high quality ICT products according to the stages of ICT product development based on the specifications of the company's needs; Documenting the processes and results of ICT product development verbally and in writing independently by internalizing academic values, norms and ethics	
Subject		**:**		
Problem exploration/submission of IT project description, IT project design, IT project design presentation, IT project development process, IT project documentation, IT project dissemination, industrial internship reports				
Reference		**:**		
1.	Malang State Polytechnic Industrial Internship Guidelines 2021			
2.	Guidelines for D4 Industrial Internship in Informatics Engineering, State Polytechnic of Malang 2021			

Subject		**:**	**Entrepreneurial Activities 2**	
Course Code		**:**	**RTI218004**	
Credits / Hour		**:**	**10 Credits (20 Hours per Week)**	
Semester		**:**	**8**	
Graduate Learning Outcomes		**:**	**S6**	Working together and having social sensitivity and concern for society and the environment.
			S8	Internalize academic values, norms, and ethics.
			S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
			S10	Internalize the spirit of independence, struggle and entrepreneurship.
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
			KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.

			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to master the principles of leadership and entrepreneurship in various types of organizations; mastering business ethics and value creation; exploring ICT product needs and ideas; conduct market research inside and outside the institution; write down ideas in ICT product development proposals; deliver and verbally present ICT product development proposals; develop ICT products according to the stages of ICT product development based on pre-made specifications; create documentation, reports and present work processes and results independently and in work groups by taking into account academic values, norms and ethics.	
Subject		**:**		
Marketing strategy, leadership concept and model, IT product, product validation, business model, business model validation				
Reference		**:**		
1.	Malang State Polytechnic Entrepreneurial Activity Guidelines 2021			
2.	Guidelines for D4 Entrepreneurial Activities in Informatics Engineering Malang State Polytechnic 2021			
3.	Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition.			
4.	Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons.			
5.	Coviello, Nicole E ; and Marian V Jones. (2004). Methodological Issues in International Entrepreneurship Research.			

Subject	**:**	**Independent Project 2**	
Course Code	**:**	**RTI218005**	
Credits / Hour	**:**	**10 Credits (20 Hours per Week)**	
Semester	**:**	**8**	
Graduate Learning Outcomes	**:**	**S6**	Working together and having social sensitivity and concern for society and the environment.
		S8	Internalize academic values, norms, and ethics.
		S9	Demonstrate a responsible attitude towards work in the field of expertise independently.

			PP3	Mastering documentation techniques and quality assurance of ICT products.
			PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
			PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
			KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
			KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
			KU2	Able to demonstrate independent, quality and measurable performance.
			KU3	Able to study cases of the application of science and technology that pay attention to and apply humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the website College.
			KU4	Able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website.
			KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
			KU6	Able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution.
			KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
			KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
			KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
Course Learning Outcomes		**:**	Able to explore problems, needs, think critically in finding innovative solutions and ideas that can be submitted in national and international competitions by considering validity, values, norms and ethics; able to write down ideas in the form of project proposals; deliver and verbally present project proposals; cooperate and be responsible for realizing the idea as planned; making documentation, reports in the form of working papers, demonstrating and presenting the process and results of work independently and in working groups; able to communicate, make decisions, show independent performance, be responsible, evaluate themselves and groups, and develop good working networks.	
Subject		**:**		
Project management, scientific paper writing, innovative ideas, project development				

Reference		**:**		
1.	Guide to MBKM Independent Project Activities Malang State Polytechnic			
2.	Guidelines for MBKM Independent Project Activities D4 Informatics Engineering Malang State Polytechnic 2021			

Appendix 2 of the 2021 Curriculum RPS

Semester 1

Pancasila

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D 4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits)/hour**	**SEMESTER**	**DATE. PREPARATION**
Pancasila	**RTI221001**	I MKU, Compulsory, and Supporting	2 SKS/2 HOURS	**1**	July 2, 2021
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Widaningsih, S.Psi, SH, MH Dr. Shohib Muslim, SH, MH		Atiqah Nurul Asri, S.Pd., M.Pd.	Imam Fahrur Rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				

	S2 Uphold human values in carrying out duties based on religion, morals, and ethics. **S3** Contribute to improving the quality of life in society, nation, state, and the advancement of civilization based on pancasila. **S4** Plays a role as a citizen who is proud and loves the country, has nationalism and a sense of responsibility to the country and nation. **S5** Appreciate the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others. **S6** Working together and having social sensitivity and concern for society and the environment. **S7** Obey the law and discipline in the life of society and the state. **S8** Internalize academic values, norms, and ethics. **KU2** Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK)
	Mastering the concepts of ideology, institutions and rules in the state; demonstrate an attitude of nationalism, concern for society and the environment, respect for diversity of cultures, views, religions and beliefs, uphold human values, and obey the law; able to demonstrate independent performance in completing assignments by taking into account academic values, norms and ethics
Short Course Descriptions	Able to understand the history, foundation, and philosophy & position of Pancasila so that it becomes the basis of the Republic of Indonesia
Learning Materials/subject matter	1. Pancasila education in historical & cultural review 2. Pancasila education in juridical & philosophical view 3. Pancasila in the context of the history of the struggle of the Indonesian nation 4. Pancasila as a system of philosophy 5. RI 1945 Constitution 6. Amendments to the 1945 Republic of Indonesia Constitution 7. Trias Politica in the Republic of Indonesia 8. State institutions according to the 1945 Constitution of the Republic of Indonesia 9. Pancasila as the national ideology 10. Another ideology that is developing in the world 11. Pancasila and Human Rights 12. Implementation of human rights in the 1945 Constitution of the Republic of Indonesia 13. Corruption Crime

	14. Pancasila as the Development Paradigm	
References	**Main :**	
	Pancasila Teaching Module	
	Supporters:	
	1) Sri Hudiarini, et al, Pancasila Education in the Historical and State Administration Perspective of the Republic of Indonesia Revised Edition, Aditya Media Publishing, 2016, Yogyakarta 2) Muhammad Noor Syam, Translation of Pancasila Philosophy in Legal Philosophy (As the Foundation for Development of the National Legal System), Pancasila Laboratory, State University of Malang, 2000, Malang	
Instructional Media	**Software :**	**Hardware :**
	Microsoft Word, MicrosoftExcel, Microsoft Power Point (*Online*)	Computers/Laptops
Name of Lecturer	**Widaningsih, S.Psi, SH, MH** Dr. Shohib Muslim, SH, MH	
Requirements Course		

Week	Planned Final Capabilities (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Recognize the final objective of the course • Be able to explain the definition of Pancasila historically and culturally. • Able to understand the	1) The ultimate goal of lectures 2) Historical and cultural definition of Pancasila	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)*	1x3x 50”	- Know the ultimate goal of lectures - Knowing the historical and cultural definition of Pancasila Understanding the concept of the definition of Pancasila	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking	Form : Oral Test Criteria: ● Students' ability to explain and answer questions about the historical and cultural definition of Pancasila	**3%**

	concept of Pancasila historically and culturally		**Assignment:** **Task 1** : Find examples of case studies in everyday life that are in accordance with the implementation of Pancasila (1x50') *Offline*		historically and culturally	and answering (affective) ● question about the definition of Pancasila		
2	Able to explain the definition of Pancasila juridically and philosophically	Juridical and philosophical definition of Pancasila	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: Task 2** : Look for examples of the juridical and philosophical definition of Pancasila (1x50') *Offline*	1x3x 50”	● Understand and explain the definition of Pancasila juridically and philosophically	**Criteria:** Accuracy and mastery of the material **Form of assessment:** ● Presentation ● Active group discussion includes asking and answering (affective) ● The attractiveness of the explanation of the material	- Appropriateness and clarity in answering and explaining regarding the juridical and philosophical definition of Pancasila	**3%**
3	Able to explain Pancasila in the context of the history of the	Able to explain Pancasila in the context of the history of the	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video	1x3x 50	● Understanding Pancasila in the context of the history of the	**Criteria:** Accuracy and mastery of the material	● The accuracy of students explaining the definition of Pancasila in the	**3%**

	struggle of the Indonesian nation	struggle of the Indonesian nation	● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignment 3** : individual presentation with current topic (1x50') *Offline*		struggle of the Indonesian nation ● Explaining Pancasila in the context of the history of the struggle of the Indonesian nation	**Form of assessment:** ● Presentation ● Active group discussion includes asking and answering (affective)	context of the history of the Indonesian nation's struggle	
4	QUIZ 1	Evaluation	Independent task of compiling an essay	1x3x50	-	-	-	**10%**
5	Be able to explain the definition of Pancasila as a philosophical system	- The definition of Pancasila as a system of philosophy	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: Task 5 group discussion on** Pancasila as a system	1x3x50	- Understand and explain the definition of Pancasila as a philosophical system	**Criteria:** ● Answer accuracy ● Problem solving creativity ● Communication attraction **Form of assessment:** group discussion	● Student accuracy in answering questions about the definition of Pancasila as a philosophical system	**3%**

			of philosophy (1x50') *Offline*					
6	Able to explain and decipher the 1945 Constitution of the Republic of Indonesia and the amendments to the 1945 Constitution of the Republic of Indonesia	Able to explain and decipher the 1945 Constitution of the Republic of Indonesia and the amendments to the 1945 Constitution of the Republic of Indonesia	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: Task 6 group discussion on** the concept of the 1945 Constitution and amendments to the 1945 Constitution of the Republic of Indonesia (1x50') *Offline*	1x3x 50	- Understand the concept of 1945 Constitution and amendments to the 1945 Constitution of the Republic of Indonesia	**Criteria:** ● Clarity answers questions ● Clarity of content ● Writing suitability ● Easy for readers to understand ● **Form of assessment:** ● group discussion	● Student accuracy in answering questions about the 1945 Constitution and amendments to the 1945 Constitution ● Clarity of the contents of the material written by students	**3%**
7	Able to explain and describe the Trias Politica in the Republic of Indonesia	Definition of Trias Politica in the Republic of Indonesia	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion	1x3x 50	- Answering questions and discussing Trias Politica in the Republic of Indonesia	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation	● Accuracy of students in answering questions ● The accuracy of students in presenting Trias	**3%**

			Learning methods: ● *Contextual Teaching and Learning (CTL)* **Assignment: Task 5 group discussion on** Trias Politica in the Republic of Indonesia (1x50') *Offline*			● Group discussion activity includes asking and answering (affective) questions about Trias Politica in the Republic of Indonesia	Politics in the State of the Republic of Indonesia and packaging it into a good and interesting presentation	
8	Able to explain and describe State Institutions according to the 1945 Constitution of the Republic of Indonesia	Definition of State Institutions according to the 1945 Constitution of the Republic of Indonesia	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignment: group discussion on** state institutions according to the 1945 Constitution of the Republic of Indonesia (1x50') *Offline*	1x3x50	● Understanding the definition of State Institutions according to the 1945 Constitution of the Republic of Indonesia	**Criteria:** Accuracy and mastery of the material **Form of assessment:** ● Ability to make presentations ● Interest in making presentations	● Students' ability to understand State Institutions according to the 1945 Constitution of the Republic of Indonesia	**3%**
9	Material test week 1 to 8	UTS	UTS ONLINE	1X4X50"	UTS	UTS	UTS	20%

10	Pancasila as National Ideology	1) The definition of Pancasila as the national ideology 2) The function of Pancasila as a national ideology The process of forming Pancasila as a national ideology	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignment: group discussion about** Pancasila as a National Ideology (1x50') *Offline*	1x3x50”	● Mastering and answering questions about the definition, function and process of forming Pancasila as a national ideology	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation ● Active group discussion includes asking and answering (affective) question about Pancasila as the National ideology	● Students' ability to understand and explain the definition, function and process of forming Pancasila as a national ideology	**3%**
11	Another ideology that is developing in the world	Another definition of ideology that developed in the world	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)*	1x3x50	- Mastering and answering questions about the definition, function and process of forming Pancasila as a national ideology - Mastering and answering questions about other ideologies	**Criteria:** ● Precision and mastery **Form of assessment:** ● Presentation ● Active group discussion includes asking and answering (affective)	● The ability of students to understand and explain about other ideologies that are developing in the world	**3%**

			Assignment: group discussion about other ideologies that are developing in the world (1x50') *Offline*		that are developing in the world -			
12	Pancasila and Human Rights	Definition of Pancasila and Human Rights	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: group discussion on** the definition of Pancasila and HAM (1x50') *Offline*	1x3x50”	Mastering and answering questions about Pancasila and human rights	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) questions about the definition of Pancasila and human rights	- Students' ability to implement effective communication methods within an organizational team	**3%**
13	QUIZ	Evaluation	Online Test	1x3x50	-	-	-	**10%**
14	Implementation of human rights in the 1945 Constitution of the Republic of Indonesia	1) Definition of the implementation of human rights in the 1945 Constitution of the Republic of Indonesia	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video	1x3x50	- Mastering and answering questions about the Definition and Characteristics of the Implementation	**Criteria:** Precision and mastery **Form of assessment:** • Presentation	Student's ability to understand and explain the definition of negotiation, negotiation approach,	**3%**

		2) Characteristics of the Implementation of Human Rights in the 1945 Constitution of the Republic of Indonesia	● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: group discussion on** the implementation of human rights in the 1945 Indonesian Constitution (1x50') *Offline*		of Human Rights in the 1945 Constitution of the Republic of Indonesia	● Active group discussion includes asking and answering (affective) questions regarding the implementation of human rights in the 1945 Constitution of the Republic of Indonesia	characteristics of negotiation and negotiation steps	
15	Corruption Crime	Definition of Corruption Crime -Characteristics of Corruption	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: group discussion on** corruption (1x50') *Offline*	1x3x50	- Conduct a presentation on the Definition and Characteristics of Corruption Crimes	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation ● Active group discussion includes asking and answering (affective) questions about corruption ● Interest in making presentations	● Accuracy of students in answering questions ● The accuracy of students in presenting information system projects in front of forums, and packaging them into a good and interesting presentation	**3%**

16	Pancasila as the Development Paradigm	Definition of Pancasila as a Development Paradigm	**Format:** Lecture ● Online (*Online*) (1x50') **Asynchronous** → learning video ● Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** ● *Contextual Teaching and Learning (CTL)* **Assignment: Task 5 group discussion on** Pancasila as a Development Paradigm (1x50') *Offline*	1x3x50	- Mastering and answering Pancasila questions as a Development Paradigm -	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation ● Active group discussion includes asking and answering (affective) questions about Pancasila as a Development Paradigm	● Students' ability to understand and explain about moderation and minutes	**3%**
17	UAS	Evaluation	*Online* Exam	1x3x50	-	-	-	**20%**

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/ hour	SEMESTER	DATE. PREPARATION
Information Technology Concept	**RTI221002**	Basic Informatics	2 credits/4 hours	1	July 2, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Bagas Satya Dian Nugraha, ST., MT. Faisal Rahutomo, ST., M.Kom., Dr. Eng. Moch Zawaruddin Abdullah, S.ST., M.Kom.	Maybe Astiningrum, ST., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.

PP1 Mastering the concepts of applied mathematics, basic knowledge of ICT (Algorithms, Programming, Databases, Computer Networks, etc.), engineering science, and engineering principles in the field of ICT in depth.

PP7 Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.

KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering ICT Concepts, Technology Innovation, Scientific and ICT developments and the latest issues, Engineering Ethics, Computer Systems, Computer Systems Concepts, Data Representation, Boolean Algebra, Flowcharts, Computer Networks and the Internet, IT Applications in Various Fields, IT Field Certification; able to demonstrate independent performance in completing tasks related to the concept of information technology.

Short Course Descriptions

In this course, technology concepts, technological innovation, science and technology development, engineering ethics, ICT development, computer systems, computer system concepts, data representation, Boolean algebra, flowcharts, computer networks and the Internet, IT applications in various fields, certification will be discussed. IT field.

Learning Materials / Subjects	● Technology concept ● Technology Innovation ● Science and Technology Development ● Engineering Ethics ● ICT development ● Computer system ● Computer System Concept ● Data Representation ● Boolean Algebra ● Flow chart ● Computer Networks and the Internet ● IT Applications in Various Fields ● IT Field Certification.
References	**Main :** 1. Glen J. Coulthard, 2012, Computing Now, McGraw-Hill Book. 2. Brian Williams and Stacey Sawyer, 2009, Using Information Technology: A Practical Introduction to Computer & Communications, 6th Edition, McGraw-Hill. **Supporters:** 1. Munir, Curriculum based on Information and Communication technology, Cet.II. Bandung. 2008, p.9 2. Davis, WS Computers and Information Systems: An Introduction. West Publishing Company. 3. Khalili, TM Management of Technology: The Key to Competitiveness and Wealth Creation. McGraw-Hill. 2000.

	4. Samuel, A. Weir, J. Introduction to Engineering Design. Elsevier Science & Technology Books. 1999.	
Instructional Media	**Software :**	**Hardware :**
	LMS	LCDs and Projectors
Name of Lecturer	Bagas Satya Dian Nugraha, ST., MT. Faisal Rahutomo, ST., M.Kom., Dr. Eng. Moch. Zawaruddin Abdullah, S.ST., M.Kom	
Requirements Course	-	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	● Students understand the concept of Information Technology ● Students can know the function and utilization of information technology ● Students can know the grouping of information technology ● Students can find out the building components of IT ● Students can know the basic role of IT	● Information Technology Concept ● Functions and utilization of Information Technology ● Information technology grouping ● IT building components ● The basic role of IT	**Forms of Learning:** (*Online*) **Learning methods:** *Contextual Teaching and Learning (CTL), Self Directed Learning (SDL)* **Assignment:** Individual Assignment Summarize Information Technology	1x3x50'	By studying Information Technology Concepts material students can: 1. Understand the current concept of information technology 2. Understand the role and function of IT in today's world	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions ● Appropriateness, clarity, straightforwardness in	● Students can explain the concept of information technology, the function and utilization of IT, the grouping of IT, the building components of IT, the basic role of IT	2%

		● Information Technology Trends	review			answering the tasks given		
2	● Students understand about Technological Innovation ● Students know the difference between information system innovation and Modern Information Technology ● Students can understand examples of information system innovation and Modern Information Technology	● Technology Innovation ● Differences between information system innovation and modern information technology ● Examples of information system innovation and modern information technology	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL), Cooperative Learning (CoL)* **Assignment:** Group assignment summarizes 2020 modern era IT innovation	1x3x50'	By studying Information Technology Innovation materials students can: 1. Understand current information technology innovations 2. Find examples of current innovations	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering ● Appropriateness, clarity, straightforwardness in answering the tasks given	● Students have the ability to understand and explain the differences between information system innovation and modern information technology	2%
3	● Students can know the meaning of science and technology ● Students can find out the development of science and technology ● Students can find out the	● Definition of science and technology ● Development of science and technology	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL),*	1x3x50'	By studying science and technology development material students can: 1. Understand current developments in	**Criteria:** Precision and mastery **Form of assessment:**	● Students have the ability to understand science and technology and have the ability to understand the impact of science	2%

	development of science and technology in the field of education ● Students can find out the impact caused by the influence of science and technology and find solutions	● The development of science and technology in the field of education ● The influence of science and technology and its solutions	*Cooperative Learning (CoL)* **Assignment:** Group assignments review the topic of the world of IT in science and technology		science and technology 2. Knowing examples of the development of science and technology in the world of education	● Active group discussion includes asking and answering ● Appropriateness, clarity, straightforwardness in answering the tasks given	and technology and their solutions	
4	● Students can know the meaning of Ethics in the use of IT Technology ● Students can understand and explain the types of IT ethical issues ● Students can know the role of ethics in the IT field	● Definition of Ethics ● Use of Ethics in IT technology ● Types of IT ethical issues ● The Role of Ethics in IT ● Professional Ethics and responsibilities of the IT profession	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL), Cooperative Learning (CoL)* **Assignment:** Group assignments review the topic of international standards of ethics for the IT	1x3x50'	By studying Ethics in Information Technology students can: 1. Know the examples of professional ethics that exist in the world of IT 2. Understand the unwritten ethics in the world of IT	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering ● Appropriateness, clarity, straightforwardness in	● Students have the ability to understand and explain the meaning of ethics in the use of IT Technology	2%

			profession			answering the tasks given		
5	Quiz 1	● Technology concept ● Technology Innovation ● Development of science and technology ● Engineering Ethics	● Online exams	1x60'	Quiz	Quiz	● Students are able to know and understand the concepts of Technology, Technology Innovation, Science and Technology and IT Ethics	12%
6	● Students know the development of ICT ● Students know about the benefits of ICT and its application in various sectors ● Students can know the difference between ICT and ICT	● Definition of ICT ● ICT development ● The benefits of ICT and its application ● The difference	**Forms of Learning:** (*Online*) **Learning methods:** *Contextual Teaching and Learning (CTL), Self Directed*	1x3x50'	By studying ICT development materials, students can: 1. Know the benefits of ICT in various sectors	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and	● Students can understand the development of ICT, its application and the differences between ICT and ICT	2%

	● Students can find out the influence of ICT in organizations	between ICT and ICT	*Learning (SDL)* **Assignment:** Individual Tasks Summarize the review of ICT Development		2. Know the difference between ICT and ICT	answering questions Appropriateness, clarity, straightforwardness in answering the tasks given		
7	● Students understand the concept of computer systems and their components	● Computer System Concept ● Computer Structure ● I/O devices ● Interconnection between components ● Register ● Memory ● Processor (CPU) ● CU/ Control Unit ● PESTLE ● BUS	**Forms of Learning:** (*Online*) **Learning methods:** *Contextual Teaching and Learning (CTL), Self Directed Learning (SDL)* **Assignment:** Individual Tasks Summarize the concept of a computer system, as well as reviewing computer components on	1x3x50'	By studying the concept of computer system concepts students can: 1. Knowledge of computer concepts 2. Know the components in a computer	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given	● Ability to understand and explain the structure of computers and their components	2%

			each PC/laptop owned.					
8	● Students understand the concept of computer systems ● Students can find out about computer system architecture	● Computer system elements ● Computer system architecture ● Computer system components	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL), Cooperative Learning (CoL)* **Assignment:** Group assignments review the topic of computer architecture on a computer that is owned	1x3x50'	By studying Computer Systems material students can: 1. Know the architecture of a computer 2. Know the functions of computer components	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given	● Ability to understand and explain basic computer systems and computer system components	2%
9	UTS	● Technology concept ● Technology Innovation ● Development of science and technology	Online exams	1x60'	UTS	UTS	● Ability to understand how to apply IT concepts, science and technology, computer systems	20%

		● Engineering Ethics ● Computer system ● Computer System Concept ● ICT development						
10	● Students understand the concept of Data Representation	● Definition of Data representation ● Number System ● Arithmetic ● Type data type ● Number Theory ● Number Conversion ● Data Presentation	**Forms of Learning:** (*Online*) **Learning methods:** *Contextual Teaching and Learning (CTL), Self Directed Learning (SDL)* **Assignment:** Individual assignments work on sample questions of data representation.	1x3x50'	By studying the concept of Data Representation Concepts students can: 1. Understand the Concept of Data Representation 2. Understand the conversion of a computer number	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given	● Ability to understand how to apply data representation concepts including number systems, data types and number theory	2%

11	• Students understand the concept of Boolean Algebra	• Basic Logic Operations • Logic Operations and Logic Gates • Boolean expression • Laws of Boolean Algebra • Boolean Functions • Boolean Algebra Application	**Forms of Learning:** (*Online*) **Method :** *Contextual Teaching and Learning (CTL), Self Directed Learning (SDL)* **Assignment:** Individual assignments work on boolean algebra examples.	1x3x50'	By studying Algebraic Concepts material students can: 1. Understand algebraic concepts 2. Know the logic operations that exist on the computer	**Criteria:** Precision and mastery **Form of assessment:** • Active group discussion includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given	• Ability to understand how to apply Boolean algebra concepts, laws and their applications	2%
12	• Students understand the concept of Flowchart	• Flowchart concept • Types of Flowcharts • Flowchart Symbols • Case studies in the application of flowcharts	**Forms of Learning:** (*Online*) **Learning methods:** *Contextual Teaching and Learning (CTL), Self Directed Learning (SDL)*	1x3x50'	By studying Flowchart material students can: 1. Know the concept of flowchart 2. Implementing a flowchart in a case	**Criteria:** Precision and mastery **Form of assessment:** • Active group discussion includes asking and	• Ability to understand how to apply flowchart concepts and case studies	2%

			Assignment: Individual assignments work on flowchart sample questions.			answering questions Appropriateness, clarity, straightforwardness in answering the tasks given		
13	● Quiz 2	● IT Application Concept ● Computer Networks and the Internet ● Flow chart ● Data Representation ● Flow chart	Online exams	1x60'	Quiz	● Quiz	● Ability to understand IT application concepts, computer and internet networks, flowcharts, data representation	12%
14	● Students understand the concept of Computer Networks and the Internet	● Computer Network Concept ● Internet concept and understanding	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL), Cooperative*	1x3x50'	By studying the concept of computer networks, students can: 1. Know the basic concepts of computer networks 2. Know the types and functions	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion	● Ability to understand how to apply the concept of computer and internet networks along with topologies, types of networks and network devices	2%

		● Types of computer networks ● Internet and Intranets ● Network topology ● Network device	*Learning (CoL)* **Assignment:** Group assignments review the topic of computer network devices		of computer networks	includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given		
15	● Students understand the concept of IT applications	● IT Application Concept ● Types of IT applications ● The function and role of IT in everyday life and the company	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL), Cooperative Learning (CoL)* **Assignment:** Group assignments review IT application topics	1x3x50'	By studying IT Application Concepts material students can: 1. Understand the concept of the application 2. Know the types and functions of IT applications in everyday life	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given	● Ability to understand how to apply IT application concepts in everyday life	2%

16	● Students get to know Certification in the IT Field	● Definition of certification ● Types of IT field certification	**Forms of Learning:** (*Online*) **Learning methods:** *Self Directed Learning (SDL), Cooperative Learning (CoL)* **Assignment:** Group assignments review the topic of certifications in the IT field	1x3x50'	By studying Certification material in the IT Field students can: 1. Understand the meaning and benefits of certification in the IT field 2. Know the types of certification in the world of IT	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions Appropriateness, clarity, straightforwardness in answering the tasks given	● Ability to understand the types and types of IT certification	2%
17	UAS	Online exams	UAS	1x60'	UAS	UAS	UAS	30%

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/ hour	SEMESTER	DATE. PREPARATION
Critical Thinking & Problem Solving	**RTI221003**	Study Program Competency Support Courses	2 credits/3 hours	1	December 24, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dwi Puspitasari, S.Kom., M.Kom. 3. Maybe Astiningrum, ST., M.Kom. 4. Agung Nugroho Pramudhita, ST., MT.	Atiqah Nurul Asri, S.Pd., M.Pd.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics
S9 Demonstrate a responsible attitude towards work in the field of expertise independently.
KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in the field of expertise and in accordance with work competency standards in the field concerned.
KU2 Able to demonstrate independent, quality and measurable performance.
KU10 Able to recognize needs, make adaptations and demonstrate ability to continue self-development (lifelong learning).

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering the concept of thinking and problem solving; independently able to identify problems and needs, perform analysis, gather information, think logically, critically, and innovatively in solving simple problems by considering values, norms, and ethics

	SUB-CPMK 1	Students are able to explain the concept of thinking and reasoning as skills. [C2]
	SUB-CPMK 2	Students are able to explain the basic concepts of critical thinking [C1, C2, C4, C5]
	SUB-CPMK 3	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]
	SUB-CPMK 4	Students are able to explain and use basic problem solving skills [C2, C3, C6]
	SUB-CPMK 5	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]
	SUB-CPMK 6	Students are able to explain and use advanced problem solving skills [C2, C3]
	SUB-CPMK 7	Students are able to explain and apply critical reasoning. [C2, C6]
Short Course Descriptions	In this course students will learn about the concept of critical thinking and how to apply it in responding to information in everyday life. In addition, this course will teach about concepts and techniques in solving cases/problems both within the scope of exams/tests, as well as on problems encountered in everyday life.	
Learning Materials / Subjects	1. Thinking and Reasoning 2. Critical Thinking Foundation 3. Basic Problem Solving Skills 4. Applied Critical Thinking 5. Advanced Troubleshooting Capabilities 6. Advanced Techniques for Problem Solving 7. Critical Reasoning	
References	**Main :** 1. Thinking Skills Critical Thinking and Problem Solving Second edition **Supporters:** 1. Critical Thinking Skills For Dummies	
Instructional Media	**Software :** 1. Microsoft PowerPoint 2. Google Forms	**Hardware :** 1. Laptops/PCs 2. Projector LCDs

	3. Google Classroom	3. Projector Screen
Name of Lecturer	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dwi Puspitasari, S.Kom., M.Kom. 3. Maybe Astiningrum, ST., M.Kom. 4. Agung Nugroho Pramudhita, ST., MT.	
Requirements Course	-	

Week:	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Students are able to explain the concept of thinking and reasoning as skills. [C2]	- Thinking as an ability - Critical thinking - Solution, not a problem	Lectures, discussions.	3 x 50”	- Be able **to explain** [C2] the concept of thinking as an ability - Be able to **explain** [C2] the concept of critical thinking - Be able **to explain** [C2] the importance of focusing on solutions instead of the causes of problems	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion - The number of correct answers to the practice questions	3%
2-4	Students are able to **explain** the basic concepts of critical thinking [C1, C2, C4, C5]	- Claims, assertions, and assertions	Lectures, discussions.	3 x 50”	- Be able **to explain** [C2] the differences between claims,	- Liveliness in discussion - Collection of answers to	- Students take part in	9%

		- Assess a claim			assertions, and statements - Able **to assess [C5]** a claim - Be able **to explain** [C2] the concept of an argument - Be able **to identify** [C1] an argument - Able **to analyze** [C4] an argument - Be able **to explain** [C2] the concept of complex arguments - Be able **to explain** [C2] the concept of conclusion - Be able **to explain** [C2] the concept of reason - Be able **to explain** [C2] the concept of assumptions - Be able to **explain** [C2] the concept of flaws and fallacies	practice questions.	the discussion - The number of correct answers to the practice questions	

5	- Quiz-1	- Materials for meeting-1 to meeting-4	Theory exam	3 x 50”	- Working on theory test questions in the form of essays and/or multiple choice.	- Completion of exam questions.	- Number of correct answers.	12%
6-8	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]	- What is meant by problem? - How do we solve a problem? - Select and use information - Process data - Methods rather than solutions - Problem solving with search - Pattern recognition - hypotheses, reasons, explanations, and inferences - Spatial reasoning - Need and Sufficiency	Lectures, discussions.	3 x 50”	- Be able **to explain** [C2] what is meant by a problem - Be able to **identify** [C1] ways to solve a problem - Able **to select [C5]** and **use** [C3] information appropriately - Able to perform **processing** of data - Be able **to identify** [C1] methods of solutions. - Able to solve problems by doing searches - Be able **to identify** [C1] patterns - Be able to **explain** [C2] the concept	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion - The number of correct answers to the practice questions	9%

		- Choose and use models - Make choices and decisions			of hypotheses, reasons, explanations, and inferences - Be able **to explain** [C2] the concept of spatial reasoning - Be able to **explain** [C2] the concept of need (necessity) and adequacy (sufficiency) - Able **to select [C1]** and **use** [C3] model - Able **to explain** [C2] how to make choices and make decisions			
9	- UTS	- Materials for meeting-6 to meeting-8	Theory Exam	3 x 50”	- Working on theory test questions in the form of essays and/or multiple choice.	- Completion of exam questions.	- Number of correct answers.	12%
10-11	Students are able to explain and use basic	- Inference - Explanation	Lectures, discussions.	3 x 50”	- Be able **to explain** [C2] the concept of inference	- Liveliness in discussion - Collection of	- Students take part in	6%

	problem solving skills [C2, C3, C6]	- Proof - Credibility - Critical thinking and science - Present long arguments - Apply analytical skills - Critical evaluation - Respond with a more in-depth argument			- Be able **to explain** [C2] the concept of explanation - Be able to **explain** [C2] proof concept - Be able **to explain** [C2] the concept of credibility - Be able to **explain** [C2] the relationship between critical thinking and science - Be able **to build** [C6] long arguments - Able **to apply** [C3] analytical skills - Be able **to explain** [C2] the concept of critical evaluation - Be able to **compose** [C6] follow-up responses with deeper arguments	answers to practice questions.	the discussion - The number of correct answers to the practice questions	

12	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]	- Unite abilities - use imagination - Develop models - Carry out investigations - Data analysis and inference	Lectures, discussions.	3 x 50”	- Be able **to explain** [C2] the concept of pooling abilities using imagination - Be able **to develop** [C6] models - Able to conduct **investigations** [C5] - Able to do data **analysis** and inference [C4]	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion - The number of correct answers to the practice questions	3%
13	Students are able to explain and use advanced problem solving skills [C2, C3]	- Using a mathematical method - Graphical method - Probability, tree diagrams, and decision trees	Lectures, discussions.	3 x 50”	- Able **to use** [C3] mathematical methods - Able **to use** [C3] graphical method - Be able **to explain** [C2] the concept of probability, tree diagrams, and decision trees	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion - The number of correct answers to the practice questions	3%
14	- Quiz-2	- Materials for meeting-10 to meeting-13	Theory Exam	3 x 50”	- Working on theory test questions in the form of essays and/or multiple choice.	- Completion of exam questions.	- Number of correct answers.	12%

15-16	Students are able to explain and apply critical reasoning. [C2, C6]	- Terms and Conditions - Common sense and validity - Non-deductive reasoning - Reasoning with statistics - Decision-making - Principle - critical writing	Lectures, discussions.	3 x 50”	- Be able **to explain** [2] the concept of terms and conditions - Be able **to explain** [2] the concept of common sense and validity - Be able to **explain** [2] the concept of Non-deductive Reasoning - Be able **to explain** [2] the concept of reasoning with statistics - Be able **to explain** [2] how to make the right decision - Be able to **explain** [2] the principle concept - Able **to make** [C6] critical writing	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion - The number of correct answers to the practice questions	6%
17	- UAS	- All material from start to finish	Theory Exam	3 x 50”	- Working on theory test questions in the form of essays	- Completion of exam questions.	- Number of correct answers.	25%

					and/or multiple choice.			

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
MATHEMATICS 1	RTI221004	Core	2 credits/ 6 hours	1	September 3, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Rudy Ariyanto, ST., M.Cs. 2. Dr. Eng. Cahya Rahmad, ST, M. Kom 3. Rosa Andrie Asmara, ST., MT., Dr. Eng. 4. Erfan Rohadi, ST., M.Eng., Ph.D. 5. Drs. Rawansyah, M.Pd. 6. Deasy Sandhya Elya, S.Si., M.Si. 7. Diana Mayangsari Ramadhani, SST 8. Grezio Arifiyah PSKom., M.Kom	Deasy Sandhya Elya, S.Si., M.Si.	Priest Fahrur Rozi, ST., MT.

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)	
	S8 Internalize academic values, norms, and ethics. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently. **PP1** Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth. **KU2** Able to demonstrate independent, quality and measurable performance.	
	Learning Outcomes Graduates charged to courses (CPL-MK)	

	Mastering the concept of types of numbers, factors and prime numbers, powers, number systems, Introduction to Algebra (linear equations, coefficients, constants etc.), Algebraic powers, Algebraic Factoring, Solving linear and polynomial equations, Graphs, Combinatorial (factorials, combinations, permutations , probability), Trigonometry (special angles, Pythagorean formula), Series of Numbers; Mastering the concepts of mathematics and applied mathematics; able to be responsible for solving mathematical problems independently by taking into account academic values, norms, and ethics
Short Course Descriptions	Mathematics 1 is the basic material of mathematics which is expected to be able to support and facilitate learning and learning programming
Learning Materials / Subjects	Types of numbers, factors and prime numbers, powers, number systems, Introduction to Algebra (linear equations, coefficients, constants etc.), Algebraic powers, Algebraic Factoring, Solving linear and polynomial equations, Graphs, Combinatorial (factorials, combinations, permutations, opportunities), Trigonometry (special angles, Pythagorean formula), Series of Numbers
References	**Main :** Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 **Supporters:** Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.
Instructional Media	**Software :** - **Hardware :** Computer
Name of Lecturer	1. Rudy Ariyanto, ST., M.Cs. 2. Dr. Eng. Cahya Rahmad, ST, M. Kom 3. Rosa Andrie Asmara, ST., MT., Dr. Eng. 4. Erfan Rohadi, ST., M.Eng., Ph.D. 5. Drs. Rawansyah, M.Pd. 6. Deasy Sandhya Elya, S.Si., M.Si. 7. Diana Mayangsari Ramadhani, SST 8. Grezio Arifiyah PSKom., M.Kom
Requirements Course	

Week	Planned Final Capabilities (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Students are able to understand the concept of types of numbers	Number Type	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment: Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	2%
2	Students are able to understand Factors and Prime Numbers	Factors and Prime Numbers	**Form :** Studying	6 x 50”	By studying and understandin	**Criteria:** Scoring criteria rubric	Able to work on exercises systematically	1.5%

			- Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		g the existing material, students are expected to be able to understand and work on questions related to the material.	**Form of assessment:** • Presentation • Written test, about solving case studies	related to the material presented.	
3	Students are able to understand the concept of Fractions, Ratios, and Percentages	Fractions, Ratios and Percentages	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous**	6 x 50”	By studying and understanding the existing material, students are expected to	**Criteria:** Scoring criteria rubric **Form of assessment:**	Able to work on exercises systematically related to the material presented.	1.5%

			→ learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		be able to understand and work on questions related to the material.	• Presentation • Written test, about solving case studies		
4	Students are able to understand the concept of Decimal Numbers (division, fractions , comma2 numbers)	Decimal Numbers (division, fraction, comma2)	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50')	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about	Able to work on exercises systematically related to the material presented.	1.5%

			Sync → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		related to the material.	solving case studies		
5	Quiz 1	- Material 1 to 4	Online written exam	6 x 50”	Answer questions correctly	- Answer accuracy	Quiz 1	7.5%
6	Students are able to understand the concept of rank	Rank	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Learning methods: *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		related to the material.			
7	Students are able to understand the concept of Number System 1	Number System 1	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:**	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Contextual Teaching and Learning (CTL) **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*					
8	Students are able to understand the concept of Number System 2	Number System 2	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:**	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Assignments : Do practice questions related to Logic (3x50') *Offline*					
9	UTS	- Material from meeting 1 to 8	Online written exam	6 x 50”	Answer Questions Correctly	- Answer accuracy	UTS	30%
10	Students are able to understand the concept of Introduction to Algebra (linear equations, coefficients, constants etc.), Algebraic Ranks, Algebraic Factoring	Introduction to Algebra (linear equations, coefficients, constants etc.), Algebraic Powers, Algebraic Factoring	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			questions related to Logic (3x50') *Offline*					
11	Students are able to understand and solve the concept of solving linear equations and polynomials	Solving linear and polynomial equations	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment: Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

12	Students are able to understand concepts and draw graphs	Chart	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%
13	Students are able to understand the concept of combinatorial (factorial, combination,	Combinatorial (factorial, combination, permutation, chance)	**Form :** Studying - Online (*Online*)	6 x 50”	By studying and understanding the existing material,	**Criteria:** Scoring criteria rubric	Able to work on exercises systematically related to the material presented.	1.5%

	permutation, opportunity)		(1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		students are expected to be able to understand and work on questions related to the material.	**Form of assessment:** • Presentation • Written test, about solving case studies		
14	Quiz	- Material from meeting 9 to 12	Online written exam	6 x 50”	Answer questions correctly	- Accuracy of explanation - Oral questions - Task	Quiz	7.5%
15	Students are able to understand the concept of Trigonometry (special	Trigonometry (special angles, Pythagorean formula)	**Form :** Studying - Online (*Online*)	6 x 50”	By studying and understanding the existing	**Criteria:** Scoring criteria rubric	Able to work on exercises systematically	1.5%

	angles, Pythagorean formula)		(1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		material, students are expected to be able to understand and work on questions related to the material.	**Form of assessment:** • Presentation • Written test, about solving case studies	related to the material presented.	
16	Students are able to understand the concept of Number Series	Number Series	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation	Able to work on exercises systematically related to the material presented.	1.5%

			- Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment: Assignments** : Do practice questions related to Logic (3x50') *Offline*		and work on questions related to the material.	• Written test, about solving case studies		
17	UAS	- Material from meeting 1 to 16	Online exams	6 x 50”	Able to do the questions well	- Answer accuracy	UAS	35%

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM: Diploma 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (SKS)/hour	SEMESTER	DATE. PREPARATION
ENGLISH 1	RTI221005	Characteristics of PT	2 credits/ 4 hours	1	November 2021
AUTHORIZATION	RPS Developer Lecturer		MMK Coordinator	Ka PRODI	
	Atiqah Nurul Asri, S.Pd, M.Pd		Atiqah Nurul Asri, S.Pd. , M.Pd	Imam Fahrur Rozi, ST, MT	

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

1. S8 Internalize academic values, norms, and ethics.
2. PP6 Mastering knowledge of oral and written communication techniques using the national language and international.
3. KU2 Able to demonstrate independent, quality and measurable performance.
4. KU11 Able to communicate using international languages orally and in writing.

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering knowledge of oral and written communication techniques using English in the context of Informatics Engineering; Able to communicate independently using English orally and in writing in the context of Informatics Engineering by taking into account values, norms and ethics;

The SUB CPL MK are as follows:

1. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Computer Uses*** .

	2. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Computer Architecture*** . 3. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with *Multimedia topics.*** 4. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Networking.*** 5. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *the Website.*** 6. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Careers in IT.*** 7. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *IT Support Staff.*** 8. Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Workstation Health and Safety*** .
Short Course Descriptions	The name of this course is *English Informatics* 1 taught to students of the Informatics Engineering Study Program which is focused on training their abilities and skills in *Listening, Speaking, Reading* and *Writing* in an integrated manner in the **context of Informatics Engineering** . So that **the topics** in this material are adapted to the context of the field of Informatics which can be applied in everyday life and in the world of work in the future. Methods used during the teaching-learning process include lectures, discussions, *role plays* , presentations, debates, individual and group projects, *Problem -Based Learning, Project-Based Learning, Cooperative and Collaborative Learning, Know-What-Learn, SQ3R* , and **done online/online** .
Learning Materials / Subjects	**Topic 1: Computer Applications** 1.1. Kinds of computer applications and their potential users in everyday life. **1.2. Grammar Study: Simple Present Tense** **1.3. Grammar Study: Imperatives and Sequencers** **Topic 2: Computer Architecture** 2.1. Types of computers 2.2. A computer advertisement 2.3 **.** The functions of computer hardware **2.4. Grammar Study: Comparative and Superlatives** **2.5. Grammar Study: Useful Phrases for Presentation**

	Topic 3: Multimedia 3.1. Toolbox from a graphics package and multimedia equipment **3.2. Grammar Study: Time clauses** **3.3. Grammar Study: Passive Sentences** **Topic 4: Networking** 4.1. Network and network hardware 4.2. Network topologies **4.3. Grammar Study: If-Clauses** **Topic 5: Websites** 5.1. Types of websites and their purposes 5.2. The most visited websites based on their purposes and their reasons 5.3. Types of Charts 5.4. Grammar Study: Expressions for Explaining Charts 5.5. Criteria of a good website 5.6. A website reviews **Topic 6: Careers in IT** 6.1. Kinds of careers in IT, their job descriptions, and requirements **6.2. Grammar Study: Modals and be + essential/critical** 6.3. A dream job **Topic 7: IT Support Staff** 7.1. Common computer problems and their solutions **7.2. Grammar Study: Modals** 7.3. Writing a report **7.4. Grammar Study: Conjunctions** **Topic 8: Workstation Health and Safety** 8.1. Computer-related health and safety problems **8.2. Grammar Study: Modals** 8.3. Security and rules for using a company computer and laboratory
References	**Main:** Asri, Atiqah Nurul. 2018. English for Informatics 1: Seventh Edition. The module has not been published yet.

	Supporters: 1. Esteras, Santiago Remacha. (2010). *Infotech English for Computer Users Workbook* . Cambridge: Cambridge University Press. 2. Esteras, Santiago Remacha. (2011). *Infotech English for Computer Users Student's Book* . Cambridge: Cambridge University Press. 3. Fabre, Elena Marco, and Esteras, Santiago Remacha. (2007). Professional English in Use: ICT. Cambridge: Cambridge University press. 4. Hills, David. (2012). *English for Information Technology Vocational English Course Book 2* . Essex: Pearson Education Limited. 5. Glendinning, Eric H and McEwan, John. (2012). Basic English for Computing Revised and Updated. Oxford: Oxford University Press. 6. Olejniczak, Maja. (2011). *English for Information Technology 1 Vocational English Course Book* . Essex: Pearson Education Limited.	
Instructional Media	**Software:**	**Hardware:**
	Zoom, WhatsApp, JTI LMS, Polinema LMS, Camtasia, Mentimeter, Padlet , Canva, etc.	computers, microphones, headsets, mobile phones , audio files, and speakers
Name of Lecturer	1. Atiqah Nurul Asri, S.Pd, M.Pd 2. Faiz Ushbah Mubarok, S.Pd, M.Pd 3. Farida Ulfa, S.Pd, M.Pd 4. Satrio Binusa S., SS, M.Pd	
Requirements course	--	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1- 2	• Mastering and applying oral and written communication	**1. Topic 1: Computer Uses** 1.1. Kinds of computer	**Forms of Learning:** Face to face:	8 x 50 minutes consist of	By using English students can: • identify and explain various	**Criteria:** Precision and mastery	• Accuracy and mastery of student	5%

	techniques using English in **the context of Informatics Engineering with the topic *Computer Uses*** .	applications and their potential users in everyday life. **1.2 . Grammar Study: Simple Present Tense** **1 . 3 . Grammar Study: Imperatives and Sequencers**	Offline/Online Task 1: *Write a paragraph about the use of the computer in both your leisure time and study using Simple Present Tense.* Task 2: In a group of three, make a presentation about installing software using *imperatives* and *sequencers* . **Learning methods:** ● Lecture ● Small group discussions ● Problem based learning ● Presentation	2 x 50 minutes face to face online 3 x 50 minute structured assignments 3 x 50 minute independent assignments	computer applications found in everyday life and their users by completing tables. • listen to conversations about 4 people with different jobs and identify the use of computers in carrying out their work. • read, identify, and re-explain the contents of the reading about *The Digital Age* • look for similarities in words found in the text with their meanings • identify the *Simple Present Tense form* in the text above • write a paragraph	**Form of assessment:** ● Oral test ● Written test based on case studies and presentations (refer to the rubric) Rubric: See in SAP	communication using English in: • identify and explain various computer applications found in everyday life and their users by completing tables. • listen to conversations about 4 people with different jobs and identify the use of computers in carrying out their work. • read, identify, and re-explain the contents of the reading about *The Digital Age* • look for similarities in words found in the text with their meanings • identify the *Simple Present Tense form* in the text above • write a paragraph about computer use in spare time and study time using *the Simple Present Tense* .	

					about computer use in spare time and study time using *the Simple Present Tense* . • identified *imperatives* and *sequencer forms in the reading about Windows 10* installation instructions . • write and present application software installation processes using imperatives and *sequencers.*		• identified *imperatives* and *sequencer forms in the reading about Windows 10* installation instructions . • write and present application software installation processes using imperatives and *sequencers.*	
3 - 4	• Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Computer Architecture*** .	**2. Topic 2: Computer Architecture** 2.1. Types of computer 2.2. A computer advertisement. 2.3. The functions of computer hardware **2.4. Grammar Study: Comparative**	**Forms of Learning:** Face to face: Offline/Online Task: *In a group of three, find two different advertisements of PCs/laptops/any gadgets and write*	8 x 50 minutes 2 x 50 minutes face to face online 3 x 50 minute structured assignments	By using English students can: • Identify and explain the various types of computers and their functions • listen to the dialogue and identify explicit	**Criteria:** Precision and mastery **Form of assessment:** • Oral test • Written test based on case studies and presentations (refer to the rubric) Rubric: See in SAP	Accuracy and mastery of student communication using English in: • Identify and explain the various types of computers and their functions • listen to dialogue and identify explicit and implicit information.	5%

		and Superlatives **2.5. Grammar Study: Useful Phrases for Presentation**	*some comparisons (at least 10 sentences) based on their specifications and present it in the class. Use the phrases that you have learned today* . **Learning methods:** ● Lecture ● group discussion ● Case study ● Contextual learning ● cooperative ● Presentation	3 x 50 minute independent assignments	and implicit information. ● read, understand, and explain again the contents of the computer advertisement and the text *How to Read a Computer Ad* . ● Identify and explain *computer functions hardware* . ● understand and use the forms of *comparatives* and *superlatives* . ● identify, understand, and use the phrases used in the presentation. ● read two or three tables of		● read, understand, and explain again the contents of the computer advertisement and the text *How to Read a Computer Ad* . ● Identify and describe the functions *of computer hardware.* ● understand and use the forms of *comparatives* and *superlatives.* ● identify, understand, and use the phrases used in the presentation ● read two or three tables of *gadget specifications* , identify, analyze the differences and similarities and make sentences using *comparatives* and *superlatives* . ● read, understand, and present a comparison of two or more	

					gadget specifications , identify, analyze the differences and similarities and make sentences using *comparatives* and *superlatives* . ● laptops /gadgets using *comparatives, superlatives,* and *useful phrases for presentation* based on their specifications .		PCs/laptops/gadgets using comparatives , *superlatives,* and *useful phrases for presentation* based on specifications .	
5 - 6	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with *Multimedia topics*** .	**3. Topic 3: Multimedia** 3.1. Toolbox from a graphics package and multimedia equipment **3.2. Grammar Study: Time Clauses** **3.3. Grammar Study: Passive Sentences**	**Forms of Learning:** Face to face: Offline/Online Task: *In a group, make a presentation about telling a process of making or editing pictures, videos, or music using any software you*	8 x 50 minutes 2 x 50 minutes face to face online 3 x 50 minute structured assignments	By using English students can: ● mention and explain the functions of *the toolbox* found in multimedia applications. ● enumerate and explain the functions of various	**Criteria:** Precision and mastery **Form of assessment:** ● Oral test ● Written test based on case studies and presentations (refer to the rubric) Rubric: see in SAP	Accuracy and mastery of student communication using English in: ● mention and explain the functions of *the toolbox* found in multimedia applications. ● enumerate and explain the functions of various multimedia devices.	10%

			know. Use time words and the passive voice. **Learning methods:** ● Lecture ● Small group discussions ● Cooperative learning ● Problem based learning ● Presentation	3 x 50 minute independent assignments	multimedia devices. ● read, understand, and explain the contents of *Understanding MP3 reading* . ● read, understand, and complete the reading with the words provided. ● Identify and use forms *of time clauses* ● understand and use *passive sentences* ● able to change *active sentences* into *passive sentences.* ● present the process of editing images, videos, or audio files using *time clauses* and		● read, understand, and be able to retell the contents of *Understanding MP3 reading* . ● read, understand, and complete the reading with the words provided. ● Identify and use forms *of time clauses* ● understand and use *passive sentences* *active sentences* into *passive sentences.* ● present the process of editing images, videos, or audio files using *time clauses* and *passive sentences* .	

					passive sentences .			
7	**UTS**							20%
8 - 9	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Networking*** .	**4. Topic 4: Networking** 4.1. Network and network hardware 4.2. Network topologies **4.3. Grammar Study: If-Clause**	**Forms of Learning:** Face to face: Offline/Online Task: Multiple Choice Questions at LMS. **Learning methods:** ● Lecture ● Group discussions ● Case study ● Contextual learning	8 x 50 minutes 2 x 50 minutes face to face online 3 x 50 minute structured assignments 3 x 50 minute independent assignments	By using English students can: ● identify and redefine *network hardware* and its functions. ● understand and explain *Network Health Center* LAN drawings and answer questions ● describe and explain the meaning of *network* and *hardware components* based on the picture given. ● read and understand the text entitled *Networks* and identify whether the given sentences are *true* or *false* .	**Criteria:** Precision and mastery **Form of assessment:** ● Oral test ● The written test is in the form of multiple choice questions.	Accuracy and mastery of student communication using English in: ● understand the diagram about the components in the LAN and explain their functions. ● understand and explain *Network Health Center* LAN drawings and answer questions ● describe and explain the meaning of *network* and *hardware components* based on the picture given. ● read and understand the text entitled *Networks* and identify whether the given sentences are *true* or *false* . ● read, understand and complete the text in the form of an email	5%

					● read, understand and complete the text in the form of an email with the words provided. ● identify and explain *the network topology* based on the drawings provided ● Read and understand texts on *network topologies.* ● identify *the network topology* based on the description given in the sentence according to the reading above. ● read, understand, and apply the use of *If-Clause Type 1* in sentences and dialogues.		with the words provided. ● Read and understand texts on *network topologies.* ● identify *the network topology* in the sentence according to the reading above. ● read, understand, and apply the use of *If-Clause Type 1* in sentences and dialogues.	
1 0 -1 1	● Mastering and applying oral and written	**5. Topic 5: Websites**	**Forms of Learning:** Face to face:	8 x 50 minutes	By using English students can:	**Criteria:** Precision and mastery	Accuracy and mastery of student communication using English in:	10%

	communication techniques using English in **the context of Informatics Engineering with the topic *Websites*** .	5.1. Types of websites and their purposes. 5.2. The most visited websites are based on their purposes 5.3. Types of Charts **5.4. Grammar Study: Expressions for Explaining Charts** 5.5. Criteria of a good website 5.6. Website reviews	Offline/Online Task: *In a group of three, find the criteria for a good website, choose one available website, and make an analysis based on the criteria you have found. You are NOT allowed to take references from Wikipedia or blogs.* **Learning methods:** ● Lecture ● group discussion ● Problem based learning ● Discovery learning ● Contextual learning	2 x 50 minutes face to face 3 x 50 minute structured assignments 3 x 50 minute independent assignments	● read, understand and be able to retell short readings about *The World Wide Web* ● find explicit and implied information related to the above reading ● read, understand and be able to retell short passages on *Types of Websites - A Guide for Website Designers* ● Find explicit and implied information related to the text above. ● mention and explain the types of websites and their purpose based on the pictures provided. ● do a simple research about	**Form of assessment:** ● Oral test ● Written test based on case studies and presentations (refer to the rubric) Rubric: see in SAP	● read, understand and be able to retell short readings about *The World Wide Web* ● find explicit and implied information related to the above reading ● read, understand and be able to retell short passages on *Types of Websites - A Guide for Website Designers* ● Find explicit and implied information related to the text above. ● mention and explain the types of websites and the purpose of the images provided. ● do a simple research about the most frequently visited websites by interviewing classmates. ● read, understand and be able to retell short readings about *Charts* ● Mention the various types of charts along	

					the most frequently visited websites by interviewing classmates. ● read, understand and be able to retell short readings about *Charts* ● Mention the various types *of charts* along with their forms and functions. ● make *a chart* based on the results of the interview and present it. ● mention and explain the criteria of a good website. ● find a website and write a review based on the criteria mentioned above and present it in class.		with their forms and functions. ● make *a chart* based on the results of the interview and present it. ● mention and explain the criteria of a good website. ● find a website and write a review based on the criteria mentioned above and present it in class.	

1 2 -1 3	• Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Careers in IT*** .	**6. Topic 6: Careers in IT** 6.1. Kinds of careers in IT, their job descriptions, and requirements. **6.2. Grammar Study: modals and be + essential/critical** 6.3. A dream job	**Forms of Learning:** Face to Face Offline/Online Task: *Create a 2–5-minute video talking about your dream job by answering these following questions:* *1. What is your dream job? Why do you want it?* *2. What are the responsibilities for the job?* *3. How can you succeed in pursuing your dream job?* *4. Do you think it is possible to achieve your dream job? why (not*) **Learning methods:** • Classic discussion • Discovery learning	8 x 50 minutes consist of 2 x 50 minutes face to face online 3 x 50 minute structured assignments 3 x 50 minute independent assignments	By using English students can: • Mention the types of jobs in the IT field, job descriptions and qualifications required. • Complete training on IT jobs. • read, understand and complete exercises regarding short job description texts in the IT field. • listen, understand and complete the exercise from a short dialogue on IT jobs. • listen and identify the differences between one job and another by filling in the table. • read, understand and	**Criteria:** Precision and mastery **Form of assessment:** • Oral test • Written test based on case studies and role play/simulation (referring to the rubric) Rubric: See in SAP	Accuracy and mastery of student communication using English in: • Mention the types of jobs in the IT field, job descriptions and qualifications required. • Complete training on IT jobs. • read, understand and complete exercises regarding short job description texts in the IT field. • Listen to understand and complete the exercise from a short dialogue on IT jobs. • listen and identify the differences between one job and another by filling in the table. • read, understand and complete the exercise from the text *Industry Overview on IT Careers* • Find explicit and implied information related to the text above.	10%

			● Contextual learning ● Case study ● Role play ● Project based learning ● Presentation		complete the exercise from the text *Industry Overview on IT Careers* ● Find explicit and implied information related to the text above. ● understand and apply Modals to define requirements. ● write down about the desired job and plans to make it happen. ● The script above is then converted into a short video.		● understand and apply to explain the requirements. ● write down about the desired job and plans to make it happen. ● change the script above into a short video.	
1 4 -1 5	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic**	**7. Topic 7: IT Support Staff** 7.1. Common computer problems and their solutions **7.2. Grammar Study: Modals** 7.3. Writing a report **7.4. Grammar Study: Conjunctions**	**Forms of Learning:** Face to Face Offline/Online Task: Multiple Choice Questions at LMS. **Learning methods:**	8 x 50 minutes consist of 2 x 50 minutes face to face online 3 x 50 minute	By using English students can: ● identify problems related to computers and their solutions. ● listen, understand, and mention 6	**Criteria:** Precision and mastery **Form of assessment:** ● Oral test: role play exercise ● The written test is in the form of	Accuracy and mastery of student communication using English in: ● identify problems related to computers and their solutions. ● listen, understand, and mention 6 different computer	5%

	IT Support Staff .		● Discussion ● Problem based learning ● Contextual learning ● Role play/simulation	structured assignments 3 x 50 minute independent assignments	different computer problems based on dialogue. ● listen, understand, and answer questions about computer problems and their solutions based on dialogue between the consumer and *the IT help desk.* ● correctly understand and apply *the Modals for Speculation and Deduction* . ● listen, understand, and complete dialogue transcripts regarding computer problems and their solutions based on dialogue. ● Mention and complete the	multiple choice questions.	problems based on dialogue. ● listen, understand, and answer questions about computer problems and their solutions based on dialogue between the consumer and *the IT help desk.* ● correctly understand and apply *the Modals for Speculation and Deduction* . ● listen, understand, and complete dialogue transcripts regarding computer problems and their solutions based on dialogue. ● Mention and complete the table about various problems related to computers and how to solve these problems. ● listen to conversations between IT technicians and customers and identify the forms of questions *(WH-*	

					table about various problems related to computers and how to solve these problems. ● listen to conversations between IT technicians and customers and identify the forms of questions *(WH-Questions* and *Yes / No Questions)* what technicians express to find out the problems encountered by the customer. ● study the form commonly used by IT technicians in recording customer problems submitted via telephone and understand the terms contained in the form.		*Questions* and *Yes / No Questions)* what technicians express to find out the problems encountered by the customer. ● study the form commonly used by IT technicians in recording customer problems submitted via telephone and understand the terms contained in the form. ● listen back to the conversation and complete the contents of the form to identify the problems faced by the customer. ● practice dialogue between *customer* and technician based on the given situation. ● read a short report consisting of 3 paragraphs written by IT technicians about customer problems and solutions that have been provided and identify what is written in each	

					● listen back to the conversation and complete the contents of the form to identify the problems faced by the customer. ● practice dialogue between *customer* and technician based on the given situation. ● read a short report consisting of 3 paragraphs written by IT technicians about customer problems and solutions that have been provided and identify what is written in each paragraph in the report. ● write a short report consisting of 3 paragraphs about customer problems in the activity above.		paragraph in the report. ● write a short report consisting of 3 paragraphs about customer problems in the activity above. ● understand and apply *conjunctions* correctly. ● identify suggestions and sentence forms used by IT technicians in providing solutions to these customer problems and take turns playing roles with classmates. ● read e-mails about computer-related problems and as a technician then explain the solution to the problem. ● write emails regarding recommended solutions based on the problems above.	

					● understand and apply *conjunctions* correctly. ● identify suggestions and sentence forms used by IT technicians in providing solutions to these customer problems and take turns playing roles with classmates. ● read e-mails about computer-related problems and as a technician then explain the solution to the problem. ● write emails regarding recommended solutions based on the problems above.			
1 6	● Mastering and applying oral and written communication techniques	**8. Topic 8: Workstation Health and Safety** 8.1. Health and Safety Problems.	**Forms of Learning:** Face to Face Offline/Online	4 x 50 minutes consist of	By using English students can: ● observe and in pairs identify	**Criteria:** Precision and mastery **Form of assessment:**	Accuracy and mastery of student communication using English in: ● Observe and in pairs identify safety	5%

	using English in **the context of Informatics Engineering with the topic *Workstation and health safety*** .	**8.2. Grammar Study: Modals** 8.3. Rules for Using Company Computers and Laboratory	Task *With your partner create a poster about Workstation Health and Safety. Make sure you put all the grammar forms you have learned in this unit.* **Learning methods:** ● Lecture ● group discussion ● Case study ● Presentation	1 x 50 minutes face to face online 1 x 50 minute structured task 2 x 50 minute independent assignments	safety issues in computer use. ● identify computer system and network safety procedures in the computer laboratory and together with your partner write one of the safety procedures in place. ● read and complete safety procedures on computer systems and networks by matching the answer choices into the text. ● read, understand, and retell the text on *Computer Ergonomics* , and answer the questions ● understand and apply *giving advice and declaring*	● Oral test ● Written test based on case studies and poster/infographic presentation (refer to the rubric) Rubric: See in SAP	problems in computer use. ● identify computer system and network safety procedures in the computer laboratory and together with your partner write one of the safety procedures in place. ● read and complete safety procedures on computer systems and networks by matching the answer choices into the text. ● read, understand, and retell the text on *Computer Ergonomics* , and answer the questions ● understand and apply *giving advice and declaring prohibitions* correctly. ● read and understand a list of safety rules regarding computer use in a company and discuss any rules that need to be added.	

					prohibitions correctly. ● read and understand a list of safety rules regarding computer use in a company and discuss any rules that need to be added. ● making *posters* related to *Workstation Health and Safety* (K3).		● making *posters* related to *Workstation Health and Safety* (K3).	
1 7	**UAS**							25%

Information :

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Basic Programming

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Basic Programming	**RTI221009**	Basic Informatics	2 credits/ 4 hours	1	December 20, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Maybe Astiningrum, ST, M, Kom	Maybe Astiningrum, ST, M. Kom	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.

S9 Demonstrate a responsible attitude towards work in the field of expertise independently.

PP1 Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.

KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering the basic **concepts** of programming as part of **basic knowledge of ICT** ; Mastering the concepts of Algorithms, Algorithmic Representations, Translators, Programming Languages, Data Types, Variables, Constants, Values, Expressions, Input-Output, Sequences, Case Analysis, Branching, Looping, Arrays, Functions/Procedures. Able to demonstrate independent, quality and measurable performance by taking into account **academic values, norms and ethics** in designing algorithm concepts.

SUB-CPMK 1	Students know the basic concepts of algorithms and are able to analyze simple problems in the form of algorithms [C2, A3] – Week 1-2
SUB-CPMK 2	Students understand and are able to explain Data Types, Variables, Input-output, Sequences, Operators (Arithmetic Assignment, Joint Assignment, Increment, Decrement, Relational, Logic, Conditional, Bitwise, Casting) and are able to apply them in writing algorithms [C4, A3] – Week 3
SUB-CPMK 3	Students are able to explain the concepts of simple and nested selection, and are able to write selection algorithms to complete case studies using flowcharts [C4, A3, P2] – Week 5-6
SUB-CPMK 4	Students are able to understand simple looping algorithms and nested loops, and be able to describe case study problems using flowcharts [C4, A3, P2] – Week 7-8
SUB-CPMK 5	Students are able to understand the concept of 1-dimensional and 2-dimensional arrays, and are able to complete case studies using 1-dimensional and 2-dimensional arrays – Week 10-11

	SUB-CPMK 6	Students are able to explain the concept of iterative and recursive functions, create / declare functions, call functions and are able to apply them in compiling problem solving algorithms [C4, A3, P2] – Week 13-14
Short Course Descriptions	Fundamentals of Programming provides knowledge and understanding of the basic concepts of algorithms and basic programming so that in this course students have the basis for solving logical problems using flowcharts and pseudocode.	
Learning Materials / Subjects	Concept of Algorithm, Programming Language, Data Type, Variable, Constant, Value, Expression, Input-Output, Sequence, Case Analysis, Selection, Loop, Array, Function	
References	**Main :** 1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming , Deepublish. **Supporters:** Rinaldi Munir, 2015, Algorithm and Programming, Informatics Publisher	
Instructional Media	**Software :** 1. Microsoft Office 2. Adobe Reader 3. Sublime 4. JDK	**Hardware :** PCs/Laptops
Name of Lecturer		
Requirements Course		

Week To	Planned Final Capabilities (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1-2	Students know the basic concepts of algorithms and are able to analyze simple problems in the form of algorithms [C2, A3]	· Programming Basic Concepts · Logic-based problem analysis	**Forms of Learning:** Online or Offline (*Online/Offline*) **Learning methods:**	2 x 2 x 100" Face to Face and Structured assignments.	By studying Basic Programming material students can:	**Criteria:** Precision and mastery	● Understand the meaning and importance of algorithms ● Get to know the basic	3.3%

			Contextual Teaching and Learning (CTL), Problem Based Learning **Assignment:** Task 1: complete a simple case study and provide analysis Task 2: complete the case study (sequence, selection, repetition)	2 x 2 x 70" Self Duty.	1. Explain the importance of algorithms 2. Solve the problems that exist in the case study and provide analysis 3. Solve the problems that exist in the case study and identify inputs, processes, and outputs	**Form of assessment:** ● Active group discussion includes asking and answering questions ● Accuracy of task answers	concepts of algorithms ● Understand the input, process, and output of case study problems (sequence, selection, repetition)	
3	Students understand and are able to explain Data Types, Variables, Input-output, Sequences, Operators (Arithmetic Assignment, Joint Assignment, Increment, Decrement, Relational, Logic, Conditional, Bitwise, Casting) and are able to apply them in writing algorithms [C4, A3]	· Data Type · Variable · Input-Output · Sequences · Operator (Arithmetic Assignment, Concatenated Assignment, Increment, Decrement, Relational, Logical, Conditional, Bitwise and Casting	**Forms of Learning:** Online or Offline (*Online/Offline*) **Learning methods:** *Contextual Teaching and Learning (CTL), Problem Based Learning* **Assignment:** Task 3: Complete case studies on types and operators	1 x 2 x 100" Face to Face and Structured assignments. 1 x 2 x 70" Self Duty.	By studying data types and operators, students can: 1. Identify the concept of data types, variables, input-output, sequences, and operators. 2. Implement the concepts of data types, variables, input-output, sequences, and operators to solve problems / case studies.	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions ● Accuracy of task answers	● understand and be able to explain about Data Types ● understand and be able to explain about Variables ● explain and be able to explain about Input-output ● put forward and be able to explain about the Sequence ● understand and be able to describe the Operator	3.3%
4	Quiz 1	Week 1-3 Material	Theory Exam – Multiple Choice and or Essay, Closed Book nature		Able to work on exam questions with week 1-3 material independently.	Exam	Accuracy of answers with Answer Key	10%
5-6	Students are able to explain the concepts of simple and nested selection, and are able to write selection algorithms to complete case studies using flowcharts [C4, A3,P2]	Selection 1 (if, if...else, if..else if…, switch..case) Logic expression Nested selection	**Forms of Learning:** Online or Offline (*Online/Offline*) **Learning methods:** *Contextual Teaching and Learning (CTL), Problem Based Learning*	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	By studying election material 1 students can: 1. Explain the concept of selection 1 2. Implementing the concept of selection algorithm 1 to solve problems / case	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion	● Knowing about the concept of selection algorithm 1 ● Understanding the difference in the syntax of select 1 (if..else and switch case) ● The accuracy of the flowchart depiction using the selection	3.3%

			Assignment: Task 4 : Complete a case study about selection 1 by describing a flowchart Task 5 : Complete a case study on nested selection by illustrating a flowchart		studies. 3. Using logical expressions in select syntax 4. Implement the concept of a pick 2 algorithm to complete a case study	includes asking and answering questions ● Accuracy of task answers	concept 1 ● The accuracy of the selection 1 algorithm in solving problems in case studies. ● Knowing the use of logical operators in the form of logical expressions in the selection syntax ● Understand the concept of nested selection algorithms ● Accuracy of flowchart depiction to solve nested selection case studies	
7-8	Students are able to understand simple looping algorithms and nested loops, and be able to describe case study problems using flowcharts [C4, A3, P2]	· Looping Concept · Nested Loops	**Forms of Learning:** Online or Offline (*Online/Offline*) **Learning methods:** *Contextual Teaching and Learning (CTL), Problem Based Learning* **Assignment:** Task 6: Complete the case study about iteration of part 1 by illustrating the flowchart Task 7: Complete a case study about nested loops by describing a flowchart	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	By studying repetition 1 material students can: 1. Explain the concept of repetition part 1 2. Implementing the iterative algorithm concept part 1 to solve problems / case studies. 3. Explain the concept of nested loops 4. Implementing the concept of nested loop algorithms to solve problems / case studies.	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions ● Accuracy of task answers	● Understanding the looping algorithm part 1 ● Understand how to provide a simple example for the iterative form case study part 1 ● The accuracy of the description of the iterative case study problem in part 1 using a flowchart ● Understand nested loop algorithms ● Understand how to provide simple examples for case studies of nested looping forms ● The accuracy of the description of nested iteration case study problems using	10%

							flowcharts	
9	UTS	Week 1-8 Material	Theory Exam – Multiple Choice and or Essay, Closed Book nature		Able to work on exam questions with week 1-3 material independently.	Exam	Accuracy of answers with Answer Key	30%
10-11	Students are able to understand the concept of 1-dimensional and 2-dimensional arrays, and are able to complete case studies using 1-dimensional and 2-dimensional arrays	· Arrays concept · 1 Dimensional Arrays · 2D Arrays	**Forms of Learning:** Online or Offline (*Online/Offline*) **Learning methods:** *Contextual Teaching and Learning (CTL), Problem Based Learning* **Assignment:** Task 8: 1. Declares a 1-dimensional array 2. Performs simple operations on 1-dimensional arrays 3. Implementing a 1-dimensional array in the case study of searching and sorting Task 9: Complete case studies using 2-dimensional arrays	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	By studying Array 1 material students can: 1. Explain the concept of 1-dimensional arrays 2. Implementing the concept of 1-dimensional arrays to complete searching and sorting case studies 3. Explain the concept of 2-dimensional arrays 4. Implementing the 2D array concept to complete the matrix case study	**Criteria:** Precision and mastery **Form of assessment:** ● Active group discussion includes asking and answering questions ● Accuracy of task answers	● able to understand the concept of 1-dimensional arrays ● able to give examples of the use of 1-dimensional arrays ● able to solve simple searching and sorting case studies ● able to understand the concept of 2-dimensional array ● able to give examples of the use of 2-dimensional arrays ● able to complete matrix case studies and others	3.3%
12	Quiz 2	Week 10-11 Material	Theory Exam – Multiple Choice and or Essay, Closed Book nature		Able to work on exam questions with week 1-3 material independently.	Exam	Accuracy of answers with Answer Key	10%
13-14	Students are able to explain the concept of iterative and recursive functions, create / declare functions, call functions and are able to	· Function Concept · Iterative Functions	**Forms of Learning:** Online or Offline (*Online/Offline*) **Learning methods:**	2 x 2 x 100" Face to Face and Structured assignments.	By studying function 1 material students can: 1. Explain the concept of	**Criteria:** Precision and mastery	● Knowing about the concept of function 1 ● Understand function usage (parameterized function or not	3.3%

	apply them in compiling problem solving algorithms [C4, A3, P2]	· Recursive Function	*Contextual Teaching and Learning (CTL), Problem Based Learning* **Assignment:** Task 10: Complete a case study by making a flowchart in which there are functions Task 11: Complete a case study on recursive functions by creating a flowchart	2 x 2 x 70" Self Duty.	Function 1 2. Implementing the concept of function 1 in a case study 3. Explain the concept of function 2 4. Implement the recursive function concept to complete the case study	**Form of assessment:** ● Active group discussion includes asking and answering questions ● Accuracy of task answers	and function returns value/return value or not) ● The accuracy of the flowchart depiction using the function ● Understand the concept of recursive functions ● Know the difference between recursive functions and iterative functions ● Accuracy of flowchart depiction to solve recursive function case studies	
17	UAS	Week 1-14 Material	Theory Exam – Multiple Choice and or Essay, Closed Book nature		Able to work on exam questions with week 1-3 material independently.	Exam	Accuracy of answers with Answer Key	30%

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Programming Basic Practicum	**RTI221007**	Basic Informatics	3 credits / 6 hours	1	August 27, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Imam Fahrur Rozi, ST., MT. Maybe Astiningrum, ST., M.Kom. Noprianto SKom., MEng. Mamluatul Hani'ah, S.Kom., M.Kom. Ika Kusumaning Putri, S.Kom., MT Vivin Ayu Lestari, S.Pd., M.Kom Adevian Fairuz Pratama, S.ST, M.Eng Vivi Nur Wijayaningrum, S. Kom, M. Kom	Maybe Astiningrum, ST., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.

S9 Demonstrate a responsible attitude towards work in the field of expertise independently.

KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).

KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.

KU2 Able to demonstrate independent, quality and measurable performance.

	Learning Outcomes Graduates charged to courses (CPL-MK)
	Able to apply the basic concepts of programming, namely sequences, selection, looping, arrays and functions using the Java programming language ; Able to make programs according to case studies / simple problems with responsibility and promote academic values, norms and ethics .
Short Course Descriptions	This course discusses making algorithms to solve problems with efficient methods to produce flowcharts and translate algorithm texts into programming language program texts.
Learning Materials / Subjects	1. Algorithm concept 2. Algorithm Representation 3. Translator 4. Programming language 5. Data Type 6. Variable 7. Constant 8. Mark 9. Expression 10. Input-Output 11. Sequences 12. Case Analysis 13. branching 14. loop 15. Arrays 16. Functions/Procedures
References	**Main :**

	1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming , Deepublish. **Supporters:** 1. Rinaldi Munir, 2015, Algorithm and Programming, Informatics Publisher
Instructional Media	**Software :** JDK, IDEA, Microsoft Office, Adobe Reader **Hardware :** PCs/Laptops
Name of Lecturer	1. Imam Fahrur Rozi, ST., MT. 2. Maybe Astiningrum, ST., M.Kom. 3. Noprianto SKom., MEng. 4. Mamluatul Hani'ah, S.Kom., M.Kom. 5. Ika Kusumaning Putri, S.Kom., MT 6. Vivin Ayu Lestari, S.Pd., M.Kom 7. Adevian Fairuz Pratama, S.ST, M.Eng 8. Vivi Nur Wijayaningrum, S. Kom, M. Kom
Requirements Course	

Week	Planned Final Capabilities (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	able to explain about program concepts, programming languages, compilers, debugging, interpreters, able to install Java programming tools and Java basic structure	Programming language • Programming language concept	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Carry out the trial steps for installing the Java programming tools according to the jobsheet	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets	• Accuracy in installing Java programming tools • Student activity in conducting online discussions (questions and answers)	1.8 %

		• Java programming language • Compilers and debugging • Java programming tools installation	**Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 1 : Complete the java installation jobsheet		3. Able to compile and debug java program syntax 4. Students do practical assignments	• Independent task		
2	Students can model case study problems using algorithms (describing input, process, output)	Case study	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion, Problem base Learning (PBL) **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 2 : Complete the case study Jobsheet	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Carry out the experimental steps according to the jobsheet 3. Do practical assignments 4. Able to create description algorithms based on existing case studies	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• The accuracy of carrying out the experimental steps • The accuracy of answering questions on the jobsheet •	1.8 %

3	Able to apply data types, variables, input-output, sequences, and about Operators (Arithmetic Assignment, Joint Assignment, Increment, Decrement, Relational, Logic, Conditional, Bitwise, Casting) in a program code using Java	Input - output, variable, sequence	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 3 : Completing the Input - output, variable, sequence Jobsheet	1X6X50 " _	1. Conduct material review with supporting lecturers 2. Carry out the experimental steps according to the jobsheet 3. Do practical assignments 4. Able to use Data Types and variables, Input-output, operators to the Java programming language 5. Sequence problems into the Java programming language	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	• The accuracy of using Data Types and variables, Input-output, operators to the Java programming language • Sequence problems into the Java programming language • The accuracy of answering questions on the jobsheet • Student activeness in conducting online discussions (questions and answers • The accuracy of the program code and output according to the task	1.8 %
4	Material Practice Tests week 1 to 3	Quiz 1		1X6X50 " _				**10%**
5	• the if, if-else, else-if and switch-case selection forms into the Java programming language Able to write into the Java program, flowcharts that have been made at the theoretical meeting on basic selection cases	Election 1	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion, Problem base Learning (PBL) **Class activities:** Practice **Media:**	1X6X50 " _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according to the jobsheet 3. Students do practical assignments 4. Able to use election 1 (if, if-else, else-if and switch-case) in the Java programming language	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	• Accuracy of use election 1 (if, if-else, else-if and switch-case) in the Java programming language • The accuracy of answering questions on the jobsheet • Student activity in conducting online discussions (questions and answers)	1.8 %

			Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 5 : Completing Jobsheet Selection 1 according to the case study on the jobsheet (example: case study to calculate the final grade)				• The accuracy of the program code and output according to the task	
6	Students are able to write into the Java program, the flowchart that has been made at a theoretical meeting about nested selection cases	Election 2	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion, Problem base Learning (PBL) **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:**	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according to the jobsheet 3. Students do practical assignments 4. Able to use selection 2 (nested if) in the Java programming language	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	• The accuracy of using selection 2 (nested if) in the Java programming language • The accuracy of answering questions on the jobsheet • Student activity in conducting online discussions (questions and answers) • • The accuracy of the program code and output according to the task	1.8 %

			Task 6 : Completing Jobsheet Selection 2 in accordance with the given case study (example of a case study of creating a simple cashier program using nested selection)					
7	able to make the format of writing a looping program part 1 (for, while, do-while) Students are able to write Java programs based on the flowchart that was made at the theoretical meeting on the looping case part 1	Loop 1	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 7 : Completing the Jobsheet Iteration 1	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according to the jobsheet 3. Students do practical assignments 4. Able to utilize the concept of repetition	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	● Accuracy explains looping part 1 on java programming ● The accuracy of answering questions on the jobsheet ● The accuracy of the program code and output according to the task	1.8 %
8	Midterm exam			1X6X50 ” _				**25%**
9	• Be able to explain the format of writing nested loop programs *(for, while, do-while)*	Loop 2	**Form:** Online Lectures (Online) / Offline (Offline)	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according	**Criteria:** Scoring criteria rubric **Form of assessment:**	● Accuracy explains nested loops in java programming	1.8 %

	• Able to write Java programs based on flowcharts that have been made at a theoretical meeting on nested loop cases		**Method :** Discussion **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 9 : Completing the Jobsheet Iteration 2		to the jobsheet 3. Students do practical assignments	• Practicum worksheets • Independent task	• The precision of modeling basic looping case studies to Java programming • The accuracy of answering questions on the jobsheet • The accuracy of the program code and output according to the task	
10	• Able to understand the creation of 1-dimensional Arrays • Able to write implementation of 1 dimensional Array and access its elements in the Java programming language . • Able to implement searching and sorting (enrichment)	Arrays 1	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i)	1X6X50 " _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according to the jobsheet 3. Students do practical assignments 4. Able to implement 1-dimensional arrays using the Java programming language	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• The accuracy of using 1-dimensional arrays in the Java programming language • The accuracy of answering questions on the jobsheet • The accuracy of the program code and output according to the task	1.8 %

			Assignment: Task 10 : Complete Jobsheet Array 1					
11	• Students are able to understand the creation of 2-dimensional Arrays • Able to write implementation of 1 dimensional Array and access its elements in the Java programming language. Case study enrichment can be used matrix operations	Arrays 2	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion, Problem base Learning (PBL) **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 11 : Completing Jobsheet Array 2 according to the case study (case study data on height, weight and age, looking for data with the youngest age)	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according to the jobsheet 3. Students do practical assignments 4. Able to apply the concept of 2-dimensional arrays in the given case studies	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	• The accuracy of using 2-dimensional arrays in the Java programming language • The accuracy of answering questions on the jobsheet • The accuracy of the program code and output according to the task	1.8 %
12	Quiz 2			1X6X50 ” _				**10%**
13	able to implement functions (function data types, function parameters/arguments,	Function 1	**Form:** Online Lectures (Online) / Offline (Offline)	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according	**Criteria:** Scoring criteria rubric **Form of assessment:**	• The accuracy of using functions in the Java programming language	1.8 %

	returns) and function calls in Java		**Method :** Discussion **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:** Task 13 : Complete Jobsheet Function 1		to the jobsheet 3. Students do practical assignments 4. Able to use functions in the Java programming language	• Practicum worksheets • Independent task	• The accuracy of answering questions on the jobsheet • The accuracy of the program code and output according to the task	
14	able to implement recursive functions and enrichment of function cases	Function 2 (Recursive Function)	**Form:** Online Lectures (Online) / Offline (Offline) **Method :** Discussion **Class activities:** Practice **Media:** Computers and LCD projectors, or gadgets and the internet **Learning Resources:** LMS (lmsc19.polinema.ac.i) **Assignment:**	1X6X50 ” _	1. Conduct material review with supporting lecturers 2. Students carry out the experimental steps according to the jobsheet 3. Students do practical assignments 4. Able to use recursive functions in the Java programming language	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• The accuracy of using recursive functions in the Java programming language • The accuracy of answering questions on the jobsheet • Student activity in online discussions (questions and answers) • The accuracy of the program code and output according to the task	1.8 %

			Task 14 : Completing Jobsheet Function 2					
15	Able to create programs to solve problems	Meeting materials 1-14	• Independent Practice • Program Demos	1x6x50'	1. Exercises and assignments	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	• Student activity in online discussions (questions and answers) • Program code accuracy and output according to practice	1.8 %
16	Able to create programs to solve problems	Meeting materials 1-14	• Independent Practice • Program Demos	1x6x50'	1. Exercises and assignments	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	• Student activity in online discussions (questions and answers) • Program code accuracy and output according to practice	1.8 %
17	UAS		**DemoProjects**	1X6X50 ” _		**Criteria:** Scoring criteria rubric		**30%**

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
OCCUPATIONAL HEALTH AND SAFETY	RTI221008	Basic Informatics Course	2 credits / 2 hours	1	July 2, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. ANUGRAH NUR RAHMANTO 2. ASHRI SHABIRNA AFRAH, SST., MT 3. BUDI HARIJANTO, ST., M.MKOM 4. CANDRASENA SETIADI, SST., MT 5. ROKHIMATUL WAKHIDA, S.PD., MT 6. SATRIO BINUSA S, SS, MPD	ATIQAH NURUL ASRI, S.PD., M.PD.	IMAM FAHRUR ROZI, ST., MT

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.
PP5 Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates assigned to courses (CPL-MK)

Mastering the knowledge of the principles of occupational safety and health (K3); Able to implement good and quality theories, concepts and principles of occupational safety and health (K3) in order to improve the health status of workers by taking into account values, norms and ethics.

Short Course Description	Students know the legislation that forms the basis of all policies related to Occupational Health and Safety. Students understand the scope of health; work environment; work safety; employment insurance and work organizations that are part of a labor system.
Learning Materials/subject matter	1. K3 concept; History of occupational health and safety, Definition of K3, Objectives of K3 2. K3 Law; the law that underlies K3, Government Regulations 3. Public health; basic regulations, Health check before work, Check after work 4. Work environment; Physical and non-physical work environment 5. Work safety; influencing factors, sources of danger, prevention of work accidents 6. Work safety tools 7. K3 organization; goals and objectives of the organization and organizational goals K3 8. Insurance; basic principles, types and insurance claims 9. BPJS
References	**Main :** 1. Budi Harijanto, K3 teaching module, 2012 2. Law no. 1 of 1970 concerning work safety 3. Law no.13 of 2003 concerning employment 4. Law no.3 of 1992 (Social security for workers) 5. PP no. 33 of 1977 **Supporters:** 1. Tresnaningsih, Erna (2008). Occupational Health and Safety. Secretary General of the Indonesian Ministry of Health. Available from; http://www.depkes.go.id. accessed on March 2008.

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Instructional Media	**Software :**	**Hardware :**
		Notebooks & LCD Projectors
Name of Lecturer	1. BUDI HARIJANTO, ST., M.MKOM 2. SATRIO BINUSA S, SS, MPD 3. ASHRI SHABIRNA AFRAH, SST., MT 4. CANDRASENA SETIADI, SST., MT 5. ROKHIMATUL WAKHIDA, S.PD., MT	
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	● Students know the history of OSH development in Indonesia, and are able to explain why K3 needs to be studied by	OSH definition, history of OSH, objectives of OSH, meaning of OSH symbol	● **Shape** : Online Lectures ● **Method** :	3 X 50”	• Understand, about the K3 symbol and the meaning of the symbol,	**Criteria** : Grading criteria rubric **Non-test form** :	● Accuracy in explaining the history of K3;	1.5%

	a student.		group discussion		know the history and purpose of K3 **(Task-1)**	● Task report	● Accuracy in explaining the meaning of K3 ● Systematics and form of task reports	
2	● Students know the legal basis for employment in Indonesia, and are able to explain the policies that underlie employment in Indonesia from each President, are also able to explain the link between employment policies and occupational health and safety (K3).	K3 Legal Basis During Past and Present Governments	**Form:** Online Lectures **Method:** Inquiry	3 X 50”	• Understand the laws and legal basis of K3. **(Task-2)**	**Criteria** : Accuracy, suitability and systematics **Non-test form** : ● K3 Legal Basis Task Report;	● Accurate understanding of the legal basis of K3	1.5%
3	● Students know the legal basis for Health Requirements for the Work Environment, and understand what is meant by the Physical Work Environment.	● Physical work environment Which consists of direct and intermediary physical work environment	**Form:** Online Lectures **Method:** Contextual Learning	3 X 50”	Make animated slides related to the topic of discussion (work environment) **(Task-3)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● Make animated slides about the work environment in K3	● Accurate understanding of the physical and non-physical work environment	1.5%
4	QUIZ	QUIZ	**Form:**	3 X 50”	QUIZ	QUIZ	QUIZ	10%

			Online Quiz **Method:** Writing test					
5	● Students know the legal basis for the requirements for Occupational Health, and understand what is meant by a Non-Physical Work Environment.	Employee Relations at Work and outside the Workplace	**Form:** Online Lectures **Method:** Collaborative Learning	3 X 50”	Make animated slides related to the topic of discussion (work environment) **(Task-4)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● Make animated slides about the work environment in K3	● Accurate understanding of the physical and non-physical work environment	1.5%
6	● Students know the factors that affect work safety, Hazard Sources that Potentially Cause Work Accidents, Prevention of work accidents and know work safety equipment.	Hazard Sources and Work Accident Prevention	**Form:** Online Lectures **Method:** Role-Play and Simulation	3 X 50”	Demonstrating several First Treatment efforts at Work Accidents **(Task-5)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● suitability for the role	● Accurate understanding of work safety in K3	1.5%
7	● Students know the factors that affect work safety, Hazard Sources that Potentially Cause Work Accidents, Prevention of work accidents and know work safety equipment.	Factors Affecting K3	**Form:** Online Lectures **Method:** Role-play and simulation	3 X 50”	Demonstrating several First Treatment efforts at Work Accidents **(Task-6)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● suitability for the role	● Accurate understanding of work safety in K3	1.5%

8	UTS	UTS	**Form:** UTS Online **Method:** Written Exam	3 X 50”	UTS	UTS	UTS	20%
9	● Students know the legal basis for implementing occupational health for workers, as well as the benefits of pre-employment health checks and post-work health checks	OSH Setting Basics	**Form:** Online Lectures **Method:** Discovery Learning	3 X 50”	Write a paper related to public health **(Assignment-7)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● Paper assignment report	● Accurate understanding of occupational health in K3	1.5%
10	● Students know the legal basis for implementing occupational health for workers, as well as the benefits of pre-employment health checks and post-work health checks	Pre-work Health Examination and After Work Examination	**Form:** Online Lectures **Method:** group discussion	3 X 50”	Write a paper related to public health **(Assignment-8)**	**Criteria** : Accuracy, suitability with the material discussed **Non-test form** : ● Paper assignment report	● Accurate understanding of occupational health in K3 ● [0	1.5%
11	● Students know what safety equipment must be used at work	Work Safety Tools	**Form:** Online Lectures **Method:** Collaborative Learning	3 X 50”	Make animated slides related to personal protective	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** :	● Accurate understanding of work safety equipment	1.5%

					equipment **(Task-9)**	● Work safety equipment animation slides		
12	Quiz II	Evaluation	**Form :** Online Quiz **Method:** Written Exam	3 X 50”	Quiz II	Quiz II	Quiz II	10%
13	● Students know what safety equipment must be used at work	OSH Organizational Definition and Objectives	**Form:** Online Lectures **Method:** Collaborative Learning	3 X 50”	Make animated slides related to personal protective equipment **(Task-10)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● Work safety equipment animation slides	● Accurate understanding of work safety equipment	1.5%
14	● Students know the intent and purpose of establishing OSH organizations in Indonesia, and are able to explain the organizational structure of OSH and its duties and functions.	OSH Organizational Structures	**Form:** Online Lectures **Method:** Cooperative Learning	3 X 50”	Explaining the OSH organizational structure along with the main tasks and functions of each **(Task 11)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● suitability for reporting	● Accurate understanding of the K3 organizational structure	1.5%
15	● Students know the Legal Basis of Insurance in Indonesia, and are able to explain	Basic Principles, Types, and Insurance Claims	**Form:** Online Lectures **Method:**	3 X 50”	Make a paper related to insurance which includes the types of	**Criteria** : Accuracy, conformity with the material discussed	● Accurate understanding of Insurance	1.5%

	the function of insurance, types of insurance and know insurance claim procedures		Contextual Learning		insurance and how the procedure for insurance claims **(Assignment 12)**	**Non-test form** : ● suitability for reporting		
16	● Students know about BPJS	Rights, Obligations, and Benefits for BPJS Participants	**Form:** Online Lectures **Method:** Inquiry	3 X 50”	Make papers related to BPJS **(Task 13)**	**Criteria** : Accuracy, conformity with the material discussed **Non-test form** : ● suitability for reporting	● Accurate understanding of BPJS	1.5%
17	**Final exams**	Evaluation	**Form :** Online Test **Method:** Written Exam	UAS	UAS	**UAS**	UAS	40%

Semester 2

1. Religion

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Religion	**RTI222001**	Basic Informatics	2 credits/ 3 hours	2	16 FEBRUARY 2017
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Sri Nur Kudri, Dra., M.Pd.		Ahmad Bahaudin Almufaro, M.Pd.I	Ir. Deddy Kusbianto PA., MMKom.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	Mastering the concepts of faith and piety, knowledge and noble character and making Islamic teachings the basis for thinking and behaving in professional development.				
	Learning Outcomes Graduates charged to courses (CPL-MK)				
	After the end of Islamic religious studies, polytechnic students will be able to implement Islamic values in campus, nation and state life.				
Short Course Descriptions	Lectures on Islamic Religion at the Polytechnic of Brawijaya University emphasize and present Islamic teachings that are related to the realities of everyday life. This has implications for substantive and contemporary Islamic studies on the integrity of Islam as the Religion of Rahmatan Lil Alamin, and also attempts to remove the impression of a dichotomous Islamic understanding such as regarding the world and the hereafter, work and worship, thought and dhikr. Religion lecture material broadly covers three areas of issues, namely around the Issues of God (Aqidah/Tawhid), Humans and the Universe and their implications. Lecture materials start from the human need for religion, monotheism, humans, the universe, science, self-purification, Islam and development and ends with the formation of a Sakinah Family (marriage).				
Learning Materials / Subjects	Religion as a human need, Islam and openness of understanding, Islam as a religion of mercy, the concept of divinity in Islam, the concept of humanity in Islam, the embodiment of civil society, family and marhamah society				

References	**Main :** 1. Fadloli, Sri Nurkudri, and Abdul Chalim, 2013, Islamic Religious Education, Teaching Module, Polynema, Malang. 2. Al-Qur'an and its Translation, Jakarta, Ministry of Religion. **Supporters:** 1. Chaney, David (ed.Idi Subandy Ibrahim), 2005, Life styles A Comprehensive introduction, Jalasutra, Jogjakarta. 2. Hossein Nasr, Sayyed, 2003, The Heart Of Islam, Islam's Universal Messages for Humanity (trans. Nurasiah Faqih), Mizan, Bandung.
Instructional Media	**Software :** / **Hardware :** Projector
Name of Lecturer	
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	After studying Islam on this subject, students will be able to explain the importance of religion for humans well	– Religion Human Needs – The Future of Religion – Religion in the Modern Era – New Hope of	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	Able to create static web pages using bootstrap	1.5%

		Religion						
2-3	After studying Islam on this subject, students will be able to explain the true nature of Islam	– Religion and Islam concept – Dimensions of Islamic Teachings – Sources of Islamic Teachings – Methods of Understanding Islam – Islamic Religious Goals – Society and Plurality in Islam	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	● Able to create static web pages using bootstrap ● Able to link static pages with controllers	1.5%
4	After studying Islamic religion on this subject, students will be able to analyze the Tawhid sentence correctly	– Monotheism of Human Needs – Human Problems: Shirk – How to Instill Aqidah – The meaning of Tawhid	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	● Able to create models and configure databases ● Able to display data on web pages	1.5%

		– Proof of True Tawheed – Impact of Tawhid						
5	QUIZ	– QUIZ	QUIZ	3 X 45”	QUIZ	QUIZ	● QUIZ	1.5%
6-7	After studying Islamic religion on this subject, students will be able to emulate the character of the apostle's struggle well	– The Meaning of the Apostle's Struggle – Actualization of the Apostle's Mission – Prophet's Attributes Application ○ Civil society and the ethics of Islamic society	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	QUIZ	1.5%
8	After studying Islamic religion on this subject, students will be able to explain the nature of the mission of human life in Islam properly	– Humans in Islam – The Essence of Life in the World and the Hereafter – Human Function	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	Able to create simple CRUD applications using CodeIgniter	15%

		– Actualization of Destiny						
9	UTS	– UTS	UTS	3 X 45”	UTS	UTS	UTS	1.5%
10-11	After studying Islamic religion on this subject, students will be able to show the relationship about the unity of the Qauliyah and Kauniyah verses in Islam correctly	– The Nature of the Inner Universe – Islam – The Meaning And And Nature Of Sunnatullah – How to Understand Sunnatullah – Benefits of the Universe	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	Able to add validation features to CRUD applications that have been made before	1.5%
12-13	After studying Islam on this subject, students will be able to explain the nature of knowledge in true Islam	– The Essence of Knowledge in Islam – Knowledge Resources – Development of Ijtihad – Dhikr And Thought	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	● Able to install the datagrid library ● Able to create simple CRUD applications using datagrid	1.5%

		Pattern Application						
14-15	After Lectures on Islamic religion on this subject, students will be able to explain the importance of building spiritual intelligence in Islam well	– How to Purify Yourself – The Meaning and Essence of Prayer – Fasting, Zakat, Hajj, Dhikr And – Prayer – Sufism And Social Harmony	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	Able to add filtering and pagination features to applications that have been made in the previous meeting	1.5%
16	After studying Islam in this subject, students will be able to mention Islamic values in development properly	– Internal Work Ethic, Islam – Work Motivation in Islam – Property and Wealth Functions – Actualization of Jihad in Development – Islamic economics – Islamic Politics	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	UTS	20%

17	After studying Islamic religion on this subject, students will be able to explain the mechanism of the process of forming and fostering a Sakinah family properly	– Inner Family Functions – Islam – Formation Process – Sakinah Family (Marriage) – Problems And Dynamics – Islamic Society – The Mosque As The Center Of Civilization	Lectures and discussions	3 X 45”	Exercises and assignments	Task completion	Able to create applications that have login and logout processes and limit access to certain data.	1.5%
18	UAS	– UAS	UAS	3 X 45”	UAS	UAS	UAS	1.5%

2. Mathematics 2

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
MATHEMATICS 1	RTI222002	Basic Informatics	2 credits/ 4 hours	2	February 25, 2022

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Drs. Rawansyah, M.Pd. 2. Deasy Sandhya Elya, S.Si., M.Si.	Deasy Sandhya Elya, S.Si., M.Si.	Priest Fahrur Rozi, ST., MT.

Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**
	Learning Outcomes Graduates charged to courses (CPL-MK) Mastering the concepts of sets, relations, functions, matrices (definition, notation, operations, transpose, determinants, inverses of 2x2 and 3x3 matrices), solving systems of linear equations and solving non-linear equations.
Short Course Descriptions	Mathematics 2 is the basic material for advanced mathematics from Mathematics 1 which is expected to be able to support and facilitate learning and learning programming.
Learning Materials / Subjects	Sets, Relations, Functions, Matrices (Definitions, Notations, Operations, Transposes, Determinants, Inverses of 2x2 and 3x3 matrices), Solving Systems of Linear Equations and Solving Non-Linear Equations.
References	**Main :** Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 **Supporters:**

	Munir, Rinaldi, "Discrete Mathematics Ed. 5th Revision", Informatics Bandung, 2012.	
Instructional Media	**Software :**	**Hardware :**
	-	Computer
Name of Lecturer	1. Drs. Rawansyah, M.Pd. 2. Deasy Sandhya Elya, S.Si., M.Si.	
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Students are able to understand the concept of the type of set	Definition of Sets, Presentation of Sets, Types of Sets	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:**	6 x 50"	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	2%

			Assignments : Do practice questions related to Logic (3x50') *Offline*					
2	Students are able to understand the concept of the type of set	Set Operations (Incision, Union, Difference, Complement, Symmetrical Difference and Composition)	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment: Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50"	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

3	Students are able to understand the concept of Relations	The definition of a relation, the relation symbol, defines the result area of the relation	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%
4	Students are able to understand the concept of function	function result area , relation and function differences	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			- Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment: Assignments** : Do practice questions related to Logic (3x50') *Offline*		related to the material.			
5	Quiz 1	- Material 1 to 4	Online written exam	6 x 50”	Answer questions correctly	- Answer accuracy	Quiz 1	7.5%
6	Students are able to understand the concept of the Matrix	Definition of Matrix, Matrix Notation, Same Matrix	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Learning methods: *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*					
7	Students are able to understand the concept of the Matrix	Matrix Addition and Subtraction, Matrix Multiplication, Matrix Transpose	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:**	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Assignments : Do practice questions related to Logic (3x50') *Offline*					
8	Students are able to understand the concept of the Matrix	determinant property, 2x2 matrix determinant, 2x2 matrix inverse	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment: Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

9	UTS	- Material from meeting 1 to 8	Online written exam	6 x 50”	Answer Questions Correctly	- Answer accuracy	UTS	30%
10	Students are able to understand the concept of the Matrix	Determinant with cofactors for a 3x3 Matrix	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%
11	Students are able to understand the concept of the Matrix	inverse matrix 3x3	**Form :** Studying - Online (*Online*)	6 x 50”	By studying and understanding the existing material, students are expected to be	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation	Able to work on exercises systematically related	1.5%

			(1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*		able to understand and work on questions related to the material.	● Written test, about solving case studies	to the material presented.	
12	Students are able to understand the concept of solving systems of linear equations using the Gauss Seidel method	Gauss Seidel Method Algorithm	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Learning methods: *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*					
13	Students are able to understand the concept of solving systems of linear equations using the Gaussian method	Gaussian Method Algorithm	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:**	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			Assignments : Do practice questions related to Logic (3x50') *Offline*					
14	Quiz	- Material from meeting 9 to 12	Online written exam	6 x 50”	Answer questions correctly	- Accuracy of explanation - Oral questions - Task	Quiz	7.5%
15	Students are able to understand the concept of solving systems of linear equations using the Gauss-Jordan method	Gauss- Jordan Method Algorithm	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%

			questions related to Logic (3x50') *Offline*					
16	Students are able to understand the concept of solving non-linear equations	Table and Bisection Methods	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignments** : Do practice questions related to Logic (3x50') *Offline*	6 x 50”	By studying and understanding the existing material, students are expected to be able to understand and work on questions related to the material.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work on exercises systematically related to the material presented.	1.5%
17	UAS	- Material from meeting 1 to 16	Online exams	6 x 50”	Able to do the questions well	- Answer accuracy	UAS	35%

3. English 2

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
ENGLISH 2	RTI222003	Basic Informatics	2 credits/ 3 hours	2	19 February 2018

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Atiqah Nurul Asri, S.Pd, M.Pd Farida Ulfa, S.Pd, M.Pd Satrio Binusa S., SS, M.Pd	Atiqah Nurul Asri, S.Pd, M.Pd	Ir. Deddy Kusbianto PA., MMKom.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

Special Skills:

1. Mastering knowledge of oral and written communication techniques using national and international languages.
2. Able to communicate using international languages orally and in writing.

Learning Outcomes Graduates charged to courses (CPL-MK)

1. Mastering knowledge of spoken and written communication techniques using English in **the context of Informatics Engineering** .
2. Able to communicate using English orally and in writing **in the context of Informatics Engineering** .

Short Course Descriptions

The name of this course is *Informatics English* 2 taught to students of the Informatics Engineering Study Program which is focused on training their abilities and skills in *Listening, Speaking, Reading* , and *Writing* in an integrated manner in **the context of Informatics Engineering** . So **the topics in this material** adapted to the context of the field of Informatics that can be applied in everyday life and in the world of work in the future. The methods used during the teaching and learning process include lectures, discussions, *role plays* , presentations, debates, and individual and group projects.

Learning Materials / Subjects	1. **Topic 1** : Programming 1.1. Stages in Programming 1.2. Flowcharting 1.3. ProgrammingLanguage **1.4. Grammar Study: Describing objects and their functions, Describing Process, and Reporting Screen Messages.** 2. **Topic 2:** Databases 2.1 Database Basics **2.2 Grammar Study: Expressing Certainty, Using If-Clause** 2.3 Data Processing 2.4 Data Storage and Backup 3. **Topic 3:** Computer Security 3.1 Computer Threats **3.2 Grammar Study: Simple Past Tense** 3.3 Computer Crime **3.4 Grammar Study: Analyzing Problems and Their Solutions, and Writing Short Reports** 4. **Topic 4:** Electronic Publishing 4.1 Electronic Publishing **4.2 Grammar Study: Expressing Agreement/Disagreement, The Infinitives** 5. **Topic 5:** E-Commerce 5.1 E-commerce Types 5.2 E-commerce Features

	5.3 Grammar Study: Adverbs of Quantities, Linking Words (and, so, or, but) 5.4 Online Transactions 5.5 Transaction Security 6. **Topic 6:** Recent Developments on Information Technology 6.1 Current Changes in Interactions 6.2 Recent Developments in Computing **6.3 Grammar Study: Future Tense, Making a Summary of an Article**
References	**Main :** Asri, Atiqah Nurul. 2018. *English for Informatics 2* : Fourth Edition. The module has not been published yet. **Supporters:** 1. Esteras, Santiago Remacha. (2010). *Infotech English for Computer Users Workbook* . Cambridge: Cambridge University Press. 2. Esteras, Santiago Remacha. (2011). *Infotech English for Computer Users Student's Book* . Cambridge: Cambridge University Press. 3. Glendinning, Eric H and McEwan, John. (2012). *Basic English for Computing Revised and Updated* . Oxford: Oxford University Press. 4. Hills, David. (2012). *English for Information Technology Vocational English Course Book 2* . Essex: Pearson Education Limited. 5. Olejniczak, Maja. (2011). *English for Information Technology 1 Vocational English Course Book* . Essex: Pearson Education Limited.
Instructional Media	**Software :** / **Hardware :** Computers, LCD Projectors, Audio and Video Files, and Speakers
Name of Lecturer	1. Atiqah Nurul Asri, S.Pd, M.Pd 2. Farida Ulfa, S.Pd, M.Pd 3. Satrio Binusa S., SS, M.Pd
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1-3	▪ Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Programming*** .	1. **Topic 1** : Programming 1.1. Stages in Programming 1.2. Flowcharting 1.3. ProgrammingLanguage. **1.4. Grammar Study** : **Describing objects and their functions, Describing Process, and Reporting Screen Messages.**	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion • Case study • Presentation	9 x 45 minutes	By using English students can: ▪ identify and sequence the steps in programming. ▪ read and understand snippets of online magazine articles about an interview about the steps for making a program. ▪ identify implied and explicit information in the reading above by answering the questions reading above. ▪ Complete the sentences with the words provided by referring to the information in the text above. ▪ identify, mention, and explain the symbols used in *flowcharts* and their functions. ▪ read, understand, and re-explain the contents of the reading about *the Flowchart.*	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: presentations and case studies • writing test	Accuracy and mastery of student communication using English in: ▪ identify and sequence the steps in programming. ▪ read and understand snippets of online magazine articles about an interview about the steps for making a program. ▪ identify implied and explicit information in the reading above by answering the questions reading above. ▪ Complete the sentences with the words provided by referring to the information in the text above. ▪ identify, mention, and explain the symbols used in *flowcharts* and their functions. ▪ read, understand, and re-explain the contents of the reading about *the Flowchart.* ▪ identify the main idea of the reading.	10%

					▪ identify the main idea of the reading. ▪ identify true or false sentences based on the information in the text. ▪ identify implicit and explicit information in the text. ▪ complete a *flowchart* about a person's activities based on the information in a paragraph . ▪ make *a flowchart* according to the given situation, write down the explanation, and present it in front of the class. ▪ identify or find words related to *programming* contained in the alphabet. ▪ read, understand, mention, and explain programming languages in reading *Computing Languages* . ▪ know, understand, and use the words/phrases/sentences used in: describing objects and their functions, describing a process, and reporting back *screen messages* .		▪ identify true or false sentences based on the information in the text. ▪ identify implicit and explicit information in the text. ▪ complete a *flowchart* about a person's activities based on the information in a paragraph. ▪ make *a flowchart* according to the given situation, write down the explanation, and present it in front of the class. ▪ identify or find words related to *programming* contained in the alphabet. ▪ read, understand, mention, and explain programming languages in reading *Computing Languages* . ▪ know, understand, and use the words/phrases/sentences used in: describing objects and their functions, describing a process, and reporting back *screen messages* .	

4-6	• Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Database.***	2. **Topic 2** : Databases 2.1. Database Basics 2.2. **Grammar Study: Expressing Certainty , U sing If-Clause** 2.3. Data Processing 2.4. Data Storage and Backup	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion • Case study • Presentation	6 x 45 minutes	By using English students can: • *database* terms . • Mention *the fields* and *records* contained in a *database* according to the case given. • read, understand, and look up data in a table. • read, understand, and retell *Search content* . • determine *the selection rules* to search for a data in *the database* according to the case given. • identify, describe, and exemplify *wildcard characters* . • know, understand, and use the words/phrases/sentences used in: expressing possibilities. • know, understand, and use *the if clause* in a sentence. • identify, mention, and explain the steps in *data processing* based on *the audio file* heard. • identify, enumerate, and describe *data storage and back up* . • complete the contents of the reading *Data*	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: presentations and case studies • writing test	Accuracy and mastery of student communication using English in: • *database* terms . • Mention *the fields* and *records* contained in a *database* according to the case given. • read, understand, and look up data in a table. • read, understand, and retell *Search content* . • identify, describe, and exemplify *wildcard characters* . • know, understand, and use the words/phrases/sentences used in: expressing possibilities. • know, understand, and use *the if clause* in a sentence. • identify, mention, and explain the steps in *data processing* based on *the audio file* heard. • identify, enumerate, and describe *data storage and back up* . • complete the contents of the reading *Data Storage* with the words provided. • hear and understand conversations about	10%

					Storage with the words provided. • hear and understand conversations about *Data Storage* and identify true or false sentences.		*Data Storage* and identify true or false sentences.	
7-8	• Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Computer Security*.**	3. **Topic 3** : Computer Security 3.1. Computer Threats **3.2. Grammar Study : Simple Past Tense.** 3.3. Computer Crime s 3.4. **Grammar Study : Analyzing Problems and Their Solutions, and Writing Short Reports**	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion • Case study • Presentation	6 x 45 minutes	By using English students can: • mention and explain the kinds of *computer threats* , solutions, and prevention. • identify the words in the box and match them with descriptions of *computer threats* . • identify and match phrases about solutions to face *computer threats* and their goals. • hear and understand conversations about *computer threats* and answer questions. • know, understand, and use *Simple Past Tense* in sentences. • asking students to retell their experiences related to *computer threats* and the solutions carried out using *the Simple Past Tense* .	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: presentations and case studies • writing test	Accuracy and mastery of student communication using English in: • mention and explain the kinds of *computer threats* , solutions, and prevention. • identify the words in the box and match them with descriptions of *computer threats* . • identify and match phrases about solutions to face *computer threats* and their goals. • hear and understand conversations about *computer threats* and answer questions. • know, understand, and use *Simple Past Tense* in sentences. • recounted his experiences related to *computer threats* and the solutions carried out using *the Simple Past Tense* .	10%

					• identify, mention, and explain the various types *of computer crime* . • read, understand, and retell the contents of news snippets about *computer crime* and answer questions. • watch and understand the contents of *the Hackers Outlaws and Angels video* and identify and mention the types *of hackers* and their differences by filling in the table provided. • search for a news article about *computer crime* in Indonesia, identify some of the points given, analyze it, write a summary, and present it in front of the class.		• identify, mention, and explain the various types *of computer crime* . • read, understand, and retell the contents of news snippets about *computer crime* and answer questions. • watch and understand the contents of *the Hackers Outlaws and Angels video* and identify and mention the types of *hackers* and their differences by filling in the table provided. • search for a news article about *computer crime* in Indonesia, identify some of the points given, analyze it, write a summary, and present it in front of the class.	
9	**Midterm exam**							20%
10-11	- Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with**	4. **Topic 4:** Electronic Publishing 4.1 Electronic Publishing **4.2 Grammar Study: Expressing Agreement/Disagreement, The Infinitives**	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion	6 x 45 minutes	By using English students can: • State and explain the meaning of *electronic publishing* . • mention and explain the things that are considered in making *electronic publishing* .	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: presentations and case studies • writing test	Accuracy and mastery of student communication using English in: • State and explain the meaning of *electronic publishing* . • mention and explain the things that are	10%

	the topic of *Electronic Publishing.*		• Case study • Presentation		• distinguish and explain *electronic publishing* and *paper based publishing* and determine which one is more effective for electronic publication in a given case. • read, understand, and identify the opinions of several people regarding *electronic publishing* in the reading by completing the table provided. • expressed his opinion regarding *electronic publishing* and *paper based publishing* . • mention and explain the features of an *electronic book reader* . • mention, explain, and analyze the differences between the two *electronic book readers* . • designing an *electronic book reader* and presenting it in front of the class. • read, understand, and identify the opinions of several people regarding *e-publishing* in the reading by		considered in making *electronic publishing* . • distinguish and explain *electronic publishing* and *paper based publishing* and determine which one is more effective for electronic publication in a given case. • read, understand, and identify the opinions of several people regarding *electronic publishing* in the reading by completing the table provided. • expressed his opinion regarding *electronic publishing* and *paper based publishing* . • mention and explain the features of an *electronic book reader* . • mention, explain, and analyze the differences between the two *electronic book readers.* • designing an *electronic book reader* and presenting it in front of the class. • know, understand, and use the words/phrases/sentences used in expressing	

					completing the table provided. • expressed his opinion regarding *e-publishing* and *paper based publishing* . • know, understand, and use the words/phrases/sentences used in expressing opinions (agree or disagree) in a given case. • know, understand, and use *Infinitives* .		opinions (agree or disagree) in a given case. • know, understand, and use *Infinitives* .	
12-14	• Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *E-commerce***	5. **Topic 5:** E-Commerce 5.1 E-commerce Types 5.2 E-commerce Features **5.3 Grammar Study: Adverbs of Quantities, Linking Words (and, so, or, but)** 5.4 Online Transactions 5.5 Transaction Security	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion • Case study • Presentation	6 x 45 minutes	By using English students can: • mention and explain the meaning of *e-commerce* and *online shopping* and their differences. • share experiences related to *online shopping* . • listen, understand the contents of a conversation about *online shopping* , and identify true or false sentences. • mention, sort, and explain how to purchase *online shopping* based on the cases given.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: presentations and case studies • writing test	Accuracy and mastery of student communication using English in: • mention and explain the meaning of *e-commerce* and *online shopping* and their differences. • share experiences related to *online shopping* . • listen, understand the contents of a conversation about *online shopping* , and identify true or false sentences. • mention, sort, and explain how to purchase *online shopping* based on the cases given.	5%

					• identify, mention, and explain the types of business by completing the tables provided. • listen, understand, and complete a conversation about *e-commerce* with the words provided while listening to the audio file. • read, understand, and re-explain *Internet Shopping: the Inside Story passage* and answer questions. • State and explain the criteria for a good e-*commerce/online shop website.* • mention and explain the features that must exist on an *e-commerce/online shop website* . • analyze an *e-commerce/online shop website* and present it in front of the class. • understand and make sentences using *adverbs of quantity* . • understand and combine sentences by using *the linking words and, but, or,* and *so* .		• identify, mention, and explain the types of *e-commerce* by completing the tables provided. • listen, understand, and complete a conversation about *e-commerce* with the words provided while listening to the audio file. • read, understand, and re-explain *Internet Shopping: the Inside Story passage* and answer questions. • State and explain the criteria for a good e-*commerce/online shop website.* • mention and explain the features that must exist on an *e-commerce/online shop website* . • analyze an *e-commerce/online shop website* and present it in front of the class. • understand and make sentences using *adverbs of quantity* . • understand and combine sentences by using *the linking words and, but, or,* and *so* .	

					• read, understand, and explain an email about *online security* and answer the questions.		• read, understand, and explain an email about *online security* and answer the questions.	
15-17	• Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Recent Development in IT.***	6. **Topic 6:** Recent Developments on Information Technology 6.1 Current Changes in Interactions 6.2 Recent Developments in Computing **6.3 Grammar Study: Future Tense, Making a Summary of an Article**	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion • Case study • Presentation	6 x 45 minutes	By using English students can: • mention and explain the difference between the way of communication now and in the past. • mention and explain the online communication applications that are often used and the reasons. • identify, name, and exemplify, and differentiate *enterprise social media websites* . • listen, understand an explanation about *the enterprise social media website* and complete the table provided. • read, understand, and re-explain the 3 readings of *Smart cards, Robotics* , and *Virtual Reality* and complete the table given. • understand and use *the Future Tense* in sentences.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: presentations and case studies • writing test	Accuracy and mastery of student communication using English in: • mention and explain the difference between the way of communication now and in the past. • mention and explain the online communication applications that are often used and the reasons. • identify, name, and exemplify, and differentiate *enterprise social media websites* . • listen, understand an explanation about *the enterprise social media website* and complete the table provided. • read, understand, and re-explain the 3 readings of *Smart cards, Robotics* , and *Virtual Reality* and complete the table given. • understand and use *the Future Tense* in sentences.	10%

					• understand and make *a summary* of a journal article and present it in front of the class.		• understand and make *a summary* of a journal article and present it in front of the class.	
18	**Final exams**							25%
19	Remedy							

4. Operating system

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 BUSINESS INFORMATION SYSTEM**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits) / hour**	**SEMESTER**	**DATE. PREPARATION**
Operating system	**RTI222004**	Informatics Engineering	2 credits/ 6 hours	1	
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Annisa Taufika Firdausi, ST., MT. **Meyti Eka Apriyani, ST., MT.**			Hendra Pradipta, SE., M.Cs.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	S3 - Contribute to improving the quality of life in society, nation, state, and the advancement of civilization based on Pancasila S9 - shows a responsible attitude towards work in the field of expertise independently; P7 - supervision and evaluation of the completion of work assigned to workers under their responsibility P8 - Able to carry out the process of self-evaluation of work groups under his responsibility, and able to manage learning independently				

	KU - Mastering theoretical concepts in the field of Business Information Systems knowledge in general and theoretical concepts in the field of Multiplatform System Development or E-Business in depth, and able to formulate procedural problem solving
	Learning Outcomes Graduates charged to courses (CPL-MK) • Able to explain the basic concepts of operating systems • Able to operate commands on the Linux operating system • Able to make input/output processes on Linux • Able to make file operations • Able to understand process and process management • Able to operate file programming • Able to understand about the flow of memory
Short Course Descriptions	In the Operating Systems course, we will discuss the Basic Concepts of Operating Systems, Processes, Scheduling, Synchronization, Memory and Secondary Storage in the Linux operating system.
Learning Materials / Subjects	**Basic Concepts of Operating Systems, Processes, Scheduling, Synchronization, Memory, I/O** **LEARNING METHODS:** 1. Lectures / Expert Lectures, 2. Problem Based Learning/FGD 3. Project Based Learning 4. Self-Learning (V-Class) 5. Group discussion 6. Case method
References	**Main :** 1. MDGR, Introduction to Computer Operating Systems, 2006

		Supporters:						
Instructional Media		**Software :**	**Hardware :**					
		SOFTWARE : OS – WINDOWS & Linux , Web Browser , text editor (Notepad++)	Personal Computer, Internet Connection					
Name of Lecturer								
Requirements Course		-						
M in g gu Ke	**Planned Final Capability (Sub- CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estimated time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Rating Weight (%)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	Students know the basic concepts of operating systems	• Operating System Components • Alternative Viewpoints • Operating System Structure • Java Virtual Machine • GNU/Linux systems	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying the basic material students can understand the basic concepts of operating systems	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● An assessment case study of OS specifications that will be used in accordance with the SO structure	- Able to install VMWare on SO - Able to install Linux operating system	*2.3%*

2	Students are able to operate basic Linux commands	Linux operating system basic commands	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning *at* lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying basic programming material students can understand Processes and Threads in operating systems	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• Ability to explain the concept of Process • Ability to explain the concept of a thread	***2.3%***
3	Students are able to make input output operations on Linux	Input-output operations	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying the basic material of programming students can understand Scheduling on the LInux operating system	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• Ability to explain the Concept of Scheduling • Ability to explain Scheduling Algorithms	***2.3%***

4	Students are able to make file operations and Linux directory structures	File operations and directory structure	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying the basic material of programming students can understand processes and synchronization	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• Ability to explain the concept of interaction • Ability to explain synchronization • Ability to describe sync devices 1	***2.3%***
5	Quiz 1		Quiz 1	Quiz 1	Quiz 1	Quiz 1	Quiz 1	***10%***
6	Students are able to understand processes and process management on Linux	Process and process management	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	the basic material of programming students can further understand the process and synchronization	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• Ability to explain the concept of synchronization 2 • ability to explain deadlock processes • Ability to explain Graph diagrams • ability to explain Bounded Buffer • ability to explain Readers/Writers • ability to explain Two Way Sync	***2.3%***
7	Students are able to work with the Bash shell	Works with bash shells	**Form :** Lectures , practicum	- 2 x 50" Face to Face (Offline)	By studying basic programming material students can understand the	**Criteria :** Scoring criteria rubric	• Ability to explain memory management • Ability to explain memory allocation	***2.3%***

			Learning methods: *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 4 x 50" Practicum Jobsheet, Structured Assignments	memory process on the Linux operating system	**Form of assessment:** ● Practicum Report ● Valuation case study about	• ability to explain segmentation	
8	Students are able to operate shell programming	Shell programming	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying basic programming material, students can understand advanced memory processes on the Linux operating system	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• ability to explain the concept of virtual memory • ability to explain the concept of process page requests • ability to explain the concept of frame allocation strategy • ability to explain the concept of linux memory	***2.3%***
9	UTS	UTS	**Form :** Evaluation **Learning methods:** *Problem Base Learning (PBL)* **Learning Resources:**	UTS	UTS	UTS	UTS	***25%***

			E-learning lms.polinema.ac.id					
10	Students can understand about Unix system calls and memory management	Unix System calls and memory management	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying the basic material of programming students can understand about secondary storage	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• Ability to understand the file system on Linux • Ability to understand the directory structure on linux • Ability to understand network and security aspects • Ability to understand the implementation of the file system • Ability to understand FHS • Ability to understand file system block allocation	***2.3%***
11	Students can make file settings on Linux	file system	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying basic programming material students can understand the input and output processes of the operating system	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	• Ability to describe hardware I/O • Ability to describe the I/O subsystem • Ability to explain disk management 1	***2.3%***

12	Students can make hardware settings on Linux	Hardware management	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying the basic material of programming students can understand the advanced input and output processes of the operating system	**Criteria :** Scoring criteria rubric **Form of assessment:** • Practicum Report • Valuation case study about	• Ability to explain disk management 2 • ability to describe tertiary storage • ability to explain linux I/O	***2.3%***
13	Students can run: • Linux boot process • Add, modify, and delete users and groups • Application management	• Linux Boot Process • User and group management • Application management	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	After studying the material in this chapter students are expected to be able to: • Know the initialization of the boot process • Make changes to the initialization of the boot process	**Criteria :** Scoring criteria rubric **Form of assessment:** • Practicum Report • Valuation case study about	• Mastery of linux init process • Can find linux run level • GUI console mastery • Mastery of system shutdown and rebooting	***2.3%***
14	Students are able to provide progress on major course assignments	Linux-based operating system remastering	**Form :** Lectures , practicum **Learning methods:**	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet,	By studying the basic material of programming students can understand about on time and multimedia	**Criteria :** Scoring criteria rubric **Form of assessment:**	Capable of recreating Linux from an existing Linux for personal distribution	***5%***

			Problem Based Learning (PBL) group discussion **Learning Resources:** E-learning lms.polinema.ac.id	Structured Assignments		● Practicum Report ● Valuation case study about		
15	Students are able to provide progress on major course assignments	Linux-based operating system remastering	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	By studying basic programming material, students can understand distributed systems and system security	**Criteria :** Scoring criteria rubric **Form of assessment:** ● Practicum Report ● Valuation case study about	Capable of recreating Linux from an existing Linux for personal distribution	***5%***
16	Students are able to provide progress on major course assignments	Linux-based operating system remastering	**Form :** Lectures , practicum **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:**	- 2 x 50" Face to Face (Offline) - 4 x 50" Practicum Jobsheet, Structured Assignments	Great task presentation	Great task progress	Capable of recreating Linux from an existing Linux for personal distribution	***5%***

			E-learning lms.polinema.ac.id					
17	UAS	UAS	**Form :** UAS	2 x 50” Face to Face (Offline)	UAS	UAS	UAS	***25%***

5. Software engineering

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D 4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits) / hour**	**SEMESTER**	**DATE. PREPARATION**
Software engineering	**RTI222005**	Information Systems	2 credits/4 hours	3	
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Vipkas Al Hadid Firdaus ST., MT		Ekojono, ST., M.Kom.	Ir. Deddy Kusbianto Purwoko Aji, Mmkom	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	Able to apply the discipline of software engineering methodology in making software applications				
	Learning Outcomes Graduates charged to courses (CPL-MK)				
	• Mastering the concept of Introduction to RPL • Understanding of software processes (SDLC) • Able to apply SDLC (Software Development Life Cycle) in software development • Understand object-oriented design • Able to perform software requirements analysis, design and model the system • Able to perform basic software testing and maintenance				
Short Course Descriptions	Describes the development of software engineering along with the design methodology that has developed to date.				

Learning Materials / Subjects	Introduction to RPL, Software Process (SDLC), Software Requirements, System Modeling, Introduction to Object Oriented Design, Interface Design, Rapid Software Development, Basis for Testing, Software Maintenance Concepts.							
References	**Main :** 1. Ian Sommerville, *Software Engineering, 6th edition* , Addison-Wesley Pub Co., 2000. 2. William R. King , 2015, Planning for Information Systems, Routledge. 3. Harlan D. Mills, Richard C. Linger, Alan R. Hevner, *Principles of Information Systems Analysis and Design* , Academic Press, 1990. 4. Sprague, RH and McNurlin, BC, *Information Systems Management in Practice, 5th edition,* Prentice-Hall, 2002. 5. Ward, J et al., *Strategic Planning for Information Systems Practice, 2nd edition* , Wiley, 1996 **Supporters:**							
Instructional Media	**Software :**	**Hardware :**						
	OS - WINDOWS, Star UML, Power designer, Balsamiq mockup	LCDs and Projectors						
Name of Lecturer								
Requirements Course	-							

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimate d time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students can explain the properties of software as a product that is different from the fabrication process • students can explain the	1. Software as a product 2. Nature of Software 3. Software development	• Lecture , • Discussio n	1x4x50'	• Listen to lecture material • Discuss with group mates to understand the software concept	- Accuracy in answering questions - Activeness in class	• Accuracy in explaining the characteristics of the software and being able to mention the types	

	elements that make up the software • Students can explain the critical nature of software development	4. Common mistakes made by software developers and programmers					of software applications • Able to convey common mistakes made by programmers and developers in software development	

2	• Students can explain SDLC (Software Development Life Cycle) and
	• Understanding SDLC (Software Development Life Cycle)
	• Students are able to explain the advantages and disadvantages of an SDLC methodology
		SDLC Process Model
		• Waterfalls
		• Increment Process Model
		  • Increment Model
		  • RAD Model
		• Evolutionary Process Models
		  • Prototyping
		  • Spiral
		  • Agile
		  • Extreme programming
			• Lecture
			• Self-directed learning
			• discussion
				2x4x50'	• Listen to lecture material
					• Discuss with group mates to understand the concept of SDLC
						- Accuracy in answering questions
						- Activeness in class
							• Be able to mention the function of the SDLC stages in software development correctly
							• Be able to distinguish the advantages and disadvantages of an SDLC in software development	

3	• Students are able to apply the SDLC methodology to software development	• Development
		  - process models
		  - Component based model
			•		• Listen to lecture material
					• Discuss with group mates to apply the SDLC methodology to
						- Accuracy in answering questions
						- Activeness in class
							• Able to apply SDLC stages according to group projects	

					group projects			
4	• Quiz 1	•	•		• Answer quiz questions	- Accuracy in answering questions - write	• Accuracy in answering questions	10
5	• Understand the concepts and principles of Software engineering	• Requirements analysis and engineering (concepts & principles) •	•		• Listen to lecture material • Discuss with group mates to understand the concept of software engineering	- Accuracy in answering questions - Activeness in class	• Able to conduct interviews with users with the right questions to get user needs • Able to tell the integrity of the user in formal documents • Able to describe user needs on WBS diagrams consisting of DATA, SERVICES, and REPORTS appropriately.	
6	• Students understand the principles of designing SRS documentation	• SRS software requirements specification (software requirement system)	•		• Listen to lecture material • Discuss with group members to apply in the form of SRS documentation	- Accuracy in answering questions - Activeness in class	• Able to conduct interviews with users with the right questions to get user needs • Able to tell the integrity of the user in the SRS document	

7	• Students understand and are able to design designs using DFD	1. Use cases UML diagrams 2. Scenario narrative from the user 3. WBS (Work Breakdown Structure)	• Lecture • Discussion • Presentation • Task	3x4x50'	• Listen to lecture material • Discuss with group members to understand the concept of DFD	- Accuracy in answering questions - Activeness in class	• Able to conduct interviews with users with the right questions to get user needs • Able to tell the integrity of the user in formal documents • Able to describe user needs on WBS diagrams consisting of DATA, SERVICES, and REPORTS appropriately.	
8	UTS	Meeting 1 - 9	Essay Exam	1x4x50'	• Answer questions / questions UTS	- Accuracy in answering questions - write	• Able to answer correctly	20
9 -11	• Students understand the concepts and principles of software design • Understand object-based software design	• Design concept • UML • Hierarchy of controls • Use case diagrams • Class diagrams	• Lecture • Discussion • Presentation • Task	3x4x50'	• Listen to lecture material • Discuss with group mates to understand interface design concepts	- Accuracy in answering questions - Activeness in class	Accuracy in understanding the stages in conducting software design	

12	• Students are able to design software interface designs	• Design stages • Data design • Architectural design • Interface design Software design documentation	• Lecture • Discussion • Presentation • Task	3x4x50'	• Listen to lecture material • Discuss with group mates to understand the concept of software interface design	- Accuracy in answering questions - Activeness in class	• Able to conduct interviews with users with the right questions to get user needs • Able to tell the integrity of the user in formal documents • Able to describe user needs on WBS diagrams consisting of DATA, SERVICES, and REPORTS appropriately. •	
1 3	• Quiz 2	-	• Lecture • Discussion • Presentation • Task	1x4x50'	• Answer quiz questions	- Accuracy in answering questions - Write	• Accuracy in answering questions	10
14	• Students understand the stages of software testing	Software Testing • unit tests • Integration system • validation testing	• Lecture • Discussion • Presentation	1x4x50'	• Listen to lecture material • Discuss with group mates to understand software testing	- Accuracy in answering questions - Activeness in class	• Able to conduct interviews with users with the right questions to get user needs • Able to tell the integrity of the	

		• system testing • whitebox • black box	• Task				user in formal documents Able to describe user needs on WBS diagrams consisting of DATA, SERVICES, and REPORTS appropriately.	
15	• Students understand the stages of software maintenance and quality assurance	Software maintenance. Software quality assurance • SQA overview	• Lecture • Discussion • Presentation • Task	1x4x50'	• Listen to lecture material • Discuss with group mates to understand the concept of software interface design	- Accuracy in answering questions - Activeness in class	• Accuracy in understanding the stages of software maintenance and quality assurance	
16		Project demonstration	• Presentation • demonstration	1x4x50'	• present project results systematically	- Accuracy in answering questions - project suitability	• Accuracy in demonstrating the project • Project equipment	40
1 7	UAS	• From meeting 1 to 16	• Written/ Online Test	1x2x50'	• Answer UAS questions/questions	- Accuracy in answering questions - Write	• Answer questions correctly	30

6. Database

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
DATABASE	**RTI222006**	Core Courses	2 credits/ 4 hours	2	November 30, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Dwi Puspitasari, S.Kom., M.Kom.	Maybe Astiningrum, ST., M.Kom.	Imam Fahrur Rozi, ST, MT

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

- **S8** Internalize **academic values, norms, and ethics** .
- **S9** Demonstrate a responsible attitude towards work in the field of expertise **independently** .
- **PP1** Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, **Databases** , computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
- **PP2** Mastering **method development of ICT products** to provide appropriate solutions across one or more application domains.
- **KU2** Able to demonstrate independent, **quality** and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering database development **concepts** and **methods as** part of **ICT product development** ; Able to properly design relational databases; Able to use SQL language to implement and manage databases; Able to demonstrate independent, quality and measurable performance by taking into account **academic values, norms and ethics** in designing and managing databases.

SUB-CPMK 1	Able to give examples of ICT products that use relational databases with clear and reliable reference sources [C2, A3] (1st mg)
SUB-CPMK 2	Able to design databases using ER Diagrams based on the requirements given (C4,A3,P2) (mg 2-3)
SUB-CPMK 3	Able to design a relational model using the ER Diagram mapping algorithm to the relational model [C4,A3,P2] (mg 5-6)

	SUB-CPMK 4	Able to design a relational model using the database normalization method based on the tables and data provided [C4,A3,P2] (mg 7-8)
	SUB-CPMK 5	Able to write SQL-DDL commands to implement database design results and manage databases [C3,A3,P2] (10th mg)
	SUB-CPMK 6	Able to write SQL-DML commands to manage data stored in database [C3,A3,P2](mg to 11)
	SUB-CPMK 7	Able to write SQL-DQL commands to display data stored in database (query data) [C4,A3,P2] (mg 12-13)
	SUB-CPMK 8	Able to write SELECT commands to display data stored in multi tables in database [C4,A3,P2] [C4,A3,P2] (mg 15-16)
Short Course Descriptions	After attending this course, students are expected to master the knowledge of how to properly design and create relational databases, as well as master the database language (SQL language) to build and manage databases.	
Learning Materials / Subjects	Database concept, relational database, data modeling, ERD, relational model mapping, database normalization, database implementation, SQL language, managing and displaying data using SQL language	
References	**Main :** 1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics. **Supporters:** 3. Elmasry, R. and S. Navathe, 2016, Fundamentals of Database Systems, 3nd edition, Addison Wesley. 4. Andrew J. Oppel, 2010, Databases Demystified, McGraw-Hill/Osborne.	
Instructional Media	**Software :** 1. MySQL 2. XAMPP 3. PhpMyAdmin 4. Ms. office 5. Zoom	**Hardware :** Computer
Name of Lecturer		
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicators (evaluation)	Rating Weight (%)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Able to give examples of ICT products that use relational databases with clear and reliable reference sources [C2, A3]	- RPS and LECTURE CONTRACTS **Basic Concept** [1] p. 1-14 - Definition of Data and Database - Use of data and databases - Database characteristics - Database Type - Example of implementing the database **Relational Database** [1] p. 15-28 - Definition of Relational Database - Components in relational databases	**Form :** Studying **FACE:** online / offline **Method :** Class and group discussions, demonstration examples of database usage **TASK 1:** Looking for examples of applications or papers related to the implementation of relational databases, reviewing/describing examples and mentioning the components of the database contained in the examples	1 x 2 x 100" Face to Face and Structured assignments. 1 x 2 x 70" Self Duty.	- Able to explain the meaning of data and database - Able to explain the use of data and databases - Able to explain the characteristics and types of databases - Able to exemplify the application of the database - Able to explain the meaning of relational database - Able to mention relational database components - Able to find real examples of database implementation	**Rubric** Reviews/descriptions of application examples or papers/writings related to the implementation of relational databases	- Accuracy in searching for examples - Accurate review/example description - The exact mention of the database component in the example - Accurate search for reference sources	5%

2-3	Able to design databases using ER Diagrams based on the requirements given [C4,A3,P2]	**Data modeling** [1] p. 29-36 - Data modeling concept - Types and data modeling architecture **Database design using ER Diagram** [1] p. 58-92 - ER Versions and Components Diagram - Data requirements - Database design steps using ER Diagram - Determination of Entity, attribute and relationship - Determination of relationship cardinality - Determination of participant relationship	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-2:** Case Study: designing a database using the ER diagram of the given requirements	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	- Able to explain the concept, type and architecture of data modeling - Able to explain the versions and components of the ER Diagram - Able to identify data requirements - Able to explain and implement the steps in database design using ER diagrams - Be able to determine entity, attribute, relationship, cardinality and participant relationships in database design using ER diagrams	**Rubric** The results of the design are in the form of ER Diagrams	- The accuracy of using ER Diagram notations in solving cases	20 %

4	**Test 1**	Test 1: Meeting materials 1-3	**Theory exam (close book)**		- Able to work on multiple choice written exam questions / essays - Able to design databases using ER Diagrams correctly and with quality based on the requirements given - Able to complete assigned tasks independently and honestly	**Answer key** **Rubric** The results of the design are in the form of ER Diagrams	- Correct answer with answer key - Accuracy in determining the components of the ER Diagram	
5-6	Be able to design a relational model using the ER Diagram mapping algorithm to the relational model [C4,A3,P2]	**ER Diagram Mapping Algorithm to the relational model** [1] p. 93-105 - Mapping Entities - Attribute Mapping - Mapping Relationships **Assessment of the suitability of the relational model with the data requirements**	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-3:** Case study : Mapping ER Diagrams to the relational model of a given ERD and assessing the suitability of the resulting model	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	- Be able to explain the ER Diagram mapping algorithm to the relational model - Able to do ER Diagram mapping to a relational model based on the algorithm that has been given - Able to carry out a simple assessment of the suitability of the resulting relational model with the data requirements	**Rubric** ER Diagram mapping results to the relational model **Rubric** the relational model fit assessment	- Accuracy in determining the component mapping of the ER Diagram to the relational model - The accuracy of the results of the relational model conformity assessment	15%

7-8	Able to design a relational model using the database normalization method based on the tables and data provided [C4,A3,P2]	**Database Normalization** [1] p. 37-57 - Definition of normalization - Purpose and benefits of normalization - Database normalization stages **Database normalization process** [1] p. 37-57 - Formation of normal form 1 (1 NF) - Formation of normal form 2 (2 NF) - Formation of normal form 3 (3 NF) or BCNF - Formation of normal form 4 (4 NF) - Formation of normal form 5 (5 NF)	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-4:** Case study : Database normalization based on given table and data	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	- Able to explain the meaning, purpose, benefits, and stages of database normalization - Able to perform normal form formation 1 (1NF) to 5 (5NF) in the database normalization process based on the tables and data provided	**Rubric** Database normalization results	- Accuracy of stages in the process of normalization - The accuracy of the normalization results	20%

9	**Test 2**	Test 2: Meeting materials 6-8	**Theory exam (close book)**		- Able to work on multiple choice written exam questions / essays - Able to do ER Diagram mapping to a relational model based on the algorithm that has been given - Able to normalize the database based on the tables and data provided - Able to complete assigned tasks independently and honestly	**Answer key** **Rubric** ER Diagram mapping results to relational mode. **Rubric** Database normalization results	- Correct answer with answer key - Accuracy in determining the component mapping of the ER Diagram to the relational model - The accuracy of the results of the relational model conformity assessment - Accuracy of stages in the process of normalization - The accuracy of the normalization results	
10	Able to write SQL-DDL commands to implement database design results and manage databases [C3,A3,P2]	**Stages of Implementing Database** - Create a database - Create tables, attributes, primary keys, and foreign keys **SQL language** - Definition, purpose, benefits, and	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-5:** Case study :	1 x 2 x 100" Face to Face and Structured assignments. 1 x 2 x 70" Self Duty.	- Able to explain the stages in implementing the database - Able to explain the meaning, purpose, benefits and types of the SQL language - Able to explain SQL-DDL language, uses and commands in SQL-DDL language - Able to write SQL-DDL commands to implement	**Rubric** SQL-DDL command	- Accuracy, completeness, and neatness of SQL-DDL commands to implement database design results - The accuracy of SQL-DDL commands to modify, delete databases, tables and relations according to the given case study	5%

		types of SQL language **SQL-DDL language** - Usage and commands in SQL-DDL - CREATE command - ALTER command - DROP command	Write SQL-DDL commands to implement the results of the given database design, change and delete databases, tables, attributes, and relations based on the given case studies		database designs and manage databases - Able to write SQL-DDL commands to manage database management (change and delete databases, tables, attributes and relations)			
11	Able to write SQL-DML commands to manage data stored in the database [C3,A3,P2]	**Data Management in Database** - Data addition - Data deletion - Data change **SQL-DML language** - Usage and commands in SQL-DML - INSERT command - DELETE command - UPDATE command - WHERE clause	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-6:** Case study : Write SQL-DML commands to add, delete, and change data in the database provided based on the given case study	1 x 2 x 100" Face to Face and Structured assignments. 1 x 2 x 70" Self Duty.	- Able to explain the process of data management in the database - Able to explain the uses, types, uses, and commands in the SQL-DML language - Able to write SQL-DML commands to manage data (add, delete, and change data) stored in the database	**Rubric** SQL-DML command	- The accuracy of SQL-DML commands to add, delete, and modify data in the database, according to the given case study	5%

12-13	Able to write SQL-DQL commands to display data stored in database (query data) [C4,A3,P2]	**Data Queries** - Data query process **SQL-DQL language** - Usage and commands in SQL-DQL - SELECT command - WHERE clause - ORDER BY clause - GROUP BY clause - Aggregation Functions (SUM, MIN, MAX, AVG) - HAVING calluses	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-7:** Case study : Write SQL-DQL commands to display data in the database provided based on the given case study	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	- Able to explain the process of querying data - Able to explain the use and commands of SQL-DQL - Able to write SQL-DQL commands to display data stored in the database (query data)	**Rubric** SQL-DQL command	- The accuracy of the SQL-DQL command for displaying data stored in the database is according to the given case study	15%
14	**Test 3**	Test 3: Meeting materials 10-13	**Close book theory exam**		- Able to work on multiple choice written exam questions / essays related to database implementation and data management in databases using SQL DDL, DML, and DQL languages - Able to complete assigned tasks independently and honestly	**Answer key**	- Correspondence of answers with the answer key	

15-16	Able to write SELECT commands to display data stored in multiple tables in database [C4,A3,P2]	**SELECT command for multiple tables** - The JOIN command and its types - INNER JOIN - OUTER JOINS - CROSS JOIN	**Form :** Studying **FACE:** online / offline **Method :** Discussion, Case/Problem Base Learning (PBL) **TASK-8:** Case study : Write a SELECT command to display data in multiple tables in the database provided based on the given case study	2 x 2 x 100" Face to Face and Structured assignments. 2 x 2 x 70" Self Duty.	- Be able to explain the SELECT command for multi tables and their types - Able to write SELECT commands for multiple tables as needed	**Rubric** SQL-SELECT command for multiple tables	- SQL-SELECT command conformity - The accuracy of the SELECT command for displaying data in multiple tables in the database is according to the given case study	15%
17	**UAS**	Test 4: Meeting materials 1-16	**Theory exam (close book)**		- Able to work on multiple choice written exam questions / essays - Able to complete assigned tasks independently and honestly	**Answer key**	- Correspondence of answers with the answer key	

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
DATABASE PRACTICUM	RTI222007	Information Systems	3 credits/ 6 hours	2	February 3, 2021
AUTHORIZATION	RPS Developer Lecturer		MMK Coordinator	Ka PRODI	
	1. Dwi Puspitasari, S.Kom., M.Kom. 2. Elok Nur Hamdana, ST, MT 3. Muhammad Shulhan Khairy, S.Kom., M.Kom. 4. Dika Rizky Yunianto, S.Kom, M.Kom 5. Annisa Puspa Kirana, S. Kom, M. Kom. 6. Retno Damayanti, S.Pd., MT. 7. Ika Kusumaning Putri, S.Kom., M.Kom 8. Noprianto, S. Kom, M. Eng 9. Milyun Ni'ma Shoumi, S. Kom, M. Kom 10. Candra Bella Vista, S. Kom., MT.		Dwi Puspitasari, S.Kom., M.Kom.	Imam Fahrur Rozi, ST, MT	
Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)				

	S8 Internalize academic values, norms, and ethics. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently. **PP2** Mastering ICT product development methods to provide the right solutions through one or more application domains. **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc). **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned. 1. **KU2** Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK) Understand DBMS Architecture, Data Normalization, MySQL SQL DDL, MySQL SQL DML, MySQL Query Select, MySQL Join, MySQL Sub Query, MySQL Nested Query, SQL Server SQL DDL, SQL Server SQL DML, SQL Server Query Select, SQL Server Join, SQL Server Sorting, Filtering, SQL Server Aggregate, (Mod 4,5,6,9 Querying).
Short Course Descriptions	This course provides an understanding and mastery of database concepts, relational data models, database implementation, use of queries (SQL) for data search, data sorting, data filtering, data deletion, data updates, views, stored procedures, and functions.
Learning Materials / Subjects	DBMS Architecture, Data Normalization, MySQL SQL DDL, MySQL SQL DML, MySQL Query Select, MySQL Join, MySQL Sub Query, MySQL Nested Query, SQL Server SQL DDL, SQL Server SQL DML, SQL Server Query Select, SQL Server Join, SQL Server Sorting, Filtering, SQL Server Aggregate , (Mod 4,5,6,9 Querying) .
References	**Main :** Elmasry, R. and S. Navathe, 2016, Fundamentals of Database Systems, 3nd edition, Addison Wesley. **Supporters:** 5. Andrew J. Oppel, 2010, Databases Demystified, McGraw-Hill/Osborne. 6. Fathansyah, 2015, Basic Data Base, Bandung Informatics.
Instructional Media	**Software :** 6. MySQL 7. SQLServer **Hardware :** Computer

Name of Lecturer	1. Dwi Puspitasari, S.Kom., M.Kom. 2. Elok Nur Hamdana, ST, MT 3. Muhammad Shulhan Khairy, S.Kom., M.Kom. 4. Dika Rizky Yunianto, S.Kom, M.Kom 5. Annisa Puspa Kirana, S. Kom, M. Kom. 6. Retno Damayanti, S.Pd., MT. 7. Ika Kusumaning Putri, S.Kom., M.Kom 8. Noprianto, S. Kom, M. Eng 9. Milyun Ni'ma Shoumi, S. Kom, M. Kom 10. Candra Bella Vista, S. Kom., MT.
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	● Students **are able to explain** the concept of presenting data based on certain needs/problems **(C2)** ● Students **are able to explain** and **apply** data presentation functions on *spreadsheet -based data sets* **(C3)**	- Prepare sample data *spreadsheets* - Selecting data by utilizing the available functions	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and	4 X 50”	Exercises and assignments (Jobsheet 1 on Introduction to Database)	Completion of jobsheet tasks	Able to perform data selection by utilizing the available functions	3%

			online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
2	● Students are able to **design** databases through the design stages **(C3)** ● Students are able **to apply** the results of database design into ER diagrams manually **(C3)**	- Designing the database according to the design stages - Create ER Diagrams	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Able to design a database and its ER-Diagram	3%

			online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
3	● Students are able to **explain** and further **apply ERD and its relationship to data modeling, ERD variations, and tools that can be used to make ERD**	- Making ER Diagrams with CASE Tools	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50')	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Students are able to make ER diagrams using tools	3%

			Sync → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
4	● Students are able **to explain** the relational model database described by CDM and PDM **(C2)**	- Crea te CDM and PDM with Sybase power designer tools	**Form :** Studying Online (*Online*) (1x50') **Asynchronou**	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Students are able to make CDM and PDM a relational model database using tools	3%

			s → Learning video Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					

5	• Students are able to **design** databases through the design stages **(C3)** • Students are able to apply the results of database design into ER diagrams manually **(C3)**	- Designing the database according to the design stages - Create ER Diagrams	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning videos. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Able to design a database and its ER-Diagram	3%

6	● Students are able **to explain** further about ERD and its relationship to data modeling, ERD variations, and tools that can be used to make ERD **(C2)**	- Making ER Diagrams with CASE Tools	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work*	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Students are able to make ER diagrams using tools	3%

			(2x50')					
7	● Students are able **to explain** the concept of normalizing relational schemas into the desired form **(C2)** ● Students are able to **explain** the characteristics of the stages of normalization 1NF to 3NF **(C2)**	- Prep are sample data *spreadsheets* - Perf orm normalization according to the stages of normalization	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning videos. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work*	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	able to carry out the normalization process in accordance with the stages of normalization	4.5%

			(2x50')					
8	● Students are able **to explain** the characteristics of the stages of normalization 4NF, 5NF and BCNF **(C2)**	- Perform normalization according to the stages of normalization	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning videos. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	• Able to carry out the normalization process in accordance with the stages of normalization	4.5%

			and practicum *job sheet work (2x50')*					
9	UTS	UTS	UTS	4 X 50”	UTS	UTS	UTS	25%
10	● Students are able to **explain** the basics of MySQL **(C2)** ● Students are able **to create** databases and tables by applying DDL **(C3)** ● Students are able to **explain** and **apply** the use of commands to define database attributes, tables, fields, as well as limitations on an attribute and relationships between tables **(C2) (C3)**	- Install mysql - Create a database - Language (DDL) Create, Alter, Drop commands	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	• Able to run MySQL • Able to create database using DDL commands	3%

			questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
11	Students are able to **explain** and **apply** the use of DML commands in MySQL **(C2) (C3)**	Make use of the INSERT, UPDATE, DELETE SQL statement commands	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)*	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Able to use DML commands on MySQL	3%

			Assignment: - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
12	Students are able to **explain** and **apply** the use of SQL SELECT statements with various clauses **(C2) (C3)**	Make use of the SQL Select command	**Form :** c. Studying Online (*Online*) (1x50') **Asynchronous** → Learning videos. d. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:**	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	Able to use the SELECT command in MySQL	3%

			Contextual Teaching and Learning (CTL) **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
13	● Students are able **to explain** the connectedness of entities in the database ● Students **explain** the types of data retrieval operations in several entities **(C2)** ● Students are able **to complete *retrieval* cases** involving more than one entity **(C3)**	- Create a database with more than 1 table - Make use of the Inner Join and Outer Join commands	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:**	4 X 50”	Exercises and assignments	Completion of jobsheet tasks	● Able to create databases and tables ● Able to use the join command in MySQL	3%

			Contextual Teaching and Learning (CTL) **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
14	● Students are able to **explain and apply** the use of SQL SELECT statements with various clauses **(C2) (C3)**	- Make use of the SQL Select command	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion	4 X 50”	Exercises and assignments	Practice questions and discussion	Able to use the SELECT command in MySQL	3%

			Learning methods: *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
15	● Students are able to **explain and implement** entity connectedness in the database ● Students are able to **explain and implement** types of data retrieval operations across multiple entities **(C2) (C3)** ● *retrieval* cases involving more than one entity	- Crea te a database with more than 1 table - Make use of the Inner Join and Outer Join commands	**Form :** Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and	4 X 50”	Exercises and assignments	Practice questions and discussion	● Able to create databases and tables ● Able to use the join command in MySQL	3%

			online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
16	UAS	UAS	UAS	4 X 50”	UAS	UAS	UAS	30%

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
Algorithms and Data Structures	**RTI222008**		2 credits/ 3 hours	2	

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	- Maybe Astiningrum, ST., M. Kom. - Imam Fahrur Rozi, ST., MT - Mustika Mentari, S.Kom., M.Kom - Vivin Ayu Lestari, S.Pd., M.Kom.	Maybe Astiningrum, ST., M.Kom.	Deddy Kusbianto PA, Ir., M.Kom

Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**	
	Mastering applied mathematics concepts, basic ICT knowledge (Algorithms, Programming, Databases, Computer Networks, etc.), engineering science, and engineering principles in the ICT field.	
	Learning Outcomes Graduates charged to courses (CPL-MK)	
	Mastering the concept of Searching, Sorting, Queue, Stack, Linked List, Tree, Graf, Bruteforce, Greedy, Divide -Conquer, DFS, BFS .	
Short Course Descriptions	The Algorithm and Data Structure course is a course that is expected to provide knowledge and skills in making Algorithms and Data Structures which include Bruteforce, Divide-Conquer, Stack, Queue, Linked List, Tree and Graph as well as Sorting and Searching processes.	
Learning Materials / Subjects	1. search 2. sort 3. queue	

	4. stacks 5. Linked List 6. tree 7. Graph 8. Bruteforce 9. Divide-Conquer 10. DFS 11. BFS	
References	**Main :** 1. Goodrich, Michael T. Tamassia, Roberto. 2014. Data Structures & Algorithms in Java 6th Edition. John Wiley & Sons, Inc. 2. Nugroho, Adi. 2008. Algorithms and Data Structures in the Java Language. Andi-Yogyakarta. 3. Hari ya nto, Bambang, 2007, Data Structure, Informatics Publisher-Bandung. 4. Sjukani, M, 20 14 , Algorithms (Algorithms and Data Structures 1) with C, C++, and Java 9th Edition . Media Discourse Partners. 5. Sjukani, M, 20 10 , Data Structures (Algorithms and Data Structures 2) with C, C++ 4th Edition . Media Discourse Partners. 6. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish. **Supporters:** 1. NetBeans IDE Java Quick Start Tutorial (https://netbeans.org) 2. Java Tutorial with Netbeans (http://ilmuonline.net)	
Instructional Media	**Software :**	**Hardware :**

	1. OS – WINDOWS /MAC/Linux 2. JDK 3. Netbeans IDEs	PC, Laptop, LCD and Projector
Name of Lecturer	- Maybe Astiningrum, ST., M. Kom. - Imam Fahrur Rozi, ST., MT - Mustika Mentari, S.Kom., M.Kom - Vivin Ayu Lestari, S.Pd., M.Kom.	
Requirements Course	- Basic Programming	

M in g gu Ke	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students understand and recall about programming using Java Netbeans • Students understand the definition of class • Students understand the definition of objects and	• object	• Lecture • Discussion	3x45'	Exercise	• Question and answer	• Understand explanation of classes and objects	1 %
2	• Students understand and recall about arrays in Java • Students understand the stages of making an array of objects	• Arrays of Objects	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the stages of implementing an array of objects in Java Netbeans	1 %

3	• Students understand the use of the bruteforce algorithm and the divide-conquer algorithm	• Bruteforce • Divide-conquer	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understanding the stages of the bruteforce and divide-conquer algorithms	1 %
4	• Quiz 1 _	• Quiz 1	• Multiple Choice/Essay Exams	3x45 _	Exam	• Quiz1	• multiple choice exams / Essay quiz 1 starting from week 1-3 material	10 %
5	• Students understand the algorithms of searching bubble sort, selection sort and insertion sort	• Bubble Sort • Selection Sort • Insert Sort	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the method of sorting bubble, selection and insertion	1 %
6	• Students understand the stages of searching with sequential search and binary search algorithms	• Sequential Search • BinarySearch	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand search with sequential and binary search algorithms	1 %
7	• Students understand the meaning of the stack algorithm • Students understand the stages of the Stack algorithm	• stacks	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the stack algorithm in the program	1 %

8	UTS	• UTS	• Multiple Choice/Essay Exams	3x45 _	Exam	• UTS	• Ability to do multiple choice/Essay exams to create objects, arrays of objects, and understand bruteforce, divide-conquer, serting(bubble, selection, insertion), searching(sequential and binary) and stack algorithms	3 0 %
9	• Students understand the stages of making a queue algorithm	• queue	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the stages of the queue algorithm	2 %
10	• Students understand the concept of a linked list • Students understand the stages of making linked lists to solve problems	• Linked List	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the Single Stage Inked List _ _	2 %
11	• Students understand the concept of a double linked list	• Double Linked List	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the stages of the Double Lined List	2 %

12	• Students understand the concept of a tree in general • Understand understanding the application of binary trees	• Trees (Binaries)	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the process of making a Tree	2 %
13	• Quiz 2	• Quiz 2	• Multiple Choice/Essay Exams	3x45 _	Exam	• Quiz 2	• Ability to reimplement stack, single linked list, double linked list, and binary tree	10 %
14	• Students understand the concept of Binary Search Tree • Students understand the stages of implementing the Binary Search Tree	• Tree(Binary Search Tree)	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the concepts, limitations and algorithms of binary search trees	2 %
15	• Students understand the concept of graphs in general • Students understand the stages of implementing Graph in general	• Graph	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand graph concepts, limitations and algorithms	2 %
16	• Students understand the concept of the bread first search algorithm	• Breadth First Search • Depth First Search	• Lecture • Discussion	3x45 _	Exercise	• Question and answer	• Understand the concept of BFS and DFS	2 %

	• Students understand the concept of the depth first search algorithm • Students understand the difference between BFS and DFS • Students understand when to use BFS or DFS							
17	• UAS	• UAS	• Multiple Choice/Essay Exams	3x45 _	Exam	• Exam	• The ability of all material from week 1 to 16	3 0 %

Information :

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MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Algorithm and Data Structure Practicum	**RTI222009**	Software Engineering	2 credits / 4 hours	2	November 24, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Maybe Astiningrum, ST., M.Kom. Imam Fahrur Rozi, ST., MT Mustika Mentari, S.Kom., M.Kom Mamluatul Hani'ah, S.Kom., M.Kom. Rokhimatul Wakhidah, S.Pd., MT Noprianto SKom., MEng. Septian Enggar Sukmana, S.Pd., MT	Maybe Astiningrum, ST., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

- **S8** Internalize academic values, norms, and ethics.
- **S9** Demonstrate a responsible attitude towards work in the field of expertise independently.
- **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded , Information Systems, Intelligent systems, Business Intelligence, etc).
- **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
- **KU2** Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to apply algorithm concepts and data structures such as Searching, Sorting, Queue, Stack, Linked List, Double Linked List, Tree, Divide and Conquer, Graph using the Java programming language; Able to make simple programs according to case studies given with full responsibility and prioritize academic values, norms and ethics.

Short Course Descriptions	The Algorithms and Data Structures Practicum Course is a practical course that is expected to provide knowledge and skills in applying mathematics and basic engineering applied to algorithms and data structures. Algorithm and data structure Object, Array of Object, Bruteforce, Divide-Conquer, Searching, Sorting, Queue, Stack , Single Linked List, Double Linked List, Tree, Graph.
Learning Materials / Subjects	1. object 2. Arrays of Objects 3. Bruteforce 4. Divide-Conquer 5. search 6. sort 7. queue 8. stacks 9. Linked List 10. tree 11. Graph
References	**Main :** 1. Goodrich, Michael T. Tamassia, Roberto. Data Structures & Algorithms in Java 4th Edition. John Wiley & Sons, Inc. 2. Nugroho, Adi. 2008. Algorithms and Data Structures in the Java Language. Andi-Yogyakarta. 3. Hariaynto, Bambang, 2007, Data Structure, Informatics Publisher-Bandung. **Supporters:** 1. Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher 2. Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher 3. NetBeans IDE Java Quick Start Tutorial (https://netbeans.org)
Instructional Media	**Software :** | **Hardware :**

	JDK Netbeans IDE Microsoft Office	PCs/Laptops
Name of Lecturer	1. Maybe Astiningrum, ST., M.Kom. 2. Imam Fahrur Rozi, ST., MT 3. Mustika Mentari, S.Kom., M.Kom 4. Mamluatul Hani'ah, S.Kom., M.Kom. 5. Rokhimatul Wakhidah, S.Pd., MT 6. Noprianto S. Kom., M. Eng. 7. Septian Enggar Sukmana, S.Pd., MT	
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	● Able to apply basic programming concepts (selection, looping, arrays, functions) by creating programs using the Java programming language	● Election ● loop ● Arrays ● Function	**Form :** Online Practicum (Online) **Learning methods:** Discussion, Digital Module Practice **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 1** : Create a program to implement the sub-topics of selection,	1X4X50”	● Conduct material review with supporting lecturers ● Students carry out experimental steps according to the jobsheet ● Students do practical assignments ● After taking the Basic Programming review material, students are expected to be able to implement the basic concepts of programming into the Java programming language to complete case	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	● Understanding of basic programming concepts ● The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%

			looping, arrays, and functions		studies			
2	• Able to create classes with the Java programming language • Able to implement object creation	• Compile data object in Java language • Adding attributes to data objects • Adding methods to data objects • Applying data objects in case studies.	**Form :** Online Practicum (Online) **Learning methods:** Discussion, Digital Module Practice, Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 2** : Create a program for implementing objects in various case study models (example: land area program and calculating GPA)	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying object material students can have the ability to implement class and object creation using Java Netbeans	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of creating objects from a class • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%
3	• Students are able to make logic about arrays of objects in Java • Students are able to apply the creation of an array of objects	• Declare and instantiate an Array of Object in Java • Declare and instantiate the Java language Array of object variables	**Form :** Online Practicum (Online) **Learning methods:** Discussion, Digital Module Practice, Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying array of objects, students can: Have the ability to implement arrays of	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• An understanding of creating arrays of objects • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%

		• Make an assignment Array of objects • Displays an Array of objects	**Assignment:** **Task 3** : Create a program to implement an array of objects in various case study models		objects in Java Netbeans			
4	**Quiz 1**		**Practical exam**	**1X4X50”**				**10%**
5	• brute force algorithms and vide - conquer • Students are able to apply the use of algorithms brute force and divide-conquer	• Definition of Algorithm Brute Force • Divide-conquer algorithm • Big(O) Complexity Algorithm • How to calculate Big(O) notation from program code	**Form :** Online Practicum (Online) **Learning methods:** Digital Module Practice Discussion **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 4** : Create a program to implement the brute force and divide-conquer algorithms	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying the brute-force and divide-conquer algorithms, students can have the ability to implement brute-force and divide -conquer algorithms.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concepts of brute force and divide -conquer algorithms • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%
6	• Students are able to make algorithms for searching bubble sort, selection sort and insertion sort • Students are able to apply algorithms of searching bubble sort, selection sort and	• Definition of Sorting • Bubble Sort Algorithm • Selection Sort Algorithm	**Form :** Online Practicum (Online) **Learning methods:** Discussion, Digital Module Practice, Problem Based Learning (PBL)	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying sorting	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of sorting algorithms • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%

	insertion sort in the program	• Insertion Sort Algorithm	**Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 5** : Create a program to implement several types of sorting in various case studies		material students can have the ability to implement sorting methods: bubble sort, selection sort and insertion sort			
7	• Students are able to create search algorithms with sequential search and binary search • Students are able to apply sequential search and binary search algorithms in the program • Students are able to apply enrichment material about the merge sort algorithm in the program	• Definition of search • Sequential search/linear search algorithm • Binary search algorithm • Merge sort algorithm	**Form :** Online Practicum (Online) **Learning methods:** Discussion, Digital Module Practice, Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 6** : Create a program to implement several searching algorithms in various case study models	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying searching students can: Have the ability to implement the searching method: sequential search, binary search in the program, as well as the merge sort enrichment method in the program	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of searching algorithms • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%
8	**UTS**		**Practical exam**	**1X6X50”**				**25%**
9	• Students are able to create a Stack data structure • Students are able to apply the stack	• Definition of Stacks • Operations on the Stack	**Form :** Online Lectures (Online) **Learning methods:**	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps	**Criteria:** Scoring criteria rubric **Form of assessment:**	• Understanding of the stack data structure concept • The accuracy of making the program as the	2.5%

	algorithm in the program	• push operation • pop operation • Convert Infix Arithmetic Equations to Postfix using Stack	Digital Module Practice Discussion , Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 7** : Create a program for stack implementation in various case study models		according to the jobsheet • Students do practical assignments • By studying stack material students can have the ability to implement stack data structures in programs	• Practicum worksheets • Independent task	implementation of the algorithm to complete the case study	
10	• Students are able to create Queue data structures • Students are able to apply the queue algorithm in the program	• Understanding Queue Data Structures • enqueuing operation • dequeue operation	**Form :** Online Practicum (Online) **Learning methods:** Digital Module Practice Discussion , Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 8** : Create a program for implementing queues in various case study models	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying queue material students can have the ability to implement queue data structures in programs	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of queue data structure • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%

11	• Students are able to create a linked list data structure • Students create linked lists in the program • Students are able to distinguish what problems can be solved using a linked list	• *Linked List* data structure • Operation *add Single Linked List* • Operation *remove Single Linked List* • *Get Single Linked List* operation • *Single Linked List print* operation	**Form :** Online Lectures (Online) **Learning methods:** Digital Module Practice Discussion , Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 9** : Create programs for implementing *single linked lists* in various case study models	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying single linked list material students can: Have the ability to implement single linked list data structures for add, remove, get, and print operations in programs	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• An understanding of the concept of *a single linked list* data structure • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%
12	• Students are able to create a double linked list data structure • Students are able to apply double linked lists to the program	• Understanding the *Double Linked List data structure* • Operation *add Double Linked List* • Operation *remove Double Linked List* • Operation *get Double Linked List*	**Form :** Online Practicum (Online) **Learning methods:** Digital Module Practice Discussion , Problem Based Learning (PBL) I **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 10** : Create a program for implementing double linked lists in	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying double linked list material, students can have the ability to implement double linked list data structures for add, remove, get, and print operations in programs.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of *double linked list* data structure • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%

		• *Double Linked List print* operation	various case study models					
13	**Quiz 2**		**Practical exam**	**1X4X50”**				**10%**
14	• Students are able to make tree algorithms in general • Students are able to apply binary trees to programs • Students are able to create a Binary Search Tree algorithm • Students are able to apply Binary Search Tree to the program	• Definition of Trees • Definition of Binary Trees • Definition of Binary Search Tree • Binary Search Tree insert operation • Binary Search Tree delete operation	**Form :** Online Practicum (Online) **Learning methods:** Digital Module Practice Discussion , Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 11** : Create a program to implement binary search trees in various operations and case study models	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying tree and binary search tree material students can: Have the ability to implement the operations that exist in the binary search tree in the program	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• An understanding of the concept of tree algorithms and binary search trees • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%
15	• Students are able to make Graph algorithms in General • Students are able to apply the Graph algorithm to the program	• Definition of Graphs • Graph implementation in linked list • Graph implementation in arrays	**Form :** Online Practicum (Online) **Learning methods:** Digital Module Practice Discussion , Problem Based Learning (PBL)	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying graph material students can have the	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• An understanding of the concept of graph algorithms • The accuracy of making the program as the implementation of the algorithm to complete the case study	2.5%

			Learning Resources: E-learning lmsslc.polinema.ac.id **Assignment:** **Task 13** : Make a program to implement graphs in various case study models		ability to implement existing operations on graphs with arrays and linked lists			
16	Students are able to create java programs according to case studies using Collections in the Java library	Best Practice Collection	**Form :** Online Practicum (Online) **Learning methods:** Digital Module Practice Discussion , Problem Based Learning (PBL) **Learning Resources:** E-learning lmsslc.polinema.ac.id **Assignment:** **Task 14** : Create a program to implement a case study model using a library in Java	1X4X50”	• Conduct material review with supporting lecturers • Students carry out experimental steps according to the jobsheet • Students do practical assignments • By studying best practice collection material students can implement collections in the Java library to complete appropriate case studies	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Accuracy of completion of practicum worksheets • Appropriateness of task answers	2.5%
17	**UAS**		**Practical exam**	**1X4X50”**				**25%**

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
Communication Science and Organization	RIF222010	BASIC INFORMATICS	2 Credits/3 Hours (THEORY)	1	July 2, 2020
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Siti Romlah, SE, MM Robby Anggriawan SE., ME. Bagas Satya Dian Nugraha, ST., MT. Satrio Binusa S, SS, M.Pd		Atiqah Nurul Asri, S.Pd., M.Pd.	Imam Fahrur Rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	Produce intermediate experts in the field of information systems, who have competence in managerial, design and creation of databases, business processes and business procedures in the form of software, with technopreneur characteristics, aware of quality with competitive advantages with professional ethics.				
	Learning Outcomes Graduates charged to courses (CPL-MK)				
	Mastering concepts and able to apply ways of organizing, communicating effectively and leading, especially in the management of Information Systems projects				
Short Course Descriptions	This course discusses how to organize and lead organizations, especially in managing information systems projects, being able to communicate well with other people in a team				
Learning Materials/ subject matter	1. Definition and function of communication 2. Good listening technique 3. Good speaker techniques and their implementation				

	4. Definition and Typology of leadership 5. Leadership in the era of the industrial revolution 4.0 (technology and information era) 6. organization theory 7. Organization and authority 8. Organizational behavior and culture 9. Leadership in organization 10. Communication methods in organization 11. Negotiation Techniques 12. Presentation and speech techniques 13. Moderation and minutes	
References	**Main :** *1)* Siti Romlah, 2018, Communication and Organizational Studies, Polynema Teaching Module , Malang **Supporters:** 1) Romlah, Siti, and Deddy Kusbianto, 2012, Organization and Leadership, Teaching Module, Polynema, Malang 2) Deddy KPA, Communication Studies in Organizations, Polynema, 2007 3) Gari Yukl, 2007, Leadership in Organizations, Prentice Hall 4) Muchlas, Makmuri, 2005, Organizational Behavior, 1st Edition, Gajah University Press, Yogyakarta 5) Louis Carter, David Ulrich, and Marshall Goldsmith, 2004, Best Practices in Leadership Development and Organizational Change, Pfeiffer Wiley.	
Instructional Media	**Software :**	**Hardware :**
	Microsoft Word, MicrosoftExcel, Microsoft Power Point	Computers/Laptops

		(*Online*)						
Name of Lecturer		**Siti Romlah, SE, MM** Bagas Satya Dian Nugraha, ST., MT. Satrio Binusa S, SS, M.Pd						
Requirements Course								
M in g gu Ke	**Planned Final Capability (Sub- CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estima ted time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Rating Weight (%)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	1) Students are able to recognize the final goal of the course 2) Students are able to explain the definition of communication 3) Students are able to understand the concept of effective communication in information systems project organizations	1) The ultimate goal of lectures 2) Definition of communication 3) Effective communication concept	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** **Task 1** : Find examples of case studies in everyday life in communication and organization (1x50') *Offline*	1x3x 50”	By studying Communication and Organizational Studies material students can: • Know the ultimate goal of lectures • Know the definition of communication • Understand the concept of effective communication within the information systems project organization	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) • questions about the definition and function of effective communication	• Knowing about the basic concepts of Communication Science and Organization • Understand the meaning and importance of Communication and Organizational Studies • Accuracy in solving problems in case studies. • Ability to master the concept of effective communication in the	**3%**

							organization of information systems projects	
2	Students are able to explain how to become a good listener	Good listening technique	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: Task 2** : Game by seeking information and interacting between group members in daily life (1x50') *Offline*	1x3x 50”	• Students understand and explain in their own language the technique of being a good listener in effective communication	**Criteria:** Accuracy and mastery of the material **Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) • The attractiveness of the explanation of the material	• Appropriateness and clarity in answering and explaining techniques for being a good listener in effective communication	**3%**
3	Students Able to Master the techniques of being a good speaker and their implementation	1) Good speaker technique 2) Communication constraints 3) Practice communicating to be a good speaker in	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion	1x3x 50	• Students are able to understand what are the techniques of being a good speaker	**Criteria:** Accuracy and mastery of the material **Form of assessment:** • Presentation • Active group discussion	• Appropriateness and clarity of material in speeches • Display in oration	**3%**

		front of discussion forums	**Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: Task 3** : individual oration with the latest topic (1 x 50') *Offline*		• Have expertise in communicating about information systems in front of forums	includes asking and answering (affective) • The power of communicating		
4	QUIZ 1	Evaluation	Independent task of compiling an essay	1x3x 50	-	-	-	**10%**
5	Students are able to explain the definition of leadership and leadership styles/typologies	- Leadership definition - Leadership style/typology	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: Task 5 group discussion on** ideal leadership (1 x 50') *Offline*	1x3x5 0	• students can understand and explain the definition of leadership • Understanding the style/typology of leadership in an organization	**Criteria:** • Answer accuracy • Problem solving creativity • Communicatio n attraction **Form of assessment:** group discussion	• answer questions about leadership • Accuracy in solving problems in case studies. • Ability to master the concept of leadership	**3%**

6	Students are able to explain and describe the criteria for a leader in the industrial era 4.0 (technology and information era)	Leadership needed in the era of the industrial revolution 4.0 (technology and information era)	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: Task 6 group discussion about** the industrial revolution 4.0 (technology and information era) (1 x50') *Offline*	1x3x 50	• students can understand the concept of The leadership needed in the era of the industrial revolution 4.0 (technology and information era	**Criteria:** • Clarity answers questions • Clarity of content • Writing suitability • Easy for readers to understand • **Form of assessment:** • group discussion	• Accuracy of students in answering questions • Clarity of the contents of the material written by students • Conformity of the written content with the standard format • Ease of writing content to read	**3%**
7	Capable Student Mastering and understanding the theory in organization	1) organization theory 2) Articles of Association 3) Chairman 4) Organizational structure	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)*	1x3x 50	• students can answer questions and discuss organizational theory, statutes, chairman and organizational structure	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussions include asking and answering (affective) questions	• Accuracy of students in answering questions • The accuracy of students in presenting information system projects in front of forums and packaging them into a good	**3%**

			Assignment: Task 5 group discussion about organizing And Organizational Structure (1 x50') *Offline*			about effective organizations	and interesting presentation	
8	Capable Student Understand the definition of authority, power and responsibility in an organization	1) Authority 2) Power 3) Responsibility in organization	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignment: group discussion about** Responsibilities in the organization (1 x50') *Offline*	1x3x50	• students can understand the definition of authority, power and responsibility in an information system organization	**Criteria:** Accuracy and mastery of the material **Form of assessment:** • Ability to make presentations • Interest in making presentations	• Student's ability to understand authority, power and responsibility in an information system organization	**3%**
9	Written test for week 1 to 8 material	UTS	UTS	1X4X50"	UTS	UTS	UTS	20%
10	Capable Student Mastering the procedures for running a team in an	1) Definition of organizational culture	**Format:** Lecture • Online (*Online*) (1x50')	1x3x50"	• students can master and answer questions	**Criteria:** Precision and mastery **Form of assessment:**	• Student's ability to understand and explain the definition of organizational	**3%**

	organization (organizational behavior and culture)	2) Functions/roles of organizational culture 3) Type/type of organizational culture 4) The process of forming organizational culture and communication	**Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment:** **Assignment : group discussion about** organizational behavior and culture (1 x50') *Offline*		about definitions, functions/roles , types/types, the process of forming organizational culture	• Presentation • Active group discussion includes asking and answering (affective) questions about organizational behavior and culture	culture, function/role of organizational culture, type/type, process of forming organizational culture	
11	Capable Student implement leadership in an organization	1) The practice of running a team within an information systems project organization	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: group discussion about the**	1x3x50	• students can do hands-on practice on how to run an organizational team in groups	**Criteria:** • Fluency and appropriateness in running the team • Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking	• The ability of students to run an information system organization team smoothly and correctly	**3%**

			organization of an *offline* information system project (1 x50').			and answering (affective)		
12	Capable Student understand effective communication methods in organizations	2) The practice of implementing effective communication methods within an organization	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: group discussion about** effective communication methods within an organization (1 x50') *Offline*	1x3x50”	• students can do direct practice on how to implement effective communication methods in an organizational team	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) questions about the definition and function of effective communication	- Students' ability to implement effective communication methods within an organizational team	**3%**
13	QUIZ	Evaluation	Independent task of compiling the Organizational Structure and job descriptions	1x3x50	-	-	-	**10%**
14	Capable Student Mastering techniques in negotiating	1) Negotiation definition	**Format:** Lecture • Online (*Online*) (1x50')	1x3x50	- Students can master and answer questions about	**Criteria:** Precision and mastery	Student's ability to understand and explain the definition	**3%**

		2) Negotiation approach 3) Negotiation characteristics 4) Negotiation steps	**Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: group discussion on** Negotiation Steps (1 x50') *Offline*		the definition of negotiation, negotiation approach, characteristics of negotiation and steps of negotiation	**Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) questions about the definition and function of effective communication	of negotiation, negotiation approach, characteristics of negotiation and negotiation steps	
15	Capable Student Mastering good presentation techniques in an information system project Applying good presentation techniques in an information system project in a discussion forum	- Good presentation technique in an information system project in a discussion forum	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: group discussion on** *Offline* information system	1x3x50	• students can make presentations about information systems projects in a discussion forum	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) questions about the definition and function of effective communication	• Accuracy of students in answering questions • The accuracy of students in presenting information system projects in front of forums, and packaging them into a good and interesting presentation	**3%**

			project presentation techniques (1 x50').			• Interest in making presentations		
16	Capable Student Mastering the concept of moderation and minutes	1) Moderation 2) Minutes	**Format:** Lecture • Online (*Online*) (1x50') **Asynchronous** → learning video • Online (*online)* (1x50') **Sync** → Vcon, discussion **Learning methods:** • *Contextual Teaching and Learning (CTL)* **Assignment: Task 5: group discussion on** the concept of moderation and minutes (1 x 50') *Offline*	1x3x50	• students can Master and answer moderating questions and minutes	**Criteria:** Precision and mastery **Form of assessment:** • Presentation • Active group discussion includes asking and answering (affective) questions about the definition and function of effective communication	• Students' ability to understand and explain about moderation and minutes	**3%**
17	UAS	Evaluation	*Online* Writing Exam	1x3x50	-	-	-	**20%**

3rd semester

1. Interface Design

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
Interface Design	RTI213001	Basic Informatics	2 credits/ 4 hours	3	30 20 21

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Anugrah Nur Rahmanto, S.Sn., M.Ds. 2. Retno Damayanti, S.Pd., MT 3. Muhammad Unggul Pamenang, S.St., MT 4. Ariadi Retno Ririd, S.Kom., M.Kom. 5. Aulia Zahra Musthafawi SST., M.Kom.	Maybe Astiningrum, ST., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)
	S8 Internalize academic values, norms, and ethics.
	S9 Demonstrate a responsible attitude towards work in the field of expertise independently.
	PP2 Mastering ICT product development methods to provide the right solutions through one or more application domains.

	KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc). **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned. **KU2** Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK) **Mastering the concept of Introduction to IMK, Human Factors, Variety of Dialogues, Input Output Tools, Display Design, Ergonomic Aspects, Evaluation Techniques.**
Short Course Descriptions	**This course material covers the basic concepts of aspects of the relationship between humans and computers and is able to analyze, design and implement this theory in making interfaces between humans and computers**
Learning Materials / Subjects	- **Introduction to Human and Computer Interaction** - **Human Factors** - **Variety of Dialogues** - **Interactive Tools** - **Creating View Worksheets and View Semantic Nets** - **Storyboards and Prototyping** - **Ergonomic Aspect** - **Interface Design Evaluation Techniques**
References	**Main :** ▪ **Galitz, WO (2007). *The essential guide to user interface design: an introduction to GUI design principles and techniques* . John Wiley & Sons.** **Supporters:** ▪ ***Teaching Module of Human and Computer Interaction* Malang State Polytechnic** ▪ **Santosa I. (2004), Human and computer interaction, theory and practice, Andi Offset, Yogyakarta**

Instructional Media	**Software :** 1. **Photoshop** 2. **CorelDraw** 3. **Adobe Experience Design**	**Hardware :** 1. **Laptops /Computers**
Name of Lecturer	6. **Anugrah Nur Rahmanto, S.Sn., M.Ds.** 7. **Retno Damayanti, S.Pd., MT** 8. **Muhammad Unggul Pamenang, S.St., MT** 9. **Ariadi Retno Ririd, S.Kom., M.Kom.** 10. **Aulia Zahra Musthafawi SST., M.Kom.**	
Requirements Course		

Ming guKe	**Planned Final Capability (Sub- CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estimated time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Weight (%)**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	a. Knowing and **explaining** what is human and computer interaction (C2) b. **Explain** the field of study	Human and computer interface, basic concepts of human and computer relations, fields of study related to human and computer interaction, system development tools	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Listen and ask if something is not understood	Question and answer	Students are able to explain the concept of human and computer interfaces, basic concepts of human and computer relations, fields of study related to human and computer interaction, system development tools	2.3%

	related to IMK (C2 **)** c. **Explain system** development tools (C2)							
2	Student is able **explain** the basic concepts of human factors, computer factors and be able to explain the relationship between ability and human limitations with the design process system interaction software and hardware (C2)	human factor : • Five senses • Limitations human factor • Mental influence and psychology against design interaction • Individual differences Computer factor: • Development interaction technology • Design link interaction with technology inputs/outputs • Hardware technology or software for users with special needs	Online, Discovery Learning		watching tutorials, doing exercises.	Questions and answers, presentations and discussion of group discussions and evaluation of the results of the discussion	• Students are able to explain human factors which include physical, psychological/mental, and sociological aspects. • Students are able to explain the development of computer system technology, especially in aspects of user and system interaction design. • Students are able to explain several computer system technologies intended for users with special needs.	2.3%

3	Able **to group** information based on the appropriate category and represent it with a symbol (icon) (C3)	• Categorize information into categories. • The use of symbols/images/icons that can represent information in a mind map.	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Carry out a task.	Task collection	• Students are able to categorize information into several categories. • Students are able to use symbols/images/icons that can represent information in a mind map.	2.3%
4	Students are able to **explain** and **apply** the basic concepts of dialogue design and dialogue styles/variety of dialogues (C2) (C3)	• CommandLanguage • WIMPs • Direct Manipulation (DM) • PDA & Pen • Speech and natural language • Software User Interfaces	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Question and answer	Q&A, discussion	Students are able to explain and detail the basic concepts of dialog design and dialog style and can use user interface software	2.3%
5	Quiz 1	• Quiz 1	Exam	3 x 50'	Quiz 1	Quiz 1	Quiz 1	5%
6	Students can **explain** the basic concepts of devices used in human and	• Overview, utilities • Types of task analysis • Source and use of information	Seminars, Assignments	3 x 50'	Listening to seminars, doing assignments	Q&A, discussion	Students can explain the tools used in human-computer interaction and can present data	2.3%

	computer interactions (C2)	• Data I/O • Represents data						
7	Students **explain** the development of interactive tools from time to time. (C2)	a. The latest development of interactive tools used by humans from time to time b. Textual input tool c. *Pointing and* picking device d. Touch sensitive panel (*touch-screen*) e. Display screen f. Display processor g. Effect of interactive devices	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Task presentation	Q&A, discussion	Students can explain the latest developments in interactive devices used by humans from time to time.	2.3%
8	a. Students are able **to explain** the principles of computer system interface design on various platforms and contexts of need. (C2) b. Students are able **to**	a. Understand the principles and guidelines of display design b. Understand and be able to make simple tools for display design c. understand and be able to create a display semantic net	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Listening and working on assignments	Questions and answers and discussion	a. students are able to make a display design with a simple tool in the form of a Display Worksheet b. students are able to make Display Semantic Nets.	2.3%

	design views using View Worksheets and View Semantic Nets (C3)							
9	UTS	UTS	Exam	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Take exams	Exam results	Students can work on exam questions well and the results are correct.	30%
10	Students are able **to know** and be able to **explain** and follow the stages of interface design using storyboards and prototypes (C2) (C3)	a. Understand the principles and instructions for display design with storyboards and prototypes b. Understand and be able to create storyboards and prototype user interfaces	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Listening and working on assignments	Questions and answers and discussion	Students can design user interfaces using storyboards and user interface prototypes.	2.3%

11	**Knowing** and being able **to explain** the influence of ergonomic aspects on the design of human interfaces with computers. (C2)	a. Know and be able to explain measurements and anthropometrics b. Know and be able to explain the ergonomic aspects of the work station c. Know and be able to explain lighting effects, display screens, temperature and sound quality, sound disturbances, occupational health and safety, work habits	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	listening	Questions and answers and discussion	Measurement and anthropometrics, ergonomic aspects of work stations, lighting effects, display screens, temperature and sound quality, sound disturbances, occupational health and safety, work habits.	2.3%
12	**Know** and be able **to explain** the evaluation techniques for the design of human interfaces with computers. (C2)	Evaluation technique • Understanding • Method • Evaluation tools and devices • Evaluation flow • Implementation example	Online, Discovery Learning	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	listening	Questions and answers and discussion	Able to explain about evaluation techniques Able to utilize various kinds of evaluation techniques	2.3%
13	Quiz 2	Quiz 2	Quiz 2	3 x 50'	Quiz 2	Quiz 2	Quiz 2	5%
14	Students are able **to explain** and **apply** previously taught	User Interface Prototyping	Presentation and Assignment Demo	**1 x 3 x 50 '** - Online (*Online*) **(2 x50')**	Task progress presentation	Great task progress	Students are able to explain the progress of the prototyping user interface made	2.3%

	material in the form of case studies and **making** application UI designs (major course assignments) (C2) (C3)			**Asynchronous** → learning videos - Assignments **(1 x50')**				
15	Students are able to **explain** and **apply** previously taught material in the form of case studies and **make** application UI designs (large course assignments) (C2) (C3)	User Interface Prototyping	Presentation and Assignment Demo	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Assignments **(1 x50')**	Task progress presentation	Great task progress	Students are able to explain the progress of the prototyping user interface made	2.3%
16	Students are able to **explain** and **apply** previously taught material in the form of	User Interface Prototyping	Presentation and Assignment Demo	**1 x 3 x 50 '** - Online (*Online*) **(2 x50') Asynchronous** → learning videos	Task presentation	Great task progress	Students are able to explain the progress of the prototyping user interface made	2.3%

	case studies and **make** application UI designs (large course assignments) (C2) (C3)			- Assignments **(1 x50')**				
17	UAS	UAS	Exam	3 x 50'	Take exams	Exam results	Students can work on exam questions well and the results are correct.	30%

TOTAL QUIZ, ASSIGNMENT, UTS, AND UAS **EVALUATION**

Quiz : 2 UTS: 1 Quiz Weight: 10% UTS Weight: 30%

Task : 4 UAS: 1 Assignment Weight: 30% UAS Weight: 30%

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 BUSINESS INFORMATION SYSTEMS

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Quality Service Management	RTI213002	Basic Informatics	2 credits/ 4 hours	5	

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Septian Enggar Sukmana, S.Pd., MT		Hendra Pradibta SE., MSc

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S3 - Contribute to improving the quality of life in society, nation, state, and progress of civilization based on Pancasila P7

S9 - shows a responsible attitude towards work in the field of expertise independently;

P7 - supervision and evaluation of the completion of work assigned to workers under their responsibility

P8 - Able to carry out the process of self-evaluation of work groups under his responsibility, and able to manage learning independently

KU - Mastering theoretical concepts in the field of Business Information Systems knowledge in general and theoretical concepts in the field of Multiplatform System Development or E-Business in depth, and able to formulate procedural problem solving

Learning Outcomes Graduates charged to courses (CPL-MK)

Students can have knowledge about quality service management related to business processes in an information system in the field of technology and business fields.

	Providing knowledge about quality assurance in a business organization automatically computerized and standardized auditing.
Short Course Descriptions	This course provides an understanding of the concept of quality service management / *quality management system* (QMS) and its application to the business processes of an organization.
Learning Materials / Subjects	1. Development of Information Technology Law 2. Copyright law 3. Brand and *domain name law* 4. Media law 5. Jurisdiction in Cyberspace (*Cyberjuristicion*) 6. Law On *E-commerce* 7. Privacy 8. Data protection 9. *Cybercrimes* and Countermeasures 10. Evidence and Electronic Evidence (*digital Evidence*) **LEARNING METHODS:** 1. Lectures / Expert Lectures, 2. Problem Based Learning/FGD 3. Student Centered Learning 4. Group discussion
References	**Main :** 1. Ravi Kalakota, Marcia Robinson, “e-Business 2.0: Roadmap for Success (2nd Edition)”, Addison-Wesley Professional, 2000.

	2. Turban, Efraim, David King, Dennis Viehland, Jae Lee. Electronic Commerce A Managerial Perspective International Edition. Pearson Prentice Hall, New Jersey 2004 **Supporters:**	
Instructional Media	**Software :** 1. Internet browsers 2. Microsoft Office 3. PDFViewer	**Hardware :** Computer
Name of Lecturer	1.	
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Able to explain the development of information technology law	1. Definition of Information Technology 2. Laws governing information technology in Indonesia	**Form :** Offline (*On-site*) **Learning methods:**	1x4x50” **Sync** - introductory	1. Describe information technology 2. Explain the	**Criteria:** Scoring criteria rubric **Form of assessment:** • Active group discussion includes	1. Clarity of definition of information technology 2. Accurate identification of differences in information	5%

		3. Laws governing information technology in Indonesia	Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : In each country, determine the differences in information technology regulations that apply in that country and the differences with the regulations that apply in Indonesia! (1x50') *Offline*	materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	differences in information technology regulations between countries	asking and answering questions ● Written test, about solving case studies	technology regulations that apply in each country	
2	Able to identify the development of information technology regulations in Indonesia	1. The development of information technology law in Indonesia	**Form :** Offline (*On-site*)	1x4x50' **Sync** - introductory	1. State the level of law and regulatory basis for informatio	**Criteria:** Scoring criteria rubric **Form of assessment:**	1. The level of accuracy of legal products that regulate information	5%

		2. Characteristics of information technology law in each government period	**Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Explain the differences in the scope of information technology regulatory focus between the old, new, and reform orders! (1x50') *Offline*	materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	n technology in Indonesia 2. Explain the differences in information technology laws for each government period	• Active group discussion includes asking and answering questions • Written test, about solving case studies	technology in Indonesia 2. The accuracy of information technology law differences in each administration	
3	Knowing to identify the benefits of information technology regulations in Indonesia for	1. Information technology law policy hierarchy in Indonesia 2. Characteristics of quality assurance	**Form :** Offline (*On-site*)	1x4x50” **Sync** - introductory	1. Describe the hierarchy of information technology	**Criteria:** Scoring criteria rubric **Form of assessment:**	1. The accuracy of mentioning the information technology policy	5%

	organizational quality assurance	in an information system 3. Information technology regulatory scope for organizational quality assurance 4. Benefits of information technology regulations related to organizational quality assurance	**Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Identify the benefits of information technology regulations that apply in Indonesia for quality assurance of a business based on the given organizational form! (1x50') *Offline*	materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	policies in Indonesia 2. Explain the impact of information technology regulations in Indonesia on business activities and quality assurance	• Active group discussion includes asking and answering questions • Written test, about solving case studies	hierarchy in Indonesia 2. Clarity of opinion on the impact of information technology regulations in Indonesia on business activities and quality assurance	
4	QUIZ I	Evaluation of material at meetings 1-3	**Form :** Offline (*On-site*)	1x2x50” **Sync** - case study			1. The accuracy of the points of opinion regarding	5%

			Evaluation media: E-learning lms.polinema.ac.id	assignment **(2x50')**			the completion of the case study	
5	Able to explain the concept and characteristics of copyright law in Indonesia	1. Definition of copyright 2. Copyright form 3. Characteristics of each type of copyright 4. Types of copyright claims for information technology works 5. Copyright function for quality management	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Explain the benefits of copyright related to quality assurance activities	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. The concept of copyright and its benefits for a business entity	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Accurate description of the characteristics of each type of copyright 2. Accuracy and completeness of copyright benefits for *software house company quality management* !	5%

			in a *software house organization* ! (1x50') *Offline*					
6	able to explain and analyze the concept of brands and domain names and the laws that govern them	1. Brand definition 2. Domain name definition 3. Brand and domain name regulations in Indonesia	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 Assignment** : Brand and domain name linkage analysis for an information technology company quality assurance!	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. Mention the definition of brand and domain name 2. Explain the parties involved in issuing brands and domain names in information technology companies 3. Explain the benefits of brands and domain names in quality assurance for information	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Accurate explanation of brand and domain name definitions 2. Knowing the parties involved in issuing brands and domain names in information technology companies 3. Explain the benefits of brands and domain names in quality assurance for information technology companies	5%

			(1x50') *Offline*		technology companies			
7	Explain and analyze broadcasting regulations and media utilization	1. Definition of media and electronic media 2. Types of electronic media 3. Electronic media and business processes 4. The role of electronic media for quality assurance of an information technology company	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Analysis of the role of electronic media related to the quality assurance of an information technology company! (1x50') *Offline*	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. Introduction to types of electronic media 2. The role of electronic media for the company's business processes 3. Benefits of electronic media for quality assurance of an information technology company	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Clarity of definition and types of electronic media 2. The accuracy of the analysis of the role of electronic media for the quality assurance of an information technology company	5%

8	UTS			1x2x50”	Doing midterm exam questions			10%
9	Explain and analyze the concept of jurisdiction in the virtual world and its impact on an information system	1. Definition of *Cyberjuristics* 2. Implementation of *Cyberjuristicion* in Indonesia 3. Impact of *Cyberjuristicion* in Indonesia 4. *Cyberjuristicion* cases related to information systems in Indonesia	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Make an analysis of the influence of *Cyberjuristicion* on information systems developed for government agencies !	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. Definition, impact, and implementation of *Cyberjuristicion* 2. Analysis and development of *cyberjuristic* cases in Indonesia	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Accurate explanation of the definition, impact, and implementation *of cyberjuristics* in Indonesia 2. Clarity analysis of the influence of *Cyberjuristicion* on information systems developed for government agencies	10%

			(1x50') *Offline*					
10	Explain and analyze *e-commerce regulations* in Indonesia	1. Definition of *e-commerce* 2. *e-commerce* business processes 3. Forms of *e-commerce regulation* in Indonesia	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Make an analysis of the influence of the ITE Law regulations on *e-commerce business processes* in Indonesia ! (1x50') *Offline*	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. Explain the definition and business processes *of e-commerce* 2. Explain the regulatory scheme of *e-commerce* in Indonesia	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. *e-commerce* business processes in Indonesia 2. *e- commerce* business processes in Indonesia	10%

11	Explaining the definition of privacy, identification of privacy problems and analysis of solutions to privacy cases implemented by information technology-based companies	1. Privacy definition 2. Privacy type 3. Privacy practices 4. Privacy case in Indonesia 5. Privacy case solutions ever implemented	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 Assignment** : Make an analysis of the feasibility of resolving privacy cases in Indonesia in terms of the organizational/personal quality of the perpetrators of privacy violations! (1x50') *Offline*	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. State the definition of privacy in the field of information technology 2. State the types and cases of privacy 3. Explaining case solutions and perspectives on solving privacy cases raised.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Accuracy explains the definition of privacy in the field of information technology 2. Accuracy in analyzing cases of privacy violations in Indonesia related to the organizational and individual qualities of the perpetrators of the violations	10%

12	Explain and explain the definition of digital data protection and analyze cases related to data protection and the impact on the reputation and quality of related organizations	1. Definition of data protection 2. The relationship between privacy and data protection 3. Data protection design in information systems 4. Data protection case	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 assignment** : Make an architectural design plan for data protection that should be applied to information systems that apply to the central government! (1x50') *Offline*	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. State the definition of personal data protection 2. State the case for personal data protection 3. Designing personal data protection designs, especially in information systems for government agencies	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Be able to explain the definition of data protection related to cases that have occurred 2. Accuracy of data protection architecture design in information systems	10%
13	QUIZ 2			1x2x50”				10%

14	1. Explain and define *cybercrime and identify cybercrime* cases in Indonesia 2. Analyzing the impact of *cybercrime* on the quality of a company engaged in information technology	1. Definition of *cybercrime* 2. Characteristics *of cybercrime* 3. Examples of *cybercrime cases* 4. The impact of *cybercrime* on every aspect	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 Assignment** : Make an analysis of the impact *of cybercrime* that has occurred on the quality and reputation of banking organizations in the types of BUMN and Private! (1x50') *Offline*	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. Explain the things that drive the emergence of *cybercrime* 2. Describe the characteristics *of cybercrime* 3. Describe *cybercrime cases* in Indonesia 4. Analyzing the impact *of cybercrime* on the quality of an organization	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Accurate description of the characteristics and attributes of *cybercrime* 2. Accurate explanation of the things that encourage the development of *cybercrime* 3. *cybercrime* case analysis and its impact on the quality and reputation of an organization	10%

15	1. *cybercrime* case handling scheme 2. Analyzing steps to prevent *cybercrime cases* in terms of improving organizational quality	*Cybercrime* case studies	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 Assignment** : Make an analysis of the best *cybercrime handling steps* you've ever done! (1x50') *Offline*	1x4x50" **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. State security needs 2. Mention basic issues on security 3. Describe the types of threats and attacks 4. Provide opinion on security management 5. Describe ways to secure communications and networks	**Criteria:** Scoring criteria rubric **Form of assessment:** • Active group discussion includes asking and answering questions • Written test, about solving case studies	1. Documenting attacks on network and computer security that move very quickly. 2. Describe practical security practices 3. Understand the basic elements of system security 4. Describe several types of attacks on network security. 5. Describes the fundamental mistakes that organizations make in security management. 6. Discuss some of the main technologies for system security 7. Understand some of the main technologies for the security of network components	5%

16	Explain the definition of digital evidence Explain the types of digital evidence Analyze the importance of digital evidence tracking activities for handling cases related to assurance and improving the quality of information systems	1. Definition of digital evidence and digital forensics 2. Digital evidence tools 3. The difference between auditing and digital forensics 4. Digital file inspection method	**Form :** Offline (*On-site*) **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Week 1 Assignment** : Make an analysis of the benefits of tracking digital evidence for guaranteeing and improving the quality of information systems! (1x50') *Offline*	1x4x50” **Sync** - introductory materials **(2x50')** - discussion of case studies **(2x50')** - Structured task **(1x50')**	1. Explain the difference between an information systems audit and digital forensics 2. Describe one of the methods in digital forensics	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Active group discussion includes asking and answering questions ● Written test, about solving case studies	1. Accuracy in distinguishing between an information system audit and digital forensics in the form of a case study 2. Clarity in analyzing digital forensics difficulties for information system quality assurance 3. Clarity in analyzing the importance of digital forensics for information system quality assurance	5%

17	UAS		Exam	1x2x50”	Work on end of semester exam questions	Mark	Answer accuracy	10%

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D4 Informatics Engineering

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
ARTIFICIAL INTELLIGENCE	RTI213003	Elementary Course	2 credits/ 4 hours	3	July 7, 2020

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Arie Rachmad Syulistyo, S.Kom., M.Kom. Arwin Datumaya Wahyudi Sumari, Ir., ST, MT, Dr., IPM, ASEAN Eng., ACPE. Bagas Satya Dian Nugraha, ST., MT. Ika Kusumaning Putri, S.Kom., MT M. Hasyim Ratsanjani, S.Kom., M.Kom. Mustika Mentari, S.Kom., M.Kom. Vipkas Al Hadid Firdaus, ST, MT Mamluatul Hani'ah, S.Kom., M.Kom.	Maybe Astiningrum, ST., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.

	KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
	KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
	KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
	KU2	Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK)	
	Able to understand Problem Solving, Knowledge Representation, Expert Systems, Natural Language Processing, Uncertainty, Fuzzy Logic, Neural Networks, Searching, Planning (C2); Understand various kinds of artificial intelligence algorithms and their application to solve problems in various fields; Able to analyze appropriate artificial intelligence techniques to solve problems with full responsibility and ethics;	
Short Course Descriptions	Reasoning (Fuzzy Logic), Problem Solving(BFS, DFS, Hill Climbing, A*), Knowledge Representation(Agent, Forward and Backward Chaining, Uncertainty:Bayes Theorem), Neural Networks, Natural Language Processing	
Learning Materials / Subjects	• Artificial intelligence • (Reasoning) : Fuzzy tsukamoto, sukamoto, mamdani • (Problem Solving) : Breadth-First Search, Depth-First Search, Best-First Search, Hill Climbing, A* • (Knowledge Representation) : Introduction to Knowledge representation, Agent • (Knowledge Representation) : Forwards and Backward Chaining • (Knowledge Representation) : Uncertainty of Bayes' theorem • (Machine Learning/JST) : Introduction to Supervised, Unsupervised and Reinforcement Learning, Perceptron + examples of perceptron applications, Deep Learning • (Machine Learning/JST): Decision Tree • Machine Learning/ANN): Evolutionary Algorithm Genetic Algorithm • (NLP) : Introduction	
References	**Main :**	

	1.
	Supporters: 1. Harris C, Michael, 2011, Artificial Intelligence, Marshall Cavendish Benchmark 2. Norvig, Peter, 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp. 3. Joshi, Prateek , 2017, Artificial Intelligence with Python Second Edition, Packt Publishing Ltd.
Instructional Media	**Software :** 1. VisualCode 2. Excel 3. Pythons **Hardware :** Computers/Laptops
Name of Lecturer	1. Arwin Datumaya Wahyudi Sumari, Ir., ST, MT, Dr., IPM, ASEAN Eng. 2. Ika Kusumaning Putri, S.Kom., MT 3. Rizdania, ST., MKom. 4. Vipkas Al Hadid Firdaus, ST, MT
Requirements Course	-

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)
1	• Able **to explain the basic** concepts	Introduction to Artificial Intelligence, definitions, reasons for learning, artificial intelligence	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon	1X4X50”	By studying artificial intelligence introduction	• Accuracy in finding examples of the implementation	1%

	of artificial intelligence and understand how to solve problems based on artificial intelligence (C2) techniques	applications, installing python, refreshing digital theory	**Learning methods:** *Discussion, Problem Based Learning (PBL)* **Assignment:** **Task 1** : Looking for examples of implementing artificial intelligence in everyday life and installing python (2x50') *Offline*		materials students can: 1. Explain the concept of artificial intelligence 2. Give examples of the implementation of artificial intelligence in everyday life. 3. Installing the Python programming language for artificial intelligence application development tools	of artificial intelligence in everyday life • Accuracy in installing python as a tool in learning	
2	• Be able to **explain** the concept of fuzzy reasoning (C2) • Be able to **explain** the difference between fuzzy	(Reasoning) : Fuzzy-=>Fuzzy tsukamoto, sugeno, mamdani	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *discussion* **Assignment:**	1X4X50”	By studying the concept of fuzzy reasoning students can:	• Knowing the concept of fuzzy reasoning. • simulating solving a daily problem through a fuzzy reasoning approach	1%

	tsukamoto, sugeno, mamdani		Parsing again based on the example of the concept of fuzzy reasoning (2x50') *Offline*		1. Explain the concept of fuzzy reasoning 2. Understand the benefits of the concept of fuzzy reasoning 3. Knowing the application of the concept of fuzzy reasoning.		
3	• Able **to apply** the concept of fuzzy reasoning (C3)	(Reasoning) : Fuzzy=> Fuzzy application examples for tsukamoto, sugeno, and mamdani	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *Discussion,* *Problem Based Learning (PBL)* **Assignment:** Case studies of the application of the concept of fuzzy reasoning by Tsukamoto, Sugeno, and Mamdani (2x50') *Offline*	1X4X50"	By studying the concept of fuzzy reasoning students can: 1. Applying the concept of fuzzy reasoning in solving problems according to case studies using fuzzy tsukamoto, sugeno, and mamdani 2. Applying the concept of fuzzy reasoning	• implementing a fuzzy algorithm as a solution to a problem in python.	2%

					to the Python programming language		
4	• Be able **to explain** the search strategy (C2)	(Problem Solving) : Searching->Breadth-First Search, Depth-First Search, Best-First Search, Hill Climbing, A*	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** Looking for examples of implementing search strategies and re-describing them based on the examples obtained (2x50') *Offline*	1X4X50”	By studying search strategy material, students can: 1. Be able to explain the concept of search strategy. 2. Be able to describe the benefits of search strategy. 3. Build solutions to existing problems through the implementation of search strategies.	• Accuracy describes the search strategy in solving a problem.	1%
5	Material test week 1 to 5	Quiz 1	Quiz 1	1X50”	Quiz 1	Quiz 1	10%
6	• Able **to apply** search strategy (C3)	(Problem Solving): examples of Depth-First Search applications, Hill Climbing	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *Discussion,*	1X4X50”	By studying search strategy material students can: 1. Apply the concept of search strategy in python programming	• The accuracy of implementing a search strategy as a solution to a problem in Python.	2%

			Problem Based Learning (PBL) **Assignment:** **Task 1** : implement a search strategy as a solution based on everyday problems (2x50') *Offline*		3. Apply the concept of search strategy in solving problems in everyday life		
7	• Able **to explain** the concept of knowledge representation and agent (C2)	(Knowledge Representation) : Introduction to Knowledge representation, Agent	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** exemplify and describe the application of knowledge representation & agent (2x50') *Offline*	1X4X50”	By studying knowledge representation and agent material, students can: 1. Explain again the concept of knowledge representation and agent. 2.. Building solutions to existing problems through the application of knowledge representation and agent concepts	• Accuracy in explaining forms of knowledge representation. • precision in demonstrating the role of the Agent in the AI concept	1%
8	Material test week 1 to 8	UTS	UTS	1X50”	UTS	UTS	30%
9	• Be able **to explain the concept of**	(Knowledge Representation) :	**Form :** Studying	1X4X50”	By studying forward and backward chaining	• accuracy in distinguishing the concept of forward	1%

	forward and backward chaining (C2) • Be able to **explain the difference between** forward and backward chaining (C2)	Forwards and Backward Chaining	- Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** Looking for examples of the application of knowledge representation and re-describing them based on the examples obtained (2x50') *Offline*		material, students can: 1. Explain the concept of forward and backward chaining. 2. Explain the difference between forward and backward chaining concepts 3. Simulating forward and backward chaining processes.	and backward chaining. • accuracy of simulating forward and backward chaining processes.	
10	• Able **to apply** forward and backward chaining (C3)	(Knowledge Representation): Examples of Forwards and Backward Chaining applications	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *discussion, Problem Based Learning (PBL)* **Assignment:** apply forward and backward chaining algorithms as solutions	1X4X50”	By studying the material for applying forward and backward chaining, students can: 1. Knowing the application of the concept of forward and backward chaining. 2. Applying the concept of forward and backward	• Implementing the concept of forward and backward chaining in python.	2%

			to case studies of everyday problems (2x50') *Offline*		chaining in solving problems based on case studies 3. Apply the concept of forward and backward chaining in python programming.		
11	• Be able **to explain the concept of** bayes theory (C2) • Be able to **solve** the problem of a case study using Bayes' theory (C3)	(Knowledge Representation) : uncertainty of Bayes' theorem + example application of uncertainty of Bayes' theorem	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *discussion,* *Problem Based Learning (PBL)* **Assignment:** apply Bayes' theory in a case study (2x50') *Offline*	1X4X50"	By studying Bayesian theory material, students can: 1. Explain the concept of Bayes' theory. 2. Applying Bayes' theory in solving problems. 3. Apply Bayes theory in Python programming.	• describes the bayes theory approach in everyday life. • Simulating the process of Bayes theory in calculations. • Applying bayes theory in python for everyday problem solving.	2%
12	• Able **to explain** the concept of ANN (C2) • Be able **to explain** the concept of perceptron	(Machine Learning/JST) : Introduction to Supervised, Unsupervised and Reinforcement Learning, Perceptron + examples of perceptron applications, deep learning	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon **Learning methods:** *discussion*	1X4X50"	By studying *ANN theoretical material* , students can: 1. explain the concept of *ANN theory* .	• accuracy in describing the perceptron algorithm in the form of calculations for the OR / AND case	2%

	• Be able to **describe** the perceptron algorithm in the form of calculations for the OR/AND(C3) case		**Assignment:** perceptron algorithm in the form of calculations for the OR/AND case (2x50') *Offline*		2. Explain the *Perceptron theory* 3. Describe the perceptron algorithm in the form of calculations for the OR / AND case 4. Applying the *perceptron algorithm* in python programming.		
13	Material test week 9 to 12	Quiz 2	Quiz 2	1X50”	Quiz 2	Quiz 2	10%
14	• Be able **to explain** the concept of decision tree (C2) • Be able to **describe** the perceptron algorithm in the form of calculations for a case study (C3)	(Machine Learning/JST): Decision Tree + Example of a Decision Tree application	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *discussion Problem Based Learning (PBL)* **Assignment:** Re-describe based on an example of implementing a	1X4X50”	By studying decision tree theory material, students can: 1. Explain the concept of decision tree theory. 2. Apply decision tree theory in solving problems. 3. Applying decision tree theory in python programming.	• describes the decision tree theory approach in everyday life. • Simulating the process of decision tree theory. • Applying decision tree theory in python for solving everyday problems.	2%

			decision tree algorithm for a case study (2x50') *Offline*				
15	• Be able **to explain** the concept of genetic algorithm (C2) • Able **to apply** genetic algorithm (C3)	Machine Learning/ANN): Evolutionary Algorithm Genetic Algorithm + Practicum	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Discussion* **Assignment:** Looking for examples of implementation of Genetic algorithms (2x50') *Offline*	1X4X50”	By studying genetic algorithm material, students can: 1. Explain the concept of genetic algorithm theory. 2. Explain the benefits of genetic algorithm theory. 3. Applying genetic algorithm theory in solving problems. 4. Applying genetic algorithm theory in python programming.	• describes the approach of genetic algorithm theory in everyday life. • Simulate the genetic algorithm process. • Applying genetic algorithm theory in python for everyday problem solving.	2%
16	• Able **to give** examples of the application of NLP(C2) • Be able to explain the basic concepts of NLP(C2)	(NLP) : Introduction	**Form :** Studying - Online (*online)* (2x50') **Sync** → Vcon , discussion **Learning methods:** *Discussion*	1X4X50”	By studying Natural language processing material, students can: 1. Explain the basic concept of Natural	• Describe the benefits of NLP concepts in everyday life. • Mention examples of the use of NLP concepts in everyday life.	1%

			Assignment: Looking for examples of NLP implementations (2x50') *Offline*		language processing.		
17	Material test week 1 to 16	UAS	UAS	1X50”	UAS-	UAS	30%

Information :

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MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATION TECHNOLOGY

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
Web Design And Programming	**RTI213004**	Core Informatics	3 credits/ 6 hours	2	August 30, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Elok Nurhamdana, ST, MT Annisa Taufika Firdausi, ST., MT. Milyun Ni'ma Shoumi, S.Kom., M.Kom Farid Angga Pribadi, S.Kom., M.Kom Rizky Ardiansyah, S. Kom., MT. Wilda Imama Sabilla, S.Kom., M.Kom	Yoppy Yunhasnawa, S.ST., M.Sc.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

- **S8** Internalize academic values, norms, and ethics.
- **S9** Demonstrate a responsible attitude towards work in the field of expertise independently.
- **PP2** Mastering ICT product development methods to provide the right solutions through one or more application domains.
- **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
- **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
- **KU2** Able to demonstrate independent, quality and measurable performance.

	Learning Outcomes Graduates charged to courses (CPL-MK)
	Able to create attractive interface designs to provide the right solutions through website-based application domains ; Able to distinguish static web and dynamic web; Able to distinguish dynamic applications on the user side and server side; Able to create applications using PHP, MySQL Database, jQuery and AJAX with full responsibility and ethics , and apply logical and innovative thinking .
	Graduate Learning Outcomes that are charged to courses (CPL-MK Sub)
	- Students can explain the concept of a working website and the concept of HTML (C2) - Students distinguish static web and dynamic web on the server side and on the client side (C2) - Students can apply HTML Concepts on Static Web (C3) - Students can explain the concept of CSS on Static Web (C3) - Students can explain Java Script concepts and apply them to Static Web (C2 , C3) - Students can explain the concept of JQuery and apply it to a Static Web (C2 , C3) - Students can explain web-based programming concepts and various Web server software (C2) - Students can explain PHP concepts and apply them to Dynamic Web (C2 , C3) - Students can explain the concept of web-based programming (C2) - Students can give examples of various Web server software (C2) - Students are able to create case studies (C6) - Students can explain Form Processing and Upload Form concepts and applying them to the Dynamic Web (C2 , C3) - Students can explain the concept of Database Web Programming using PHP and MySql and apply it to the Dynamic Web (C2 , C3) - Students can explain the concepts of Login, Multiuser Login and reports , and apply them to the Dynamic Web (C2 , C3) - Students can explain the concepts of Cookies, Session and Mysql and apply them to the Dynamic Web (C2 , C3) - Students can explain the concept of Bootstrap and apply it to the Dynamic Web (C2 , C3) - Students can explain the concept of Web Hosting and apply it to Dynamic Web (C2 , C3)

	- Students can explain Web design and programming concepts and apply them to Dynamic Web (C2 , C3) (C2)
Short Course Descriptions	In this Web Design and Programming course, HTML, CSS, Javascript, Jquery will be discussed, the differences between static web and dynamic web, dynamic Web on the client side and on the server side, Introduction to Web Servers, Web programming languages (PHP), Databases related to Web programming (MySQL), Middleware Connection to Database, JQuery, AJAX
Learning Materials / Subjects	**12.** Introduction to the Internet and Web Design 13. HTML 14. CSS 15. Java Script 16. JQuery 17. PHP Programming Fundamentals 18. Form Processing and Form Upload 19. Cookies, Sessions and MySQL 20. Database Programming in PHP 21. Multiuser Login and Reports 22. Datatables 23. AJAX 24. Bootstrap **25.** Web Hosting
References	**Main :** 7. Jason Beaird, The principles of Beautiful Web Design 8. Rian Ariona, Learn HTML and CSS (Fundamental Tutorial on learning HTML and CSS) 9. Adi Hadisaputra, HTML and CSS Fundamentals from Roots to Leaves

	10. John Duckett,HTML and CSS design and build websites 11. Glenn Johnson, Programming in HTML 5 with Javascript and CSS 3 12. Desrizal, Javascript Guide 13. Tutorials Point Simply Easy Learning, Java Script Language 14. Jonathan Caffer and Karl Swedberg, Learning Jquery 1.3 (Better Interaction Design and Web development with simple Jawa Script Techniques) 15. Andre Pratama, PHP Uncover – PHP Learning Guide for beginners 16. Endy Muhardin, PHP Programming Fundamentals and MySql Fundamentals 17. Bootstrap Tutorial (Simply Easy Learning by Tutorials.com) **Supporters:** 3. Desrizal, Complete guide to PHP AJAX JQuery 4. Ciebal, Basic Internet Tutorial for beginners 5. ABD Hama, Indonesian Language Bootstrap Framework Tutorial	
Instructional Media	**Software :**	**Hardware :**
	SOFTWARE :OS - WINDOWS, WEB BROWSER, XAMPP Web Server, Visual Code editor and text editor (Notepad++)	Laptops, LCDs and Projectors
Name of Lecturer	Elok Nurhamdana, ST, MT Annisa Taufika Firdausi, ST., MT. Milyun Ni'ma Shoumi, S.Kom., M.Kom Farid Angga Pribadi, S.Kom., M.Kom Rizky Ardiansyah, S. Kom., MT. Wilda Imama Sabilla, S.Kom., M.Kom	
Requirements Course	-	

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students can **explain** the concept of a working website and the concept of HTML (C2) • Students **distinguish** static web and dynamic web (C2) • Students can **distinguish** dynamic web on the server side and on the client side (C2) • Students can **apply** HTML Concepts on Static Web (C3)	• Web basic concept • Great Web Design • Web architecture • HTTP • Client side programming • Server side programming • Web server software • Introduction to HTML • Creating Images • Create Links • Heading / Title • Make a List / List • Understanding DIV Tags • Forms • Table • Web Programming • Case study	**Form :** Practice **Learning methods:** *Self Direct Learning (SLD)* **Learning Resources:** **E-learning lmsslc.polinema .ac.id** **Assignment:** **Task 1** : Working on Jobsheet 1	**1 x 5 x 50 '** - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	By studying Web design and programming materials , students can: • Static web creation exercise	• Question and answer • Practice	• Ability to understand how to Implement HTML Concepts on Static Web	**2%**
2	• Students can **explain** the concept of CSS • Students can (C2) **applying** CSS Concepts on Static Web (C3)	• Definition of CSS • Box Models • Grids • FlexBox • Case study	**Form :** Practice **Learning methods:**	1 x 5 x 50 ' - Online (*Online*) **(1x50')**	• Static web styling exercise	• Question and answer • Practice	• Ability to understand how to Implement CSS	**2%**

			Role Play & Simulation Learning **Learning Resources: E-learning lmsslc.polinema.ac.id** **Assignment: Task 2** : Work on Jobsheet 2	**Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Tasks based on case studies.		Concepts on Static Web	
3	• Students can **explain** the concept of CSS (C2) • Students can **applying** CSS Concepts on Static Web (C3)	• Fonts • Background Color • Responsive Web • Case study	**Form :** Practice **Learning methods:** *Role Play & Simulation Learning, Problem Based Learning (PBL)* **Learning Resources: E-learning lmsslc.polinema.ac.id** **Assignment: Task 3** :	1 x 5 x 50 ' - Online (*Online*) **(1x50')** **Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Static web styling exercise • Tasks based on case studies.	• Question and answer • Practice	• Ability to understand how to Implement CSS Concepts on Static Web	**2%**

			Working on Jobsheet 3, where there is a case study of applying CSS to a static website					
4	• Students can **explain** the concept of Java Script (C2) • Students can **implementing** Java Script Concepts on Static Web (C3)	• Introduction to Java Script • Event Handling • Strings object • Window object • Date and Time • Variables • Data Type • table	**Form :** Practice **Learning methods:** *Role Play & Simulation Learning, Problem Based Learning (PBL)* **Learning Resources:** **E-learning lmsslc.polinema.ac.id** **Assignment:** **Task 4** : Working on Jobsheet 4, where there is a case study of implementing Javascript on a static web	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to Implement Java Script Concepts on Static Web	**2%**

5	• Students can **explain** the concept of Java Script (C2) • Students can **implementing** Java Script Concepts on Static Web (C3)	• Arrays • Looping • Condition • Form validation • maps	**Form :** Practice **Learning methods:** *Role Play & Simulation Learning, Problem Based Learning (PBL)* **Learning Resources:** **E-learning lmsslc.polinema.ac.id** **Assignment:** **Task 5** : Working on Jobsheet 5, where there is a case study of implementing Javascript on a static web	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to Implement Java Script Concepts on Static Web	**2%**
6	• Students can **explain** the concept of JQuery (C2) • Students can **implementing** JQuery Concepts on Static Web (C3)	• Jquery Usage and Development • Jquery Basics • Event Handling in Jquery	**Form :** Practice **Learning methods:**	1 x 5 x 50 ' - Online (*Online*) **(1x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to Implement JQuery	2%

		• Creating Slide Shows with Jquery	*Self-Direct Learning, Role Play & Simulation Learning* **Learning Resources: E-learning lmsslc.polinema .ac.id** **Assignment: Task 6** : Working on Jobsheet 6	**Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**			Concepts on Static Web	
7	• Students can **explain** the concept of web-based programming (C2) • Students can **explain** various types of Web server software (C2) • Students can **explain** the concept of PHP (C2) • Students can **applying** PHP Concepts on Dynamic Web (C3)	• Introduction to Web Servers • PHP Introduction • PHP installation • PHP variables • PHP Data Types • PHP strings	**Form :** Practice **Learning methods:** *Self-Direct Learning, Role Play & Simulation Learning* **Learning Resources: E-learning lmsslc.polinema .ac.id**	1 x 5 x 50 ' - Online (*Online*) **(1x50')** **Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to apply PHP concepts on a dynamic website	**2%**

			Assignment: **Task 7** : Working on Jobsheet 7					
8	• Students can **explain** the concept of web-based programming (C2) • Students can **give examples of** various Web server software (C2) • Students can **explain** the concept of PHP (C2) • Students can **applying** PHP Concepts on Dynamic Web (C3)	• Looping and Branching Structures	**Form :** Practice **Learning methods:** *Self-Direct Learning, Role Play & Simulation Learning* **Learning Resources:** **E-learning lmsslc.polinema.ac.id** **Assignment:** **Task 8** : Working on Jobsheet 8	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to apply PHP concepts on a dynamic website	**2%**
9	• Students are able **to create** case studies (C6)	• HTML • CSS • Java Script • Jquery • PHP	**Form :** Practice **Learning methods:** *Problem Based Learning (PBL)*	1 x 5 x 50 '			• Ability to understand how to apply HTML, CSS, Java Script, PHP Concepts on	20 %

			Learning Resources: **E-learning lmsslc.polinema .ac.id** **Assignment:** **Task 8** : Implement case studies by utilizing HTML, CSS, Javascript, JQuery, and PHP				Static Web and Dynamic Web	
10	• Students can **explain** the concept of web-based programming (C2) • Students can **give examples of** various Web server software (C2) • Students can **explain** the concept of PHP (C2) • Students can **applying** PHP Concepts on Dynamic Web (C3)	• Arrays in PHP • Functions in PHP • Strings • date and time	**Form :** Practice **Learning methods:** *Self-Direct Learning, Role Play & Simulation Learning* **Learning Resources:** **E-learning lmsslc.polinema .ac.id** **Assignment:** **Task 10** :	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to apply PHP concepts on a dynamic website	**2%**

			Work on Jobsheet 10					
11	• Students can **explain** the concepts of Form Processing and Form Upload (C2) • Students can **apply** the Concept of Form Processing and Form Upload on Dynamic Web (C3)	• Basic Form Handling • Form Input type text and Password • Form Validation with isset() function and header redirect • Form Input type Radio • Form Input Checkbox • Form Input ComboBox • Form Validation using Regular Expression • Form Input type Text Area Move upload file • Validation for Uploaded files that have the same name • Limit Upload File Size • Limit Upload File Types	**Form :** Practice **Learning methods:** *Self-Direct Learning, Role Play & Simulation Learning* **Learning Resources: E-learning lmsslc.polinema.ac.id** **Assignment: Task 11** : Working on Jobsheet 11	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	• Exercise • Tasks based on case studies	• Question and answer • Practice	• Ability to understand how to apply Form Concepts to a dynamic Web	**2%**

12	• Students can **explain** the concept of Web Database Programming using PHP and MySql (C2) • Students can **implementing Web Database Programming** Concepts using PHP and MySql on the Dynamic Web (C3)	• create • Updates • Delete • Database Connection	**Form :** Practice **Learning methods:** *Self-Direct Learning, Role Play & Simulation, Learning Problem Based Learning (PBL)* **Learning Resources: E-learning lmsslc.polinema .ac.id** **Assignment: Task 12** : Working on Jobsheet 12, where there is a case study of implementing CRUD using PHP and MySQL	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**	Exercises and Assignments based on case studies	• Question and answer • Practice	• Ability to understand how to apply Web Database Programming Concepts using PHP and MySql on a dynamic Web	**2%**
13	• Students can **explain** the concept of Login, Multiuser Login and reports (C2)	• Login • Multiuser Login • Report • Sessions	**Form :** Practice **Learning methods:**	1 x 5 x 50 ' - Online (*Online*) **(1x50')**	Exercises and Assignments based on case studies	• Question and answer • Practice	• Ability to understand how to apply login concepts, multiuser login	**2%**

	• Students can **apply** the Concept of Login, Multiuser Login and report on Dynamic Web (C3) • Students can **explain** the concept of Cookies, Session and Mysql (C2) • Students can **applying** the Concept of Cookies, session and Mysql on Dynamic Web (C3)	• Cookies • mysql	*Self-Direct Learning, Role Play & Simulation Learning, Problem Based Learning (PBL)* **Learning Resources: E-learning lmsslc.polinema .ac.id** **Assignment: Task 13** : Working on Jobsheet 13, where there are case studies on the implementation of Cookies, Session and Multiuser Login	**Asynchronous** → learning videos - Practicum Jobsheet **(4 x50')**			and reports on dynamic Web	
14	• Students can **explain** the concept of Bootstrap (C2) • Students can **implementing** Bootstrap Concepts on Dynamic Web (C3)	• Bootstrap	**Form :** Practice **Learning methods:** *Self-Direct Learning,*	1 x 5 x 50 ' - Online (*Online*) **(1x50')** **Asynchronous** → learning videos	• Exercise • Task	• Question and answer • Practice	• Boostrap 's Concepts to a dynamic Web	2%

			Role Play & Simulation Learning, Problem Based Learning (PBL) **Learning Resources: E-learning lmsslc.polinema .ac.id** **Assignment: Task 14** : Working on Jobsheet 14, where there is a case study of implementing Bootstrap on the Dynamic Web	- Practicum Jobsheet **(4 x50')**				
15	• Students can **explain** the concept of Web Hosting (C2) • Students can **applying** the Concept of Web Hosting on a Dynamic Web (C3)	• Web Hosting	**Form :** Practice **Learning methods:** *Self-Direct Learning, Role Play & Simulation Learning, Problem Based Learning (PBL)*	1 x 5 x 50 ' - Online (*Online*) **(1x50') Asynchronous** → learning videos	• Exercise • Task	• Question and answer • Practice •	• Web Hosting Concepts on a dynamic Web •	2%

			Learning Resources: E-learning lmsslc.polinema .ac.id **Assignment: Task 15** : Working on Jobsheet 15, where there is a case study of implementing Web Hosting on a Dynamic Web	- Practicum Jobsheet **(4 x50')**				
16	• Students can **explain** the concept of Web design and Programming (C2) • Students can **apply** Web Design and Programming Concepts on Dynamic Web (C3)	• FinalProject	**Form :** Practice **Learning methods:** *Project Based Learning (PjBL)* **Learning Resources: E-learning lmsslc.polinema .ac.id** **Assignment: Big Tasks** :	1 x 5 x 50 '		• Question and answer • Presentation	• Ability to understand how to apply Web Design and Programming Concepts to a dynamic Web	**22%**

			Working on the Final Project					
17	U A S	• HTML • CSS • Java Script • PHP • PHPMysql • Bootstrap • Web hosting	• Online exams • Hosting	1 x 5 x 50 '	U A S	U A S	U A S	30 %

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM: D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (SKS)/hour	SEMESTER	DATE. PREPARATION
ADVANCED DATABASE	**RTI 21 3005**	Core Informatics	2 credits/ 4 hours	5	August 30, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Yoppy Yunhasnawa, S.ST., M.Sc. Rokhimatul Wakhidah, S.Pd, MT Dwi Puspitasari, S.Kom., M.Kom. Annisa Puspa K, S.Kom., M.Kom. Dika Rizky Yunianto, S.Kom., M.Kom Irsyad Arif Mashudi, S.Kom., M.Kom.	Yoppy Yunhasnawa, S. Kom. M. Eng.	Imam Fahrur Rozi, ST, MT

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)
	S8 Internalize academic values, norms, and ethics.
	S9 Demonstrate a responsible attitude towards work in the field of expertise independently.
	PP2 Mastering ICT product development methods to provide the right solutions through one or more application domains.
	KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
	KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
	KU2 Able to demonstrate independent, quality and measurable performance.

	Learning Outcomes Graduates charged to courses (CPL-MK) Understand Transact SQL - Select, Data Type, Built In Function, Sub Query, Table Expression (View, Scalar Function, Inline Table Value Function, Derived Table, Common Table Expression), Set Operator, Window Rank, Pivoting, Stored Procedure, Programming, Error Handling, Rollback, Commit, Final Database Project.
Short Course Descriptions	Advanced Database is a course that is expected to provide knowledge and skills in managing data in an enterprise relational DBMS. This knowledge and skills cover complex query techniques and database administration procedures.
Learning Materials / Subjects	- Re *View* Database, Introduction to SMBD, Installation and Configuration of Microsoft SQL *Server* . - Introduction to Transact-SQL and the SELECT Statement. - Join, sort, and filter data. - Data types, and Built-in Functions - Subqueries, Grouping, and Aggregating - Table Expressions - Set and Trigger Operations - SQL *Window* ing: Function, Rank, Offset, & Aggregate - Pivot and Grouping Sets - *Queries* against Metadata - *Stored Procedures* and dynamic SQL - Programming in T-SQL and error handling - Introduction to NoSQL - NoSQL implementation case studies - Case study of T-SQL querying
References	**Main :** Microsoft Press, Querying Microsoft® SQL *Server* ® 2012, 2012 **Supporters:** 1. Microsoft Press, Administering Microsoft® SQL *Server* ® 2012, 2012
Instructional Media	**Software :** / **Hardware :**

	8. Microsoft SQL *Server* 2012(minimum). 9. Microsoft SQL *Server* Express 2016 and above (recommended) 10. Microsoft SQL *Server* Management Studio (SSMS)	PCs/Laptops
Name of Lecturer	1. Dwi Puspitasari, S.Kom., M.Kom. 2. Dika Rizky Yunianto, S.Kom, M.Kom 3. Yoppy Yunhasnawa, S.ST., M.Sc. 4. Annisa Puspa Kirana., S. Kom, M. Kom 5. Rokhimatul Wakhidah, S.Pd, MT 6. Very Sugiarto, S.Pd 7. Galih Putra Riatma, S.ST.	
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	- Students are able **to install** Microsoft SQL *Server* , Management Studio (SSMS) and connect it with SQL *Server* **(C1)** - Students **explain the**	- Installing Microsoft SQL *Server* . - Install Microsoft SQL *Server* Management Studio.	**Form :** e. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video.	4 X 50”	By studying the SMBD Introduction material students can: - Understand database concepts - Perform the	**Criteria:** Precision and mastery **Form of assessment:** - Presentation	Able to understand the concept of *enterprise DBMS* and its various advantages.	2.86%

	intent and purpose of *SQL Server services* on *Windows* . **(C2)** - Students **explain the concept of *database objects*** on SQL *Server* through the SSMS window. **(C2)** - Students **explain the difference between *database servers* and *database tools*** *(GUI).* **(C2)** - Students are able to **execute** Transact-SQL (T-SQL) scripts via SSMS. **(C3)**	- Exploring SQL *Server* services and enabling/disablin g them through SQL *Server* Configuration Manager. - Connect to *the database server* via SSMS. - *database* objects through the SSMS window. - Execute SQL scripts via the SSMS *query window* .	f. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		process of installing and configuring Microsoft SQL Server - Understand the difference between *database servers* and *database tools (GUI).* - Execute Transact-SQL (T-SQL) scripts through SSMS.	- Active group discussion includes asking and answering (affective) - *job sheet* assignments		
2	- Students are able **to explain the basic differences between**	-Executes SQL scripts that have been previously	**Form :** a. Studying Online (	4 X 50”	By studying the SMBD Introduction	**Criteria:** Precision and mastery	Able to understand the concept of programmable-SQL	2.86%

	Transact-SQL (T-SQL) and ANSI SQL. (C2) - Students are able to **explain how to create *a database from an*** existing **SQL file (C2)** - Students can **execute part or all of the SQL script** from an existing file. **(C3)** - Students are able to **explain and apply the concept of ' *database* context' and how to adjust it. (C2) (C3)** - Students are able to **apply the concept of using 'comments' in T-SQL** . **(C3)** - Students are able **to apply the concept of using the SELECT statement** to analyze existing tables in *the database* . **(C3)** - Students **are able to apply how to display data in an orderly manner**	stored in a file -Observe and change *the database* context. -Make comments (comments) on T-SQL -Analyze a table with the help of a SELECT statement. -Display data uniquely with DISTINCT. -Create aliases for table names and column names -Create a branch with CASE.	*Online*) (1x50') **Asynchronous** → Learning video b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work*		material students can: - Understand the basic differences between Transact-SQL (T-SQL) and ANSI SQL. - Understand how to create *a database* from an existing SQL file - Understand how to execute part or all of SQL scripts from existing files. - Understand the concept of ' *database* context' and how to customize it. - Understand the concept of using 'comments' in T-SQL. - Understand the concept of using a SELECT	**Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	and the use of SELECT statements	

	unique/distinct . **(C3)** - Students are able **to apply how to use aliases** for table names and column names. **(C3)** - Students **are able to apply the concept of CASE expressions** and how to use them. **(C3)**		*(2x50')*		statement to analyze existing tables in the database. - Understand how to display data *uniquely/distinct* . - Understand how to use aliases for table names and column names. - Understand the concept of CASE expressions and how to use them.			
3	- Students are able to **explain and apply how *to query multi-tables*** in the SELECT clause using JOIN **(C2)(C3)** - Students are able to **apply how to write INNER JOIN *queries* *(C3)*** - Students are able to **apply how to write OUTER JOIN *queries* (C3)**	-*query* with JOIN -INNER JOIN -OUTER JOINS -SELF JOIN and CROSS JOIN -*sort* (sorting) data -Filter data with WHERE -Partial data	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video b. Studying **Online** (*Online*) (1x50') **Sync** →	4 X 50”	By studying the SMBD Introduction material students can: - Understand how *to query multi-tables* in a SELECT clause using JOIN - Understand how to write INNER JOIN *queries*	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective)	Understand the concept and be able to perform JOIN, Sorting and Filtering operations on data in the database.	2.86%

	- Students are able **to apply how to write SELF-JOIN and CROSS JOIN *queries* (C3)** - Students are able to **apply how to do Data Sorting (C3)** - Students are able **to apply how to do Data Filtering** with predicates **(C3)** - Students are able to **explain and apply how to do Data Filtering** with TOP and OFFSET-FETCH **(C2)(C3)** - Students are able to **explain how to handle missing and unknown values in real data. (C3)**	retrieval with TOP and OFFSET-FETCH -NULL and its handling	Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		- Understand how to write OUTER JOIN *queries* - Understand how to write SELF-JOIN and CROSS JOIN *queries* - Understand how to sort data - Students understand how to do Data Filtering with predicates - Understand how to do Data Filtering with TOP and OFFSET-FETCH - Understand how to perform Missing and unknown value handling **on real data.**	*job sheet* assignments		
4	- Students can **explain data types in SQL *Server* (C2)** - Students can **explain *queries* against data**	- Convert data types with CAST and CONVERT	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous**	4 X 50”	By studying the SMBD Introduction material students can:	**Criteria:** Precision and mastery	Students understand the use of some important built-in SQL *Server*	2.86%

	types Date & Time (C2) - Students can **explain built-in functions related to Date & Time (C2)** - Students can **explain character data types Concatenation of character data types with non-characters (C2)** - Students can **explain built-in functions related to** character data types **(C5)**	- Replace NULL with *ISNULL* and COALESCE - Convert date-time data type with CONVERT & TRYPARSE - IF logic function - Row grouping with CHOOSE. - The LEN function on strings	→ Learning video. b.Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet* work (2x50')		- Understanding data types in SQL *Server* - Understand *Queries* against Date & Time data types - Understanding Built-in Functions related to Date & Time - Understanding Character data types Concatenation of character data types with non-characters - Understand the built-in functions related to character data types	**Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	*functions and how to use them.*	

5	- Students can **explain how to write *queries*** which summarizes data using *built-in aggregation functions* **(C2)** - Students can **explain and apply how to use the GROUP BY clause** to arrange rows into several groups **(C2)(C3)** - Students **can explain and apply how to use the HAVING clause** to filter data according to search conditions **(C2) (C3)** - Students **are able to apply the intent and use *of queries* nested in** another ***query*** **(C3)** - Students **explain how to write a *self-contained sub-query*** that returns scalar or multi-valued results **(C2)** - Students **are able to apply how to write correlated sub-*queries*** and return	-Definition of aggregation and aggregation function -Groups values with GROUP BY -Filter groups of values by HAVING -*Queries* within Queries -Sub- *Query* Self-contained vs Correlated -The sub-*Query* is scalar and multivalued - Checks for the existence of a value in the sub-*query* with the EXISTS predicate	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and	4 X 50”	By studying the SMBD Introduction material students can: - Understand how to write *queries* that summarize data using built-in aggregation functions - Understand how to use the GROUP BY clause to organize rows into groups - Understand how to use the HAVING clause to filter data according to search conditions - Understand the intent and use of *queries* that are nested within other *queries* - Understand how to write *self-contained sub-queries* that	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	Students understand concepts, are able to create and use *sub-queries* , are able to classify data into *groups* , and are able to aggregate data.	2.86%

	scalar or multi-valued results **(C3)** - Students **are able to apply how to use the EXISTS predicate** to efficiently check the existence of a row in a sub-query **(C3)**		practicum *job sheet work (2x50')*		return scalar or multi-valued results - Understand how to write correlated sub-*queries that return scalar or multi-valued results* Students understand how to use the EXISTS predicate to efficiently check for the existence of a row in a sub-query			
6	- Students **are able to define the meaning of *table expressions* . (C2)** - Students **are able to explain concepts and are able to make *a VIEW* (C2) (C3)** - Students **are able to explain concepts and be able to derive tables (C2) (C3)**	-*Table expressions* and their types -Derived Table -Common Table Expressions (CTE) -Inline Table Valued Functions (TVF)	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** →	4 X 50”	By studying the SMBD Introduction material students can: - Be able to define the meaning of *table expressions* . - Understand the concept and be able to create *a*	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and	Students can type *table expressions* and be able to make and use them.	2.86%

	- Students **are able to explain concepts and are able to make common table-expressions (CTE) (C2)(C3)** - Students **are able to explain concepts and be able to make inline table-valued functions (TVF) (C2)(C3)**		Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		*VIEW* - Understand the concept and be able to derive tables - Understand the concept and be able to create a common table-expression (CTE) - Understand the concept and be able to create an inline table-valued function (TVF)	answering (affective) *job sheet* assignments		
7	- Students **are able to explain the purpose of Set Operations (C2)** - Students **are able to apply and explain the differences between UNION & UNION ALL (C2)(C3)** - Students **are able to**	-Types of Set Operations -Merge data with UNION & UNION ALL -Apply a function to each member of the set with CROSS	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (	4 X 50”	By studying the SMBD Introduction material students can: - Understand the meaning of Set Operations - Able to utilize,	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion	Students understand the concept and are able to perform set operations and create TRIGGER.	2.86%

	apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2) - Students **are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3)** - Students **explain the meaning of TRIGGER (C2)** - Students **explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2)** - Students **are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3)** - Students **are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3)**	APPLY & OUTER APPLY -Data slices with EXCEPT & INTERSECT -TRIGGER and its types -Create and Execute TRIGGER -TRIGGER AFTER -TRIGGER INSTEAD OF	*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		and understand the difference between UNION & UNION ALL - Able to utilize, and understand the difference between CROSS APPLY & OUTER APPLY - Able to utilize, and understand the differences EXCEPT & INTERSECT - Understand the meaning of TRIGGER - Understand the difference between TRIGGER AFTER & TRIGGER INSTEAD OF - Able to create and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) - Able to create	includes asking and answering (affective) *job sheet* assignments		

					and activate TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE)			
8	Written test for week 1 to 8 material	UTS	UTS	4 X 50”	UTS	UTS	UTS	25%
9	- Students are able to **explain purpose and benefits of *SQL Window ing* (C2)** - Students **are able to create *windows* with OVER clauses (C3)** - Students **are able to partition *windows* (C3)** - Students **are able to place *orders* on *the window* (C3)** - Students **are able to do *framing* on *windows* (C3)** - Students **are able to explain the concept of *window function* . (C2)** - Students **are able to explain and be able to use the aggregation function in *window***	-Definition of SQL *Window* ing -Create *a window* with OVER -*Window* partition with PARTITION BY -Ordering *window* with ORDER BY -Framing *windows* with ROWS BETWEEN -Aggregation function on *window* -*Window* ranking function -*Offset* function on	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)*	4 X 50”	By studying the SMBD Introduction material students can: - Understand the purpose and benefits of *SQL Window ing* - Able to create *window* with OVER clause - Able to partition *windows* - Able to do *ordering* on *the window* - Able to do *framing* on *windows* - Understand the	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	Students understand the concept of SQL *Windowing and are able to use the aggregation, offset* , and ranking functions on *the window* .	2.86%

	(C2)(C3) - Students **are able to explain and be able to use the ranking function in *window* (C2)(C3)** - Students **are able to explain and be able to use the *offset function* in *window* (C2)(C3)** - Students **are able to define the meaning of the distribution function on *the window* . (C2)**	*windows* -Introduction to distribution functions in *windows*	**Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		concept of *window functions* . - Understand and be able to use aggregation functions on *windows* - Understand and be able to use the ranking function on *the window* - Understand and be able to use the *offset function* on *the window* - Be able to define the meaning of the distribution function on *the window* .			
10	- Students **are able to present data in pivot form using the PIVOT operator (C3)** - Students **are able to change the data format from pivot to normal form with UNPIVOT. (C3)**	-*Pivoting* typing -Create pivots with the PIVOT operator -Normalize the pivot shape with the UNPIVOT	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (	4 X 50”	By studying the SMBD Introduction material students can: - Able to present data in pivot form using the PIVOT operator	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion	Students are able to display data in the form of pivots and are able to do *grouping sets* .	2.86%

	- Students **are able to combine 2 or more GROUP BY results with different columns and GROUPING SETS. (C3)** - Students **are able to combine 2 or more groups consisting of a combination of all the columns involved with CUBE. (C34)** - Students **are able to combine 2 or more groups consisting of a hierarchy** of all columns involved with CUBE. **(C3)** - Students **are able to determine the original NULL and *placeholder NULL* in *grouping sets* with GROUPING_ID. (C3)**	operator -Combine 2 or more different column *groups* with GROUPING SETS -Shows combining combinations of all columns in grouping sets with CUBE -Displays the merged hierarchy of all columns in grouping sets with ROLLUP -Differentiate the NULL type in the GROUPING SETS result with GROUPING_ID	*Online*) (1x50') **Sync →** Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		- Able to change data format from pivot to normal form with UNPIVOT. - Able to combine 2 or more GROUP BY results in different columns with GROUPING SETS. - Able to combine 2 or more groups consisting of a combination of all the columns involved with CUBE. - Able to combine 2 or more groups consisting of the hierarchy of all columns involved with CUBE. - Be able to specify original NULL and *placeholder NULL* in *grouping sets* with	includes asking and answering (affective) *job sheet* assignments		

					GROUPING_ID.			
11	- Students **are able to explain the meaning of Metadata (C2)** - Students **are able to display information about the currently active *database* , *along with the tables* and columns. (C3)** - Students **are able to display session information** that is currently active as well as information about the CPU and RAM on the *server* **(C3)** - Students **are able to display the definition of objects such** as *View* , *Stored Procedure* , tables, functions, and other objects. **(C3)** - Students **are able to explain concepts and various data types** in SQL *Server* **(C2)** - Students **are able to explain how to *query* the data type date & time (C2)**	- Definition of metadata and its types. - Displays database information - Displays table information - Display column information - Displays *session information* - Displays CPU & RAM information - Displays information about *user-made objects* . - Data types in SQL *Server* - *Query* against data type Date & Time - Built-in functions related to Date & Time - Character data	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and	4 X 50”	By studying the SMBD Introduction material students can: - Understand the purpose of Metadata - Able to display information about the currently active *database* , the following tables and columns. - Able to display information on the currently active session as well as information about the CPU and RAM on *the server* - Able to display definitions of artificial objects such as *View* , *Stored Procedure*	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	Understand and explain what meta data is, data types, and use some of the important built-in functions.	2.86%

	- Students **are able to explain and apply how to use functions related to date & time data types (C2)(C3)** - Students **are able to explain and apply how to combine 2 or more variables with character and non-character data types (C2)(C3)** - Students **are able to explain how to use functions related to character data types (C2)**	type - Character data type concatenation with non-characters -Built-in functions related to character data types	discussion - Practicum and practicum *job sheet work (2x50')*		, table, function, and other objects. - Understand the concept and various data types in SQL *Server* - Understand how to *query* date & time data types - Understand how to use functions related to date & time data types - Understanding how to combine 2 or more variables with character and non-character data types - Understand how to use functions related to character data types			
	- Students **are able to explain the concept of**	- Definition of *Stored Procedures*	**Form :** a. Studying Online (*Online*	4 X 50”	By studying the SMBD Introduction	**Criteria:** Precision and mastery	Students are able to create and run	2.86%

	***stored procedures* in SQL *Server* . (C2)** - Students **are able to create *a stored procedure* which in its definition contains a SELECT *statement* . (C3)** - Students **are able to execute a *stored procedure* . (C3)** - Students are able to **explain how to pass parameters to a *stored procedure* . (C2)** - Students **are able to create *stored procedures* that** return results with OUTPUT. **(C3)** - Students **explain the concept of dynamic SQL (*dynamic SQL*) (C2)** - Students **are able to build and run dynamic SQL with EXEC and SP_EXECUTESQL. (C3)**	- Create *stored procedures* - Executes *stored procedures* - Parameters in *stored procedures* - *Stored procedure* that returns a value - Understanding dynamic SQL - Executes dynamic SQL	) (1x50') **Asynchronous** → Learning video. b. Studying Online (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		material students can: - Understand the concept of *stored procedures* in SQL *Server* . - Able to create *a stored procedure* which in its definition contains a SELECT *statement* . - Able to execute a *stored procedure* . - Understand how to pass parameters to a *stored procedure* . - Be able to create *stored procedures* that return results with OUTPUT. - Understand the concept of dynamic SQL (*dynamic SQL*)	**Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	*stored procedures* and *dynamic SQL* .	

					- Able to build and run dynamic SQL with EXEC and SP_EXECUTESQL.			
13	- Students **are able to explain how to use elements of the T-SQL language in basic programming. (C2)** - Students **are able to explain about BATCH and how to use it in SQL *Server* . (C2)** - Students **are able to explain how to declare & assign variable values and SYNONYM. (C2)** - Students **are able to explain how to use IF and WHILE blocks in the T-SQL program flow. (C3)** - Students **are able to apply how SQL *Server* handles *errors* that appear in T-SQL code. (C3)** - Students **understand how to implement**	- Concept of programming in T-SQL. - BATCH - SYNONYM - Branching with IF and WHILE - SQL *Servers error handling* - *Exceptions* - T-SQL *error information*	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice	4 X 50”	By studying the SMBD Introduction material students can: - Understand how to use elements of the T-SQL language in basic programming. - Understand about BATCH and how to use it in SQL *Server* . - Understand how to declare & assign variable values and SYNONYM. - Understand how to use IF and WHILE blocks in T-SQL program flow. - Understand how SQL *Server*	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	Students are able to program with T-SQL and analyze *errors* in the program code that is made.	2.86%

	structured *exception handling in T-SQL.* (C3) - Students are able **to explain how to get information about *errors* from *the system objects* . (C2)**		questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		handles *errors* that appear in T-SQL code. - Understand how to implement structured *exception handling in T-SQL.* - Understand how to get information about *errors* from *the system objects* .			
14	- Students **are able to describe NoSQL *databases* and their varieties (C2)** - Students **describe NoSQL in the startup industry**	- Understanding NoSQL - Its application to the startup industry	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and online discussion	4 X 50”	By studying the SMBD Introduction material students can: - Be able to describe *NoSQL databases* - Able to describe the implementation of NoSQL in the startup industry	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	Students are able to understand the concept of NoSQL and implement it	2.86%

			Learning methods: *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*					
15	- Students **are able to understand the components of *queries* with good performance (C1)** - Students **are able to display and interpret basic *queries* (C3)** - Students **are able to display and interpret basic *queries* for data performance (C3)**	- Students are able to apply NoSQL to one case study example	**Form :** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') b. **Sync** → Submission of material online and	4 X 50”	By studying the SMBD Introduction material students can: - Able to understand the components of *the query* with good performance - Able to display and interpret basic *queries* - Able to display and interpret	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective) *job sheet* assignments	Students are able to implement NoSQL in one of the given case studies	2.86%

			online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*		basic *queries* for data performance			
16	- Students **are able to explain and apply all of the previous topics in certain cases (C2)**	- Case Study of T-SQL Querying	**Form:** a. Studying Online (*Online*) (1x50') **Asynchronous** → Learning video. b. Studying **Online** (*Online*) (1x50') **Sync** → Submission of material online and	2 X 50”	By studying the SMBD Introduction material students can: Able to understand and apply all the previous topics in certain cases	**Criteria:** Precision and mastery **Form of assessment:** - Presentation - Active group discussion includes asking and answering (affective)	Students are able to make T-SQL *queries* according to the case studies given	2.86%

			online discussion **Learning methods:** *Contextual Teaching and Learning (CTL)* **Assignment:** - Practice questions on theory and discussion - Practicum and practicum *job sheet work (2x50')*			*job sheet* assignments		
17	Online test of the entire material	UAS	UAS	4 X 50”	UAS	UAS	UAS	35%

MALANG STATE POLYTECHNIC

INFORMATICS ENGINEERING

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

BJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
th 3	RTI213006	Basic Informatics	2 credits/ 4 hours	3	August 30, 2021
THORIZATION	RPS Developer Lecturer		MMK Coordinator	Ka PRODI	
	Cahya Rahmat, ST., M.Kom., Dr. Eng Drs. Rawansyah, M.Pd. Deasy Sandhya Elya Ikawati, S. Si., M. Si		Drs. Rawansyah, M.Pd.	Imam Fahrur Rozi, ST., MT.	

rning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

	Able to read and understand general formulas, understand the concept of mean, median mode, know the definition of Graph, Tree and Vector; able to understand and solve mathematical problems / mathematical models in accordance with case studies given with full responsibility and prioritizing academic values, norms and ethics.
rt Course Descriptions	Able to read and understand general formulas, understand the concept of mean, median mode, know the definition of Graph, Tree and Vector; able to understand and solve mathematical problems / mathematical models in accordance with case studies given with full responsibility and prioritizing academic values, norms and ethics.
rning Materials / Subjects	- General formula case study 1 - General formula case study 2 - Introduction to Statistics (data, mean, median, mode) - Graph - Tree - Introduction: Scalar and Vector Quantity - Vector Representation, Components of a Given Vector - Vector Space - Directional Cosines, Scalar Product of Two Vectors, Vector Product of Two Vectors - Angle Between Two Vectors, Ratio Of Directions - Eigenvalues and Eigenvectors - General formula case study 3 - General formula case study 4
erences	**Main :** K. A Stroud, Engineering Mathematics **Supporters:** 1. Jim Hefferon, 2006, Linear Algebra, Vermount USA.

	2. Kreyszig, Erwin, 1993, Advanced Engineering Mathematics, 6 th Edition, New York : Willey. 3. Thomas S. Blyth, EF Robertson, 2007, Basic Linear Algebra, 2nd Edition , Great Britain.
tructional Media	**Software :** 1. Ms PowerPoint 2. Ms Word 3. Internet browsers **Hardware :** Computer
me of Lecturer	1. Cahya Rahmat, ST., M.Kom., Dr. Eng 2. Drs. Rawansyah, M.Pd. 3. Deasy Sandhya Elya Ikawati, M.Sc.
quirements Course	

eek	**Planned Final Capability (Sub-CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estimated time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Rating Weight (%)**
)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	Students are able to understand and find solutions from general formula case studies 1	- The general Eclidean formula - The general formula for Cityblocks	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:**	1X4X50” - Online (*Online*) **(1x50') Asynchronous→** video	By studying the general formula, students are expected to be able to represent the formula in systematic calculations.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work systematically using the formula.	1.5%

			E-learning lms.polinema.ac.id	pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi - Structured tasks **(2x50')**				
2	Students are able to understand and find solutions from general formula 2 case studies	- Minkowski's general formula - Chebyshev's general formula	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi	By studying the general formula, students are expected to be able to represent the formula in systematic calculations.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work systematically using the formula.	1.5%

				- Structured tasks **(2x50')**				
3	Students are able to understand the definitions and formulas for data, mean, median, mode	Introduction to Statistics (data, mean, median, mode)	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi - Structured tasks **(2x50')**	By studying this material students are expected to be able to find the mean, median, mode of a data.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	● Able to obtain the mean median mode value of a data	1.5%
4	Students are able to understand the definition of a graph and are able to perform calculations with a mathematical graph	- Definition - Graph Type - Graph Terminology	**Form :** Studying **Learning methods:** Group discussion Case study	1X4X50” - Online (*Online*) **(1x50') Asynchronous→** video	By studying this graph material, students are expected to be able to know the definition of a graph, the	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to understand the definition of graphs and be able to perform calculations with mathematical graphs	1.5%

			Learning Resources: E-learning lms.polinema.ac.id	pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi - Structured tasks **(2x50')**	types of graphs, and the terminology of the graph.			
5	QUIZ	QUIZ	QUIZ	4 X 50"	QUIZ	QUIZ	QUIZ	7.5%
6	Students are able to understand the definition of a tree and are able to perform mathematical tree calculations	- Tree definition - Spaning Tree - Rooted tree - Ordered tree - n-ary tree - Binary Tree	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50" - Online (*Online*) **(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video confere	By studying the basic material of programming students can: Know - Tree definition - Spaning Tree - Rooted tree - Ordered tree - n-ary tree Binary Tree	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	● Be able to explain the definition of trees, rooted, ordered and binary trees	1.5%

				nce, diskusi - Structured tasks **(2x50')**				
7	Students are able to know the definition of Scalar and Vector Quantity	Scalar and Vector Quantity	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi - Structured tasks **(2x50')**	By studying this material students are expected to be able to know the difference between Scalar and Vector Quantity	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	● able to know the difference between Scalar and Vector Quantity	1.5%
8	Students are able to represent Vectors, Components of a Given Vector	Vector and its components	**Form :** Studying **Learning methods:**	1X4X50” - Online (*Online*) **(1x50') Asynchr**	By studying this material, students are expected to be able to	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation	capable of representing Vectors, Components of a Given Vector	1.5%

			Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	**onous→** video pembelajaran - Online (*online)* **(1x50')** **Sync→** video conference, diskusi - Structured tasks **(2x50')**	represent Vectors, Components of a Given Vector	• Written test, about solving case studies		
9	UTS	UTS	UTS	4 X 50”	UTS	UTS	UTS	30%
0	Students are able to know the definition of Vector Space	Vector Space	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50')** **Asynchronous→** video pembelajaran - Online (*online)* **(1x50')** **Sync→** video	By studying this material, students are expected to be able to know the definition of Vector Space	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	able to know the definition of Vector Space	1.5%

				conference, diskusi - Structured tasks **(2x50')**				
1	Students are able to know and calculate the Direction of Cosines, the Scalar Product of Two Vectors, the Vector Product of Two Vectors	Directional Cosines, Scalar Product of Two Vectors, Vector Product of Two Vectors	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50')** **Asynchronous→** video pembelajaran - Online (*online)* **(1x50')** **Sync→** video conference, diskusi - Structured tasks **(2x50')**	By studying this material, students are expected to be able to know and calculate the Direction of Cosines, the Scalar Product of Two Vectors, the Vector Product of Two Vectors	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	● able to know and calculate the direction of Cosines, Scalar Product of Two Vectors, Vector Product of Two Vectors	1.5%
2	Students are able to know and calculate the angle between two vectors, the ratio of directions	Angle Between Two Vectors, Ratio Of Directions	**Form :** Studying **Learning methods:**	1X4X50” - Online (*Online*)	By studying this material, students are expected to be	**Criteria:** Scoring criteria rubric **Form of assessment:**	able to know and calculate the angle between two vectors, the ratio of directions	1.5%

			Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	**(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi - Structured tasks **(2x50')**	able to know and calculate the angle between two vectors, the ratio of directions	• Presentation • Written test, about solving case studies		
3	Students are able to know the definition and how to calculate Eigenvalues and Eigenvectors	Eigenvalues and Eigenvectors	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video	By studying this material, students are expected to be able to know the definition and how to calculate Eigenvalues and Eigenvectors	**Criteria:** Scoring criteria rubric **Form of assessment:** • Presentation • Written test, about solving case studies	able to know the definition and how to calculate Eigenvalues and Eigenvectors	1.5%

				conference, diskusi - Structured tasks **(2x50')**				
4	QUIZ	QUIZ	QUIZ	4 X 50”	QUIZ	QUIZ	QUIZ	7.5%
5	Students are able to understand and find solutions from general formula 3 case studies	- Gower's general formula - Soergel's general formula	**Form :** Studying **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	1X4X50” - Online (*Online*) **(1x50')** **Asynchronous**→ video pembelajaran - Online (*online)* **(1x50')** **Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying the general formula, students are expected to be able to represent the formula in systematic calculations.	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Presentation ● Written test, about solving case studies	Able to work systematically using the formula.	1.5%
6	Students are able to understand and find	- The general formula of	**Form :** Studying	1X4X50”	By studying the general formula, students are	**Criteria:** Scoring criteria rubric	Able to work systematically using the formula.	1.5%

	solutions from general formula 4 case studies	Canberra	**Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id	- Online (*Online*) **(1x50')** **Asynchronous→** video pembelajaran - Online (*online)* **(1x50')** **Sync→** video conference, diskusi - Structured tasks **(2x50')**	expected to be able to represent the formula in systematic calculations.	**Form of assessment:** ● Presentation ● Written test, about solving case studies		
7	UAS	UAS	UAS	4 X 50”	UAS	UAS	UAS	35%

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM: D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (SKS)/Hour	SEMESTER	DATE. PREPARATION
OBJECT BASED PROGRAMMING	RTI213007	Core Courses	2 Credits / 4 Hours	3	4 JULY 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI Milyun Ni'ma Shoumi, S.Kom., M.Kom.	Putra Prima Arhandi, ST., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering the concepts of OOP, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, database (JDBC), and Java API; Able to understand the difference between OOP and structural; Able to design applications using OOP concepts and principles with full responsibility and taking into account academic values, norms and ethics.

Short Course Descriptions	Object-Based Programming (PBO) course is a course that teaches students about the concept of program development with an object-oriented paradigm.

Learning Materials / Subjects	- Object Oriented Programming Concept - class - object - Encapsulation - inheritance - Polymorphism - Abstract Class - Interfaces - Java Basic Programming - Introduction to GUI and database (JDBC) - Introduction to Java APIs
References	**Main :** 1. Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. 2. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. **Supporters:** 1. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.
Instructional Media	**Software :** 1. JDD 12 2. Netbeans/IntelliJ IDEA **Hardware :** 1. Computer/Laptop RAM minimum 1 GB
Name of Lecturer	1. Imam Fahrur Rozi, ST., MT. 2. Muhammad Shulhan Khairy, S.Kom, M.Kom

	3. Priska Choirina, SST, M.Tr.T 4. Frihandhika Permana SPd., MKom. 5. Septian Enggar Sukmana, S.Pd., MT 6. Banni Satria Andoko, S. Kom., M.MSI
Pre-requisite Courses	Algorithms and Programming

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	●Students are able to understand the contents of the syllabus and lecture contracts; ●Students are able to understand the basic concept of PBO; ●Students are able to distinguish object-oriented paradigms from structural paradigms.	●Explanation of syllabus and lecture contracts; ●Introduction to the Basic Concepts of PBO; ●An explanation of the differences between the object-oriented paradigm and the structural paradigm.	●Online ●Discovery Learning	3 X 50”	●Listen to material from lecturers and discuss; ●The discussion applying the basic concepts of PBO was guided by presentation material from the subject lecturer	Criteria: Accuracy in answering questions Form: Oral test	●Accuracy in explaining the basic concept of PBO ; ●Accuracy in explaining and providing case studies on the differences between the object-oriented paradigm and the structural paradigm;	0.8%
2	●Students are able to understand the basic concept of PBO; ●Students are able to understand the concepts of class,	PBO Basic Concept: ●PBO introduction ●The difference between the object-oriented paradigm and the structural	●Online ●Discovery Learning	3 X 50”	●Listen to material from lecturers and discuss; ●Writing the basis for making classes and objects into program	Criteria: Accuracy in answering questions Form:	●Accuracy in identifying objects; ●Accuracy in determining the attributes and methods of each	0.8%

	object, encapsulation, inheritance, and polymorphism; ● Students are able to create UML models based on PBO case studies.	paradigm ● The basic concept of PBO: a. class b. object c. Encapsulation d. inheritance e. Polymorphism ● Introduction to UML modeling			code based on class diagrams; ● Practice drawing UML Class Diagrams.	Oral test	object that has been identified; ● Accuracy in explaining the description of the basic concept of PBO; ● Accuracy in drawing UML Class Diagrams based on case studies.	
3	● Students are able to understand the basic concept of encapsulation; ● Students are able to make UML notation in the form of access modifier notation and static notation.	Encapsulation: ● constructor ● Access modifiers ● Attribute/Method Class ● Instantiation Attributes/Methods ● Setters and Getters ● UML: Access modifier notation and static notation	● Online ● Discovery Learning ● Self-Directed Learning	3 X 50”	● Listen to material from lecturers; ● Discussion to understand the implementation of constructors, access modifiers, attributes, getter setters in accordance with the presentation material guidelines and handbooks; ● Discussion about the difference between instantiation attributes and class attributes, between	<u>Criteria:</u> Accuracy in answering questions <u>Form:</u> Oral test	● Accuracy in determining the constructor and in instantiating using the constructor; ● Accuracy in determining modifier access of an attribute and method; ● Accuracy in explaining the differences between instantiation attributes/methods and class attributes/methods; ● Accuracy in creating	0.8%

					instantiation methods and class methods; ● Discussion on the use of setters and getters.		setters and getters; ● Accuracy in writing static notation and modifier access.	
4	● Students are able to understand the concept of class relations; ● Students are able to design class diagrams from certain case studies.	Class Relations: ● Has-A relation (Case study 1 class has a has-a relationship with 1 object from another class) ● Depiction of class relationships with class diagrams ● Has-A relationship (Case study 1 class has a has-a relationship with more than 1 object from another class)	● Online ● Discovery Learning ● Self-Directed Learning	3 X 50”	● Listen to material; ● Discussion to implement class relations guided by presentation materials and guidebooks; ● The practice describes the design of class diagrams from the cases given and discusses them.	Criteria: Accuracy in answering questions Form: Oral test	● Accuracy in translating class diagrams into programs; ● Accuracy in designing a class diagram of a particular case.	0.8%
5	● Students are able to answer quiz questions properly and correctly related to meeting material 1 - 4.	**Quiz 1** Meeting materials 1-4	**Online Exam**	3 X 50”	● Answer quiz questions	Criteria: Accuracy in answering questions Form: Written/online test	● Accuracy in answering questions.	**12.5%**
6,7	● Students are able to understand the concept of	inheritance: ● Definition of	● Online ● Discovery	3 X 50”	● Listen to material; ● Discussions on	Criteria: Accuracy in answering questions	● Accuracy in identifying classes that have	0.8%

	inheritance.	Inheritance ●Single and Multilevel Inheritance ●Super keywords ●UML:inheritance relations	Learning ●Self-Directed Learning		applying the concept of inheritance guided by presentation material and book references referred to by the course lecturer; ● Illustrates inheritance relationships using UML diagrams.	Form: Oral test	inheritance relations; ●Accuracy in designing classes that have inheritance relations.	
8	●Students are able to answer UTS questions properly and correctly related to meeting material 6-8.	**UTS** ●Meeting materials 6-8	**Online Exam**	3 X 50”	● **Doing questions in the form of a simulation**	Criteria: Accuracy in answering questions Form: oral test	●Accuracy in working on questions Online / Writing	25%
9	●Students are able to understand the concepts of Overriding and Overloading.	●Overriding ●Overloading	●Online ●Discovery Learning ●Self-Directed Learning	3 X 50”	● Listen to material; ● Discussions on implementing overriding and overloading were guided by materials and reference books for the subject lecturers.	Criteria: Accuracy in answering questions Form: oral test	●Accuracy in identifying method overriding and overloading	0.8%
10	●Students are able to understand the	Abstract Classes: ●Abstract Class	●Online	3 X 50”	● Listen to material	Criteria: Accuracy in answering	●Accuracy in designing	0.8%

	concept of Abstract Class	concept ● Abstract methods ● UML: abstract notation	● Discovery Learning ● Self-Directed Learning		● Discussion to explore the concept of abstract classes and methods and make examples of their implementation	questions Form: oral test	an abstract class ● Accuracy in modeling in class diagrams	
11	● Students are able to understand the concept of Interface.	Interfaces: ● Interfaces concept ● Different Interface and Abstract Class ● Creating interfaces that implements to interfaces ● UML: implements interface and relation notation	● Online ● Discovery Learning ● Self-Directed Learning	3 X 50”	● Listen to material ● Discussion to explore the interface concept and make examples of its application ● Describe the relationship between abstract classes and interfaces using UML diagrams	Criteria: Accuracy in answering questions Form: oral test	● Accuracy in designing the interface ● Accuracy in modeling in class diagrams	0.8%
12	● Students are able to understand the concept of Polymorphism.	Polymorphism: ● Polymorphism concept ● heterogeneous collections ● polymorphic arguments ● virtual method invocations	● Online ● Discovery Learning ● Self-Directed Learning	3 X 50”	● Listen to material ● Pay attention to the simulation	Criteria: Accuracy in answering questions Form: oral test	● Accuracy in explaining the use of polymorphism	0.8%

		●cast objects						
13	**Quiz 2**	●Meeting materials 09-12	**Online Exam**	3 X 50”	● **Answer questions / questions**	Criteria: Accuracy in answering questions Format: written/online test	● Accuracy in answering questions	12.5%
14	●Students are able to understand the concept of GUI.	GUIs: ●Frames, Menus, Textfields, Buttons, Labels, Comboboxes, Radiobuttons, Checkboxes ●Event Handling (action performed)	●Online ●Discovery Learning ●Self-Directed Learning	3 X 50”	● Listen to material ● Discussion in groups to get to know the GUI and its tools' functions. ● Presenting the results of discussions in class	Criteria: Accuracy in answering questions Form: oral test	● Accuracy in understanding GUI, especially functions and menus on GUI tools ● Presentation skills	0.8%
15	●Students are able to understand the concept of GUI and Database and Java API ●Students are able to understand the concept of Java API.	GUI, Database and Java API: ●MySQL JDBC ●CRUD with GUI ●Java Docs	●Online ●Discovery Learning ●Self-Directed Learning	3 X 50”	● Listen to material ● Pay attention to the simulation	Criteria: Accuracy in answering questions Form: oral test	● Accuracy in explaining usage of Java Docs ● Accuracy in explaining the use of Database (JDBC) ● Accuracy in making windows ● Accuracy in making the components that will be added to it	0.8%

16	●Students are able to apply the theory they have learned into a comprehensive application.	Big mission: ●Designing a class diagram of a given case.	●Practice ●Project Based Learning	3 X 50”	● Identify classes and describe them in class diagrams ● Practice implementing the results of the design into the program	Criteria: Accuracy in developing large projects/tasks Format: Assessment of Practical activity	● Accuracy in identifying class ● Accuracy in the depiction of class diagrams.	10%
17	●Students are able to answer UAS questions properly and correctly related to meeting material 1-16.	UAS: ●**Materials start meeting 1-16**	**Online Exam**	3 X 50”	● Doing online exam questions	Criteria: Accuracy in answering questions Form: online test	● Accuracy in answering questions.	30%

Object-Based Programming Practicum

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
OBJECT-BASED PROGRAMMING PRACTICUM	**RTI213008**	Core Courses	3 credits/6 hours	3	July 4, 2020

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI Milyun Ni'ma Shoumi, S.Kom., M.Kom.	Yoppy Yunhasnawa, S.ST., M.Sc.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.

S9 Demonstrate a responsible attitude towards work in the field of expertise independently.

PP1 Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.

KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Mastering the concepts of OOP, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, database (JDBC), and Java API; Able to understand the difference between OOP and structural; Able to design applications using OOP concepts and principles with full responsibility and taking into account academic values, norms and ethics.

Graduate Learning Outcomes that are charged to courses (CPL-MK Sub)

- Students are able to explain the basic concepts of PBO (C2)
- Students are able to analyze the differences between structural programming and object-oriented programming (C4)
- Students are able to identify the form of Class diagram modeling (C1)
- Students are able to apply the concept of class and object in the form of programming and apply the steps for accessing attributes and methods in the programming language (C3)
- Students are able to apply the exception concept using try-catch in programming and apply class diagrams in certain cases (C3)
- Students are able to apply encapsulation in a programming language (C3)

	- Students are able to analyze class relations based on certain case studies (C4) - Students are able to apply class relations in the form of diagrams (C3) - Students are able to apply the results of case study analysis to the program form (C3) - Students are able to define the notion of inheritance (C2) - Students are able to apply the concepts of single and multiple inheritance, as well as inheritance relations in the form of diagrams (C3) - Students are able to analyze cases contained in exam questions (C4) - Students are able to apply the results of case study analysis to the program form (C3) - Students are able to apply the concepts of overriding and overloading, as well as abstract classes and methods in programming languages (C3) - Students are able to apply the interface and implement a class in the interface (C3) - Students are able to apply the concepts of polymorphism, virtual methods and object casting in programming languages (C3) - Students are able to apply GUI components to the development of a program and event handling in accordance with the GUI components used (C3) - Students are able to create APIs from the Java programming language (C6) - Students are able to implement a database connection with the Java programming language and GUI on Java programs using databases (C3)
Short Course Descriptions	Object-Based Programming (PBO) course is a course that teaches students the concept of program development with an object-oriented paradigm. so that students are able to develop a program with language concepts that are more easily understood by humans.
Learning Materials / Subjects	• OOP concept • Classes and objects • Encapsulation • Class relations • inheritance • Polymorphism

	• Abstract Class • Interfaces • Java Basic Programming • GUI introduction • Introduction to Java APIs
References	**Main :** Horstmann, CS (20 18). *Core Java Volume I–Fundamentals, Eleven th Edition.* Network Circle, Santa Clara: Prentice Hall. Horstmann, CS (20 19). *Core Java Volume II–Advanced Features, Eleven th Edition.* Network Circle, Santa Clara: Prentice Hall. **Supporters:** Rickyanto, I. (2005). *Object-Oriented Programming Basics with Java 2.* Yogyakarta: Andi Offset

Instructional Media	**Software :**	**Hardware :**
	1. JDD 12 2. Netbeans/IntelliJ IDEA	1. Computer/Laptop RAM minimum 1 GB

Name of Lecturer	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI
Requirements Course	Algorithms and Programming

M in g	**Planned Final Capability (Sub- CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estimated time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Weight (%)**

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(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	• Students are able to **explain** the basic concepts of PBO (C2) • Students are able to **analyze** the differences between structural programming and object-oriented programming (C4) • Students are able to **identify** Class diagram modeling form (C1)	1. Discussion of syllabus and lecture contracts 2. The difference between the object-oriented paradigm and the structural paradigm 3. The basic concept of PBO a. class b. object c. Encapsulation d. inheritance e. Polymorphism 4. Introduction to UML Class Diagram modeling	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** • ***Task 1** : Create classes and objects, and search for objects in the real world to define attributes, behavior and their implementation using the Java programming language (4x50') Offline*	6x50'	• Listen to material lectures from lecturers and discuss • Practice applying the basic concepts of PBO are guided by a jobsheet • Practice Drawing UML Class Diagrams	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in explaining the difference between OOP and Structural paradigms • Accuracy in practicing the concepts of class, object, encapsulation, inheritance and polymorphism • Accuracy in providing examples of each of the basic OOP concepts	
2	• Students are able to **apply** the concept of class and object in the form of programming (C3)	1. class 2. object 3. Attribute 4. method 5. Instantiation	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi**	6x50'	• Listen to practical instructions • Writing the basis for making classes and objects into program code based on class diagrams	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in identifying objects • Accuracy in determining the attributes and methods of each object that has been identified	

	• Students are able to **apply** the steps for accessing attributes and methods in programming languages (C3) • Students are able to **apply** the exception concept using try-catch in programming (C3) • Students are able to **apply** class diagrams in certain cases (C3)	6. Accessing Attributes and Methods 7. Try-Catch 8. UML:Class Diagrams	**Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 2** : Create classes and objects using the Java programming language based on the class diagrams in the offline book rental shop case study (4x50')*		• Implement the use of try catch		• Accuracy in practice depiction into class diagrams	
3	Students are able to **apply** encapsulation in a programming language (C3)	1. constructor 2. Access modifiers 3. Attribute/Method Class 4. Instantiation Attributes/Methods 5. Setters and getters 6. UML: Access modifier notation and static notation	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id	6x50'	• Listen to practical instructions • Practice implementing constructors, access modifiers, attributes, getter setters guided by the jobsheet • Discuss the difference between instantiation attributes and class attributes, between instantiation methods and class methods • Discuss the use of setters and getters	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in practice determines the constructor and accuracy in instantiating using the constructor • Accuracy in determining modifier access of an attribute and method • Accuracy in explaining the differences between instantiation attributes/methods and class attributes/methods • Accuracy in creating setters and getters • Accuracy in writing static notation, and modifier access • Accuracy in practicing the	

			Assignment: ***Task 3*** *: Implement constructors, access modifiers, attributes, getter setters in the Java programming language based on cooperative case studies (4x50') Offline*				instructions on the jobsheet	
4	• Students are able to **analyze** class relations based on certain case studies (C4) • Students are able to **apply class** relations in the form of diagrams (C3)	1. Has-A relation (Case study 1 class has a has-a relationship with 1 object from another class) 2. Depiction of class relationships with class diagrams 3. Has-A relationship (Case study 1 class has a has-a relationship with more than 1 object from another class)	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 4*** *: Implement class relations in the Java programming language based on a particular case study and draw a class diagram design from the given case (4x50') Offline*	6x50'	• Listen to practical instructions • Practice implementing class relations guided by the jobsheet • Practice illustrating a class diagram design from a given case, by discussing it	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in translating class diagrams into programs • Accuracy in designing a class diagram of a particular case • Accuracy in practicing the instructions on the jobsheet	2.5%
5	• Students are able to **analyze** cases contained	Quiz 1 (Practicum Examination and Presentation of	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran**	6x50'	• Presentation of quiz results	Criteria: Accuracy in applying OOP concepts	• Accuracy in working on practical questions	**15%**

	in exam questions (C4) • Students are able **to apply** the results of case study analysis to the program form (C3) • Students are able **to explain** the results of quiz exam assignments (C2)	Examination Results) - Materials for meetings 1-4	**- Online (*online)*(1x50')** **Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 5** : Analyze the cases given, then apply the results of the analysis to the Java programming language (4x50') Offline*			Form: Assessment of practice activities		
6,7	• Students are able **to define** the notion of inheritance (C2) • Students are able to **apply** the concept of single and multiple inheritance (C3) • Students are able to **apply** inheritance relations in the form of diagrams (C3)	1. Definition of Inheritance 2. Single and Multilevel Inheritance 3. Super keywords 4. UML:inheritance relations	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50')** **Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id	6x50'	• Listen to practical instructions • Practice applying the concept of inheritance guided by a jobsheet • Depict inheritance relationships using UML diagrams	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in identifying classes that have inheritance relations • Accuracy in designing classes that have inheritance relations • Accuracy in practicing the instructions on the jobsheet	

			Assignment: ***Task 6.7*** *: Implement the concept of inheritance in the Java programming language based on a particular case study, and describe the UML inheritance relationship in a given case (4x50') Offline*					
8	• Students are able to **analyze** cases contained in exam questions (C4) • Students are able **to apply** the results of case study analysis to the program form (C3) • Students are able **to explain** the results of midterm exam assignments (C2)	Mid Semester Examination (Practicum Examination and Presentation of Examination Results) - Meeting materials 6-7	**Form :** Practice **- Online (** ***Online*** **)** **(1x50') Asinkron → video pembelajaran** **- Online (** ***online)*****(1x50')** **Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 8*** *: Analyze the cases given, then apply the results of the analysis to the Java programming language (4x50') Offline*	6x50'	**Do the questions in practical form**	Criteria: Accuracy in applying OOP concepts Form: Assessment of practice activities	• Accuracy in working on practical questions	**30%**

9	Students are able to **apply** the concepts of overriding and overloading in programming languages (C3)	1. Overriding 2. Overloading	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 9** : Implement the concept of overriding and overloading in the Java programming language (4x50') Offline*	6x50'	• Listen to practical instructions • Practice applying overriding and overloading guided by the jobsheet	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in identifying method overriding and overloading • Accuracy in practicing the instructions on the jobsheet	2.5%
10	Students are able to **apply** abstract concepts to classes and methods (C3)	1. Abstract Class concept 2. Abstract methods 3. UML: abstract notation	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) , Discovery Learning* **Learning Resources:** E-learning lms.polinema.ac.id	6x50'	• Listen to practical instructions • Practice applying abstract class concepts and methods as well as interfaces guided by a jobsheet	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in designing an abstract class • Accuracy in modeling in class diagrams • Accuracy in practicing the instructions on the jobsheet	2.5%

			Assignment: ***Task 10*** *: Implement abstract class and method concepts and interfaces in the Java programming language (4x50') Offline*					
11	Students are able to **apply** the interface and implement a class in the interface (C3)	1. Interfaces concept 2. Different Interface and Abstract Class 3. Interface creation 4. How to create a class that implements to an interface 5. UML: implements interface and relation notation	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) , Discovery Learning* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 11*** *: Implement abstract class and interface concepts in the Java programming language using UML diagrams (4x50') Offline*	6x50'	• Practice applying interface concepts guided by a jobsheet • Describe the relationship between abstract classes and interfaces using UML diagrams	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in designing the interface • Accuracy in modeling in class diagrams • Accuracy in practicing the instructions on the jobsheet	
12	• Students are able to **apply** the concept of polymorphism in programming languages (C3)	1. Polymorphism concept 2. heterogeneous collections 3. polymorphic arguments	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi**	6x50'	• Listen to practical instructions • Practice applying the concept of polymorphism guided by a jobsheet	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in explaining the use of polymorphism • Accuracy in practicing the instructions on the jobsheet	

	• Students are able to **apply** virtual methods and casting objects (C3)	4. virtual method invocations 5. cast objects	**Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 12** : Implement the concept of polymorphism in the Java programming language based on a particular case study (4x50') Offline*					
13	• Students are able to **analyze** cases contained in exam questions (C4) • Students are able to **apply** the results of case study analysis to the program form (C3) • Students are able **to explain** the results of quiz exam assignments (C2)	Quiz 2 (Practicum Examination and Presentation of Examination Results) - Materials for meeting 10-13	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 13** : Analyze the cases given, then apply the*	6x50'	**Do the questions in practical form**	Criteria: Accuracy in applying OOP concepts Form: Assessment of practice activities	• Accuracy in completing practical questions	**15%**

			results of the analysis to the Java programming language (4x50') Offline					
14	• Students are able to **apply** GUI components to the development of a program (C3) • Students are able to **implement** event handling in accordance with the GUI components used (C3)	1. Frames, Menus, Textfields, Buttons, Labels, Comboboxes, Radiobuttons, Checkboxes 2. Event Handling (action performed)	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** *Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 14*** *:* Implement a GUI and its components *and event handling in the Java programming language based on a specific case study (4x50') Offline*	6x50'	• Listen to practical instructions • Practice implementing making a GUI and its components guided by a jobsheet • Practice implementing event handling guided by a jobsheet	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in making windows • Accuracy in making the components that will be added to it • Accuracy in practicing the instructions on the jobsheet	
15	• Students are able to **create** APIs from the Java programming language (C6) • Students are able **to implement** a database	1. Java Docs 2. collection 3. MySQL (JDBC) Database with GUI 4. CRUD with GUI 5. Model classes, DAO classes	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:**	6x50'	• Listen to practical instructions • Practice implementing the JAVA API Database (JDBC) connection to interact with the database directly from the class view (form) guided by a jobsheet • Practice implementing JDBC with CRUD on a	Criteria: Accuracy in following the practicum jobsheet Form: Assessment of practice activities	• Accuracy in explaining usage of Java Docs • Accuracy in explaining the use of JDBC • Accuracy in practicing the instructions on the jobsheet	

	connection with the Java programming language (C3) • Students are able to **apply** GUI to Java programs using a database (C3)		*Self Directed Learning (SDL) ,* *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 15** : Implement JAVA API Database (JDBC) connection to interact with database directly from class view (form), JDBC with CRUD on simple database based on certain case studies (4x50') Offline*		simple database guided by a jobsheet			
16	Students are able **to explain** the progress of the big task being done (C2)	1. Designing a class diagram of a given case	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1 6** : Building projects in groups based on selected case studies (4x50') *Offline*	6x50'	• Identify classes and describe them in class diagrams • Practice implementing the results of the design into the program	Criteria: Accuracy in developing large projects/tasks Form: Assessment of practice activities	• Accuracy in identifying class • Accuracy in the depiction of class diagrams • Accuracy in practicing the instructions on the jobsheet	

17	Students are able **to explain** the results of the big task being done (C2)	**Final Semester Examination (UAS) - Final big assignment demo**	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 17 :** Presenting projects that have been developed in groups based on selected case studies (4x50') *Offline*	6x50'	**Describe the results of the major tasks carried out**	Criteria: Accuracy in answering questions Form: large task yield test	• Accuracy in completing large tasks	**30%**

Semester 4

1. Citizenship

	MALANG STATE POLYTECHNIC **INFORMATICS ENGINEERING** **STUDY PROGRAM : D 4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits)/hour**	**SEMESTER**	**DATE. PREPARATION**
Citizenship	**RTI214001**	Basic Informatics	2 credits/ 3 hours	2	16 FEBRUARY 2017
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Ane Fany Novitasari, SH., M.Kn		Ahmad Bahaudin Almufaro, M.Pd.I	Ir. Deddy Kusbianto PA., MMKom.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	S3	Contributing to improving the quality of life in society, nation, state, and the advancement of civilization based on Pancasila.			
	S8	Internalize academic values, norms, and ethics.			
	KU2	Able to demonstrate independent, quality and measurable performance.			
	S4	Act as a citizen who is proud and loves the motherland, has nationalism and a sense of responsibility to the state and nation.			
	S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.			
	S6	Working together and having social sensitivity and concern for society and the environment.			
	S7	Obey the law and discipline in the life of society and the state.			
	Learning Outcomes Graduates charged to courses (CPL-MK)				

	Producing students who are moral, democratic and participatory in social and state life, able to understand and analyze development phenomena and challenges in national life, able to solve social problems wisely and wisely and carry out their roles and functions as good citizens in daily life -day.
Short Course Descriptions	This course studies civic education, between civic education and character education, the ideals of civic education, the relationship between science and education, the urgency of constitutional education
Learning Materials / Subjects	Citizenship education, between citizenship education and character education, the ideals of civic education, the relationship between science and education, the urgency of constitutional education
References	**Main :** 1. Hairus, 2013, Citizenship Education, Teaching Module, Polynema, Malang. 2. Robert Klitgaard, et al. 2002. Guide to Eradicating Corruption in Regional Government. The Torch Book, Jakarta. 3. Ahmad Zaki, Forming an Honest Nation's Character free of Corruption, http://ogaloogi.com/memformasi-kartu-bangsa-Jadi-merdeka-korupsi/, accessed on 7 June 2012. 4. Ariesti Vetami Gaos, Against the regeneration of Corruptors, http://perspektif.net/english/article.php?article_id=1441, accessed 11 June 2012. 5. Beseng Jie, Religion and Liberation, http://sosbud.kompasiana.com/2010/08/17/agama-dan-pembebasan/ 6. Dien Adie, Character-Based Education, http://edukasi.kompasiana.com/2011/09/01/dinding-based-character/, accessed 11 July 2012. 7. Erika Revida, Corruption in Indonesia: Problems and Solutions, http://repository.usu.ac.id/bitstream/123456789/3800/1/fisip-erika1.pdf, accessed on 7 June 2012. 8. Fathur Rahman, Anti-Corruption Education, http://www.equator-news.com/kolom/20120410/dinding-anti-corruption, accessed 11 June 2012 **Supporters:**

1 Iding R. Hasan, Measuring the Urgency of the Fifth Amendment to the 1945 Constitution, People's Mind, 26 August 2010, accessed on 27 August 2010.

2 Jimy Assiddiqy, The Concept of the Indonesian Law State, http://jimly.com/makalah/namafile/57/Konsep_Negara_Hukum_Indonesia.pdf, accessed 4 June 2012.

3 M. Bashori Muchsin, Young Civil Servants and Idols of Money, Media Indonesia, 13 December 2011.

4 Mirza Nasution, Law and Constitution, http://buscar-manuales.com/download/fungsi-dan-kedudukan-konstitute-6.html, accessed on 15 July 2012.

5 Jade Pane, Putussn MK which provides Political Education, http://www.analisadaily.com/news/read/2012/01/16/30692/juangan_mk_yang_beri_dinding_kumham/, access 14 June 2012.

6 Siti Mugi Rahayau, Education is a basic right, http://edukasi.kompasiana.com/2012/05/02/dinding-had-hak-asasi/, askes 11 July 2012.

Instructional Media	**Software :**	**Hardware :**
		Projector
Name of Lecturer		
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1-2	Students are able to explain about National Identity	Introduction National identity as a national character The process of nation and state	Lecture Discussion Question and answer	3 X 45”	Paying Attention Ask Group discussion Provide examples Summarize material	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	7.5

3-4	Students are able to explain about the State and the Constitution	State and Constitution The relationship and role of the constitution in the life of the state	Lecture Discussion Question and answer	3 X 45”	Paying Attention Ask Provide examples Summarize material Create group discussion groups	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	7.5
5		State and citizens Rights and Obligations of Citizens	Lecture Discussion Question and answer	3 X 45”	Paying Attention Ask Answer questions Provide examples Summarize material group discussion	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	7.5
7		State law Human rights	Lecture Discussion Case study Structured assignments	3 X 45”	Presentation Paying Attention Ask Answer questions	QUIZ	– Attitude – Accuracy of explanation – Communication attraction	7.5

					Provide examples Summarize material group discussion		– Ability and Accuracy of answers – Example relevance	
8-9		Democracy The journey of democracy in Indonesia	Lecture Discussion Case study Structured assignments Question and answer	3 X 45”	Presentation Paying Attention Ask Answer questions group discussion	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	7.5
10		UTS	Exam	3 X 45”	Doing midterm exam questions	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	15
11-12		Archipelagic Outlook Indonesian Geopolitics	Lecture Discussion Case study Question and answer Study tours	3 X 45”	Presentation Paying Attention Ask Answer questions Provide examples	UTS	– Attitude – Accuracy of explanation – Communication attraction	7.5

					Summarize material		– Ability and Accuracy of answers – Example relevance	
13		National defence Asta Gatra in the embodiment of national resilience Globalization and national resilience	Lecture Discussion Case study Structured assignments Question and answer Study tours	3 X 45”	Presentation Paying Attention Ask Answer questions Provide examples Summarize material group discussion	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	7.5
15-16		National Integration Plurality Integration Strategy	Lecture Discussion Case study Structured assignments Question and answer	3 X 45”	Paying Attention Ask Answer questions Provide examples Summarize material Presentation	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	7.5
17-18		Understanding Corruption Crime	Lecture Discussion Case study Structured assignments Question and answer	3 X 45”	Paying Attention Ask Answer questions Provide examples	Task completion	– Attitude – Accuracy of explanation – Communication attraction	7.5

					Summarize material group discussion Presentation		– Ability and Accuracy of answers – Example relevance	
19		UAS	Exam	3 X 45”	Work on end of semester exam questions	Task completion	– Attitude – Accuracy of explanation – Communication attraction – Ability and Accuracy of answers – Example relevance	25

2. Object Oriented Analysis And Design

MALANG STATE POLYTECHNIC

ACCOUNTING MAJOR

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Object Oriented Analysis and Design	**RTI214002**	Core courses	**2 credits / 4 hours**	3	**July 3, 2021**
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Ridwan Rismanto, SST., M.Kom. Deddy Kusbianto PA, Ir., M.Mkom. Banni Satria Andoko, S.Kom., MMSI., Dr. Eng.		**Banni Satria Andoko, S.Kom., MMSI., Dr. Eng**	**Imam Fahrur Rozi, ST., MT.**	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	S8 Internalize academic values, norms, and ethics. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently. **PP1** Mastering the concepts of applied mathematics, basic knowledge of ICT (Algorithms, Programming, Databases, Computer Networks, etc.), engineering science, and engineering principles in the field of ICT in depth. **PP2** Mastering ICT product development methods to provide the right solutions through one or more application domains. **KU2** Able to demonstrate independent, quality and measurable performance.				
	Learning Outcomes Graduates charged to courses (CPL-MK)				
	Able to master the concept of software analysis and design with an object-oriented approach in depth; Able to analyze a problem and make software design designs in certain application domains as a form of quality solutions, which are carried out with full responsibility and pay attention to academic values, norms, and ethics; Able to apply various UML diagram models used in the process of developing ICT products independently.				

Short Course Descriptions	This course is part of a competency unit that must be mastered by a prospective software application system development analyst, so as to be able to produce object-oriented software design documents, which are ready to be used by programmers to implement them in the various programming languages needed.
Learning Materials / Subjects	1. Introduction 2. Modeling Requirements: Use Cases 3. Modeling System Workflows: Activity Diagrams 4. Modeling a System's Logical Structure: Introducing Classes and Class Diagrams 5. Modeling a System's Logical Structure: Advanced Class Diagrams 6. Bringing Your Classes to Life: Object Diagrams 7. Modeling Ordered Interactions: Sequence Diagrams 8. Focusing on Interaction Links: Communication Diagrams 9. Focusing on Interaction Timing: Timing Diagrams 10. Completing the Interaction Picture: Interaction Overview Diagrams 11. Modeling a Class's Internal Structure: Composite Structures 12. Managing and Reusing Your System's Parts: Component Diagrams 13. Organizing Your Model: Packages 14. Modeling an Object's State: State Machine Diagrams 15. Modeling Your Deployed System: Deployment Diagrams
References	**Main :** Hamilton, K., & Miles, R. (2006). Learning UML 2.0 (Vol. 286). Sebastopol, USA: O'Reilly. **Supporters:**

	Hunt, J. (2000). The Unified Process for Practitioners: Object-oriented Design, the UML and Java (Vol. 12). Springer Science & Business Media. Lee, M., Kim, H., Kim, J., Lee, J., & Gum, D. (2005). StarUML 5.0 user guide. 2009-03-11]. http://staruml, sourceforge, net/docs/user-guide (en)/toc. html.	
Instructional Media	**Software :**	**Hardware :**
	StarUML 5, JDK 1.8, Netbeans 8	Computer/Laptop with a minimum of 512 MB RAM, LCD Projector/TV Monitor
Name of Lecturer	Ridwan Rismanto, SST., M.Kom. Deddy Kusbianto PA, Ir., M.Mkom. Banni Satria Andoko, S.Kom., MMSI., Dr. Eng. Muhammad Shulhan Khairy, S.Kom., M.Kom. Ariadi Retno Ririd, S.Kom., M.Kom.	
Requirements Course	Algorithms and Programming	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Introduction	● Section 1.1. What's in a Modeling Language? ● Section 1.2. Why UML 2.0? ● Section 1.3. Models and Diagrams ● Section 1.4. "Degrees" of UML ● Section 1.5. UML and the Software Development Process ● Section 1.6. Views of Your Model	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: Task 1: create a simple case example	6x50' - Online (Online) (2x50') **Asynchronous** → learning video - Online (4x50') **Sync** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and know the basic concepts of object-oriented design 2. Understand the use of UML	Criteria: Rubric, assessment criteria Form: Oral test	● Able to find and select examples of document models resulting from object-oriented software development. ● Able to explain the software development process in accordance with the example of the model he chooses himself	**2%**

		● Section 1.7. A First Taste of UML ● Section 1.8. Want More Information?						
2	Modeling Requirements: Use Cases	● Section 2.1. Capturing a System Requirement ● Section 2.2. Use Case Relationships ● Section 2.3. Use Case Overview Diagrams ● USection 2.4. What's Next	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: Task 1: create a use case from a simple case example	6x50' - Online (Online) (2x50') **Asynchronous** → learning video - Online (4x50') **Sync** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember *Usecase* diagrams 2. Understand the use of Usecases	Criteria: Rubric, assessment criteria Form: Oral test	Able to create use case diagrams according to specified business needs	**2%**
3	Modeling System Workflows: Activity Diagrams	● Section 3.1. Activity Diagram Essentials ● Section 3.2. Activities and Actions ● Section 3.3. Decisions and Merges ● Section 3.4. Doing Multiple Tasks at the Same Time ● Section 3.5. Time Events	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make activity	6x50' - Online (Online) (2x50') **Asynchronous** → learning video - Online (4x50') **Sync** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember *Activity* diagrams 2. Understand the use of Activity Diagrams	Criteria: Rubric, assessment criteria Form: Oral test	Able to create activity diagrams according to specified business needs	**2%**

		● Section 3.6. Calling Other Activities ● Section 3.7. Objects ● Section 3.8. Sending and Receiving Signals ● Section 3.9. Starting an Activity ● Section 3.10. Ending Activities and Flows ● Section 3.11. Partitions (or Swimlanes) ● Section 3.12. Managing Complex Activity Diagrams ● Section 3.13. What's Next	diagrams from simple case examples					
4	Modeling a System's Logical Structure: Introducing Classes and Class Diagrams	● Section 4.1. What Is a Class? ● Section 4.2. Getting Started with Classes in UML ● Section 4.3. visibility ● Section 4.4. Class State: Attributes ● Section 4.5. Class Behavior: Operations ● Section 4.6. Static Parts of Your Classes	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a class diagram from a	6x50' - Online (Online) (2x50') **Asynchronous** → learning video - Online (4x50') **Sync** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember *class* diagrams 2. Understand the use of the Diagram class	<u>Criteria:</u> Rubric, assessment criteria <u>Form: Oral test</u>	Able to create Class diagrams according to specified business needs	**2%**

		● Section 4.7. What's Next	simple case example					
5	Modeling a System's Logical Structure: Advanced Class Diagrams + Quiz 1	● Section 5.1. Class Relationships ● Section 5.2. Constraints ● Section 5.3. Abstract Classes ● Section 5.4. Interfaces ● Section 5.5. Templates ● Section 5.6. What's Next	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make advanced class diagrams from simple case examples ● Quiz 1	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember *class* diagrams 2. Understand the use of the Diagram class	Criteria: Rubric, assessment criteria Form: Oral test, multiple choice	Able to create Advanced Class diagrams according to specified business needs	**2%**
6	Bringing Your Classes to Life: Object Diagrams	● Section 6.1. Object Instances ● Section 6.2. Links ● Section 6.3. Binding Class Templates ● Section 6.4. What's Next	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment:	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video	By studying the basic material of object-oriented analysis students can: 1. Understand and remember object diagrams 2. Understand the use of object diagrams	Criteria: Rubric, assessment criteria Form: Oral test	Able to create object diagrams according to specified business requirements	**2%**

			● Task 1: create a diagram object from a simple case example	conferencing, discussions				
7	Modeling Ordered Interactions: Sequence Diagrams	● Section 7.1. Participants in a Sequence Diagram ● Section 7.2. time ● Section 7.3. Events, Signals, and Messages ● Section 7.4. Activation Bars ● Section 7.5. Nested Messages ● Section 7.6. Message Arrows ● Section 7.7. Bringing a Use Case to Life with a Sequence Diagram ● Section 7.8. Managing Complex Interactions with Sequence Fragments ● Section 7.9. What's Next	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a sequence diagram from a simple case example	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember sequence diagrams 2. Understand the use of sequence diagrams	Criteria: Rubric, assessment criteria Form: Oral test	Able to create sequential diagrams according to specified business needs	**2%**
8	Responsibility Assignment Patterns	● The GRASP Patterns ● What is a pattern? ● Master 1 : Expert	Form : Studying Learning methods: group discussion Case study	6x50' - Online (Online) (2x50') **Asynchronous**	By studying the basic material of object-oriented analysis students can:	Criteria: Rubric, assessment criteria Form: Oral test Form: practice	Able to create communication diagrams according to specified business needs	**2%**

		● Master 2 : Creator	Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a communication diagram from a simple case example	→ learning video -Online (4x50') **Synchronous** → video conferencing, discussions	1. Understand and remember Responsibility Assignment Patterns 2. Understand the use of Responsibility Assignment Patterns			
9	UTS	All materials from 1-8 th weeks	Online exams	2x50'	Answer multiple choice questions online	Criteria: Accuracy in answering questions Form: online exam	Able to answer multiple choice questions online	**30%**
10	Responsibility Assignment Patterns	● Master 3 : High Cohesion ● Master 4 : Low Coupling ● Master 5 : Controllers ● Summary	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a timing diagram from a simple case example	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember Responsibility Assignment Patterns 2. Understand the use of Responsibility Assignment Patterns	Criteria: Rubric, assessment criteria Form: Oral test	Able to create timing diagrams according to specified business requirements	**2%**
11	INHERITANCE	● Inheritance - the basics	Form : Studying	6x50'	By studying the basic material of object-	Criteria: Rubric, assessment criteria	Able to create interaction summary	**2%**

		● Inheritance is White Box Reuse ● The 100% Rules ● Substitutability ● The Is-A-Kind-Of Rule ● Example - Reusing queues through inheritance	Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make an overview diagram of a simple case example	- Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	oriented analysis students can: 1. Understanding and remembering INHERITANCE 2. Understand the use of INHERITANCE	Form: Oral test	diagrams according to specified business needs	
12	INHERITANCE	● Problems With Inheritance ● Visibility of Attributes ● Polymorphism ● Abstract Classes ● The Power of Polymorphism ● Summary	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: create a composite structure from simple case examples	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understanding and remembering INHERITANCE 2. Understand the use of INHERITANCE	Criteria: Rubric, assessment criteria Form: Oral test	Able to make compositional structure diagrams according to specified business requirements	**2%**

13	System Architecture - Large And Complex Systems + Quiz 2	● The UML Package Diagram ● Elements Inside a Package ● Why Packaging? ● Some Packaging Heuristics ● expert ● High Cohesion ● Loose Couplings ● Handling Cross Package Communication ● The Facade Pattern ● Architecture-Centric Development ● Example ● Handling Large Use Cases ● The Construction Phase ● Summary	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a component diagram from a simple case example ● Quiz 2 : work on multiple choice questions	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understand and remember the System Architecture 2. Understand the use of System Architecture 3. Understand the material from meetings 10 to 13	Criteria: Rubric, assessment criteria Form: Oral test	Able to create component diagrams according to specified business requirements	**2%**
14	Modeling States	● Example Statechart 108 ● State Diagram Syntax 109 ● Substates 110	Form : Studying Learning methods: group discussion Case study	6x50' - Online (Online) (2x50') **Asynchronous**	By studying the basic material of object-oriented analysis students can:	Criteria: Rubric, assessment criteria Form: Oral test	Able to create packages according to specified business needs	**2%**

		● Entry/Exit Events 111 ● Send Events	Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: create a package from a simple case example	→ learning video -Online (4x50') **Synchronous** → video conferencing, discussions	1. Understanding and remembering Modeling States 2. Understand the use of Modeling States			
15	Modeling States	● Guards 111 ● History of States 112 ● Other Uses for State Diagrams 112 ● Summary	Form : Studying Learning methods: group discussion Case study Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a state machine diagram from a simple case example	6x50' - Online (Online) (2x50') **Asynchronous** → learning video -Online (4x50') **Synchronous** → video conferencing, discussions	By studying the basic material of object-oriented analysis students can: 1. Understanding and remembering Modeling States 2. Understand the use of Modeling States	Criteria: Rubric, assessment criteria Form: Oral test	Able to make machine step diagrams according to specified business needs	**2%**
16	Transition To Code	● Synchronizing Artifacts ● Mapping Designs to Code ● Defining the Methods	Form : Studying Learning methods: group discussion Case study	6x50' - Online (Online) (2x50') **Asynchronous** → learning video	By studying the basic material of object-oriented analysis students can:	Criteria: Rubric, assessment criteria Form: Oral test	Able to create deployment diagrams according to specified business requirements	**2%**

		● Mapping Packages into Code ● in Java ● The UML Component Model ● There are Components ● Summary	Learning Resources: E-learning lms.polinema.ac.id Assignment: ● Task 1: make a deployment diagram from a simple case example	-Online (4x50') **Synchronous** → video conferencing, discussions	1. Understand and remember the Transition To Code 2. Understand the use of Transition To Code			
17	UAS	All materials	Online exams	2x50'	Answer multiple choice questions online	Criteria: Accuracy in answering questions Form: online exam	Able to answer multiple choice questions online	**40%**

3. Project management

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits)/hour**	**SEMESTER**	**DATE. PREPARATION**
Project management	**RTI214003**	**Expertise Informatics**	**2 Credits (4 Hours per Week)**	**4**	
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Candra Bella Vista, S. Kom., MT. Farid Angga Pribadi, S.Kom., M.Kom Luqman Affandi, S. Kom., MMSI Septian Enggar Sukmana, S.Pd., MT Vipkas Al Hadid Firdaus, ST,. MT		Dwi Puspitasari, S.Kom., M.Kom.	Imam Fahrur Rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	S6 Working together and having social sensitivity and concern for society and the environment. **S8** Internalize academic values, norms, and ethics. **KU2** Able to demonstrate independent, quality and measurable performance. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently. **KK5** Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software				
	Learning Outcomes Graduates charged to courses (CPL-MK)				

	Mastering the concepts of Introduction to Project Management, Project Management Cycle, Managing Project Scope, Managing Time Schedules, Managing Costs, Managing Project Quality (QMS), Managing HR, Managing Risk, Managing Communication, PDCA, Software Development Process Standards.							
Short Course Descriptions	**Project Management provides knowledge and understanding to students in managing a project, by applying 10 Knowledge Areas of project management. So that the success of a project can be realized.**							
Learning Materials / Subjects	**Introduction to Project Management, Project Management Cycle, Managing Project Scope, Managing Timelines, Managing Costs, Managing Project Quality (QMS), Managing Human Resources, Managing Risk, Managing Communications, PDCA, Software Development Process Standards.**							
References	**Main :**							
	Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology.							
	Supporters:							
	Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices							
Instructional Media	**Software :**	**Hardware :**						
	1. Microsoft Office (Word, Excel, PowerPoint) 2. Microsoft Project							
Name of Lecturer	Luqman Affandi, S. Kom., MMSI M. Hasyim Ratsanjani Pramana Yoga Saputra, S.Kom., MMT. Yuri Ariyanto, S.Kom., M.Kom.							
Requirements Course								

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

1	Students are able to understand the concepts and terminology of software development projects Students are able to understand the roles and functions of each personnel associated with the project	Project and project management concepts and terminology Personnel in project management Sample software project	Collaborative Learning Virtual Classes	4 x 45”	Answer about project concepts and terminology and software project management Responding to the functions and roles of each personnel involved in a project Discuss examples of software projects	Task completion	Able to understand the concepts and terminology of software development projects Able to understand the roles and functions of each personnel associated with the project	3%
2	Students are able to understand processes in software project management	5 Processes in project management 10 Project management knowledge areas	Collaborative Learning Virtual Classes	4 x 45”	Answered about 5 project management processes and 10 knowledge areas Discuss about the software management process	Task completion	Able to understand the processes in software project management	3%

3	Students are able to understand integration management 1	Good integration management Making Project Charters Creating a Project Management Plan	Collaborative Learning Virtual Classes	4 x 45”	Discuss about the Project Charter Discuss about the Project Management Plan	Task completion	Able to understand about integration management (integration management) 1	3%
4	Students are able to understand integration management 2	Direction and arrangement of project work Project monitoring and controlling Project closing	Collaborative Learning Virtual Classes	4 x 45”	Discuss about setting up project work Discuss about monitoring, controlling, and project closing Carry out tasks related to integration management	Task completion	Able to understand about integration management (integration management) 2	3%
5	QUIZ 1		Online Assignments	4 x 45”	Do QUIZ 1	Accuracy of answering questions	QUIZ 1	10%

6	Students are able to understand scope management	Process in scope management WBS	Collaborative Learning Virtual Classes	4 x 45”	Discuss about WBS Carry out tasks related to scope management	Task completion	Able to understand scope management	3%
7	Students are able to understand about time management (time management)	Process in time management Network Diagrams Gantt Chart	Collaborative Learning Virtual Classes	4 x 45”	Discuss about Network Diagrams and Gantt Charts Doing tasks related to time management	Task completion	Able to understand about time management (time management)	3%
8	Students are able to understand about cost management (cost management)	The importance of cost management Process in cost management	Collaborative Learning Virtual Classes	4 x 45”	Discuss about cost management Carry out tasks related to cost management	Task completion	Able to understand about cost management (cost management)	3%
9	UTS		Online Tests	4 x 45”	Doing UTS	Accuracy of answering questions	UTS	15%

10	Students are able to understand about quality management (quality management)	The importance of quality management Process in quality management Tools and techniques in quality control	Collaborative Learning Virtual Classes	4 x 45”	Discuss about quality management Carry out tasks related to quality management	Task completion	Able to understand about quality management (quality management)	3%
11	Students are able to understand about human resource management (human resource management)	The importance of human resource management Processes in human resource management Tools and techniques in human resource management	Collaborative Learning Virtual Classes	4 x 45”	Discuss about human resource management Carrying out tasks related to human resource management	Task completion	Able to understand about human resource management (human resource management)	3%

12	Students are able to understand about communication management (communication management)	The importance of good communication management Process in communication management Methods for improving communication within projects	Collaborative Learning Virtual Classes	4 x 45”	Discuss about good communication Carry out tasks related to communication management	Task completion	Able to understand about communication management (communication management)	3%
13	Students are able to understand stakeholder management	The importance of stakeholder management Process in stakeholder management	Collaborative Learning Virtual Classes	4 x 45”	Discuss about stakeholder management Carry out tasks related to stakeholder management	Task completion	Able to understand stakeholder management	3%
14	QUIZ 2		Online Assignments	4 x 45”	Doing QUIZ 2	Accuracy of answering questions	QUIZ 2	10%

15	Students are able to understand risk management	The importance of risk management Process in risk management Risk identification	Collaborative Learning Virtual Classes	4 x 45”	Discuss how to mitigate risk Carry out tasks related to risk management	Task completion	Able to understand about risk management (risk management)	3%
16	Students are able to understand procurement management	The importance of procurement management Process in procurement management	Collaborative Learning Virtual Classes	4 x 45”	Discuss about procurement management Carry out tasks related to procurement management	Task completion	Able to understand about procurement management	3%
17	UAS		Online Tests	4 x 45”	Do UAS	Accuracy of answering questions	UAS	26%

4. Project 1

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
Level 1 Project	RTI214004	Project	2 credits/8 hours	3	Sept. 1, 2016
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Usman Nurhasan, S.Kom., MT		Yuri Ariyanto, S.Kom., M.Kom.	Ir. Deddy Kusbianto Purwoko Aji, Mmkom	

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
S6	Working together and having social sensitivity and concern for society and the environment.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software

	KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned. **KU2** Able to demonstrate independent, quality and measurable performance. **KU5** Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work. **KU7** Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility. **KU8** Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently. **KU10** Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).
	Learning Outcomes Graduates charged to courses (CPL-MK) Able to apply the concept of requirements engineering and its modeling with logical, critical, quality thinking as a form of solution; Able to identify and analyze needs, as well as apply software design concepts using UML appropriately based on standard procedures and design specifications; Able to apply the concept of software implementation by paying attention to resource management in the form of time, human resources, and costs; Able to apply the concept of software testing as a form of ICT product quality assurance, and perform documentation on each development process; Able to work together in building software that is not too complex by applying software engineering principles with a responsible attitude and paying attention to academic values, norms, and ethics.
Short Course Descriptions	This course studies the documentation of project results
Learning Materials / Subjects	Reporting and documentation of project results and reporting of work results
References	**Main :** 1. Study Program Committee, 2013, Project Implementation and Reporting Guidelines, Level II Project Implementation Guidelines, Polynema, Malang. 2. Santoso, Nurudin, 2007, Project Management, Teaching Module, Polynema, Malang. 3. Santoso, Nurudin, 2007, Project Management Practicum, Teaching Module, Polynema, Malang.

	4. Sprague, RH and McNurlin, BC , 2002, Information Systems Management in Practice, 5th edition, Prentice-Hall. **Supporters:**
Instructional Media	**Software :** / **Hardware :** LCDs and Projectors
Name of Lecturer	
Requirements Course	-

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Know the course objectives	1. Introduction 2. Study objectives 3. SAP per week Group division	Lectures, Q&A, discussions	1x 8 x50'	- Understand the purpose of the lecture Learn to cooperate with others	-	-	-
2-3	Mastering various documentation techniques	1. Making project proposals 2. Making progress reports 3. Making final report	Lectures, Q&A, discussions	2x 8 x50'	- Get information about various documentation techniques	Task completion jobsheets	Individual task	5 %

4-5	Mastering the various jobs of information technology operators	1. Computer network technician 2. Enterprise information system management 3. Enterprise information systems analyst 4. etc	Lectures, Q&A, discussions	2x 8 x50'	- Get information about the various jobs of information technology operators	Task completion jobsheets	Individual task	5%
6-7	Able to determine the work environment to be studied	1. Analysis of Existing It Products 2. Contribution of Existing It Products 3. New It Product Design 4. New It Product Feasibility 5.	Lectures, Q&A, discussions	2x 8 x50'	- Get information about the work environment that will be studied	Task completion jobsheets	Individual task	5%
8-9	UTS		UTS	2x 8 x50'		Task completion jobsheets		25%

10-11	Able to determine the types of information technology operator jobs in the work environment	1. Determination of work taken 2. Job description taken 6. Division of work tasks	group discussion Question and answer Group activity assessment	2x8x50'	- Learn to cooperate with others - Communicating with others	Task completion jobsheets	Group activity	5%
12-13	Able to determine the documentation techniques used in the work of information technology operators	1. Implementation of documentation techniques used 2. Making project proposals 7. Making progress reports	group discussion Question and answer Group activity assessment	2x 8 x50'	- Learn to cooperate with others - Communicating with others	Task completion jobsheets	Group activity	5%
14-15	Able to document the work of information technology operators	1. Making progress reports 8. Making final report	group discussion Question and answer Group activity assessment	2x 8 x50 '	- Learn to cooperate with others - Communicating with others	Task completion jobsheets	Group activity	5%
16	Documentation result presentation	9. Presentation of the final report as well as the results of the project.	Presentation Question and answer Group performance assessment	2x 8 x50 '	- Learn to cooperate with others - Communicating with others	- Task completion jobsheets Presentation	Group activity	5%

17	UAS	10.	Collection of documentation results	1X60'	-		Group activity	40%

5. business intelligence

POLYTECHNIC COUNTRY POOR

MAJOR TECHNOLOGY INFORMATION PROGRAM

STUDIES : D 4 TECHNIQUE INFORMATICS

PLAN LEARNING SEMESTER (RPS)

EYE STUDYING	CODE	clump SUBJECT	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Business Intelligence	RTI214005	Eye Studying Skill	2 credits/ 4 O'clock	4	1 1 February 202 2

AUTHORIZATION	Lecturer Developer RPS	Coordinator RMK	Ka STUDY PROGRAM
	1. Banni Satria Andoko, S. Kom . , M.MSI, Dr. Eng. 2. Farid Anga Personal, S. Kom., M. Kom. 3. Ershad Arif Mashudi , S. Kom., M. Kom. 4. Vit Zuraida, S. Kom . , M. Kom.	Bi Puspitasari, S. Kom., M. Kom.	Priest Fahrur rozi, ST., MT.

Achievements Learning (CP)	Achievements Learning Graduate of Program Studies (CPL-Prodi)
	S8 Internalize academic values, norms, and ethics.
	KU2 Able to demonstrate independent, quality and measurable performance.
	PP1 Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
	PP7 Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.
	KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).

	KK6 Able to use the latest technology related to the field of ICT / science and technology to present information technology solutions. **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
	Achievements Learning Graduate of Which charged on eye college (CPL-MK)
	Able to master the basic concepts of data warehouse as well as ETL concepts and components in depth, taking into account technological developments and the latest issues related to the ICT field; Able to design a data warehouse structure by applying logical, critical, quality, and measurable thinking; Able to carry out ETL data processes from several data sources to a data warehouse database that has been designed independently with a responsible attitude and pays attention to academic norms and ethics; Able to use tools to visualize data as a solution for problem solving analysis; Able to apply knowledge of the basic concepts of data warehouse and ETL in software development.
Description Short Eye Studying	In this course, concepts and techniques for designing a large quantity of data storage media will be taughtWhich referred to as Data warehouse, following How method For fill it with data Which originate from various type source data, at once serve it.
Material Learning/Principal Discussion	Draft Base Data Warehouse Draft ETL & Component Solution Data Warehouse
	Data Warehouse Fundamentals, ETL Concepts & Components, Data Warehouse Solutions, Data Warehouse Schema Design, ETL Logic Execution (SQL Server Integration Services), ETL Logic Execution Automation (SQL Server Agent), Complex ETL Logic Design (SQL Server Data Tools), Control Flow & Data Flow, Advanced Tasks, Variables and Event Handler, Extracting Data Source & Load to Dimension Table, Transform, Load to Fact Table, Multi-type Data Source, Visualization

6. Computer network

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits) / hour**	**SEMESTER**	**DATE. PREPARATION**
Computer network	RTI214006	Core Courses	2 credits/3 hours	3	August 13, 2021
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.		Maybe Astiningrum, ST., M.Kom.	Priest Fahrur rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	Knowledge Mastery Learning Achievements: Mastering basic ICT knowledge (basic algorithms, data structures and manipulation, programming languages, databases, computer networks, etc.) to solve existing ICT problems.				
	Learning Outcomes Graduates charged to courses (CPL-MK)				
	Mastering the concept of Network Communication, Protocol, Model, Address, Application Layer, Application Protocol, Transport Layer, Network Layer, IPv4, Subnetting, Data Link Protocol, Physical Layer. • Able **to explain** the concept of communication in Computer Networks, how network protocols work, the use of Network Modeling and Computer Network Addressing (C2) • Able **to explain** basic commands in router configuration. (C2) • Able **to implement** IPv4 network addressing and subnetting. (C3)				

Short Course Descriptions	In this Computer Networking course, an introduction to Computer Networks, communication on computer networks, OSI Model & TCP Model, Application Layer, Transport Layer, Network Layer, Network Addressing, Data Link Layer, Physical Layer, Ethernet Standards, LAN Network Planning will be discussed. and router configuration introduction.
Learning Materials / Subjects	Network Communication, Protocol, Model, Address, Application Layer, Application Protocol, Transport Layer, Network Layer, IPv4, Subnetting, Data Link Protocol, Physical Layer, Router basic configuration.
References	**Main :** 1. James F. Kurose & Keith Ross, "Computer Networking : A Top-Down Approach Featuring the Internet" Addison-Wesley, 2011 2. Cisco Systems, Inc." *CCNA Exploration I: Network Fundamentals"* . Indianapolis: Cisco Press, 2007 **Supporters:**

Instructional Media	**Software :**	**Hardware :**
	OS - WINDOWS, MS. OFFICE, WEB BROWSER, WireShark, PacketTracer	LCDs and Projectors

Name of Lecturer	
Requirements Course	-

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimate d time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• students can explain the role and influence of data communication & computer networks in everyday life. **(C2)** • students can explain the elements that make up a	1. Basic Communication 2. Protocol 3. Model/Layered Use	• Form : 1. [Synchronous Online] Material Explanation (1x50) 2. [Asynchrono	1x 3x50'	- Students learn about the basics of computer networks	Criteria: Precision and mastery Form of assessment: • Active group	• Accuracy explains the role, influence of communication and provides examples of computer network	**5**

	computer network and explain the use of network protocols. **(C2)** • students can explain the advantages of using the OSI and TCP layered models as well as the basic functions of each layer **(C2)**	4. Network addressing	us Online] Learning video (1x50) 3. [Synchronous] discussion and discussion (1x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*		- Students discuss the role and influence of computer networks in everyday life.	discussion includes asking and answering (affective)	applications in life • Able to explain again the basis of communication, devices and network forming media.	
2-3	students can explain the functions, processes that occur and the types of protocols that exist in the upper layers of the OS and TCP models **(C2)**	1. Application - Interface between networks 2. Client-Server and Peer-to-peer 3. Application and Service layer protocols: • DNS • WWW and HTTP • E-mail • FTP • DHCP • File Sharing	• Form : 1. [Synchronous Online] Material review (2x30) 2. [Synchronous Online] Material explanation (2x50) 3. [Asynchronous Online] Learning videos (2x20) 4. [Synchronous Online]	2x3x50'	- Students learn about various protocols at the upper layers of OSI and TCP - Students discuss about Client Server and Peer to Peer	Criteria: Precision and mastery Form of assessment: • Active group discussion includes asking and answering (affective)	• Be able to mention application functions as user interfaces and network infrastructure as well as types of application models. • Be able to mention several network protocols and their uses appropriately	5

		• Telnet	discussion and Q&A (2x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*					
4	students can explain the functions & roles of the Transport layer, as well as the TCP and UDP protocols. **(C2)**	1. Uses of the Transport Layer 2. Transport Layer Protocol Type 3. Port Address	• Form : 1. [Synchronous Online] Material review (1x30) 2. [Synchronous Online] Material Explanation (1x50) 3. [Asynchronous Online] Learning video (1x20) 4. [Synchronous Online] discussion and Q&A (1x50) • Method : *Remote Blended Learning (RBL):*	1x3x50'	- Students learn about the transport layer - Students discuss TCP and UDP	Criteria: Precision and mastery Form of assessment: • Active group discussion includes asking and answering (affective)	• Be able to mention the function of the transport layer • Be able to mention the protocols that exist in the transport layer • Be able to explain the different transport layer protocols • Be able to explain the addresses used in the transport layer	5

			Virtual Classroom with Zoom, learning videos and online modules in LMS					
5	students can explain the functions of the Network layer, addressing, and *routing functions* **(C2)**	1. Address 2. Encapsulation 3. Routing 4. Decapsulation 5. Network Layer Protocol 6. IPv4 protocol	• Form : 1. [Synchronous Online] Material review (1x30) 2. [Synchronous Online] Material Explanation (1x50) 3. [Asynchronous Online] Learning video (1x20) 4. [Synchronous Online] discussion and Q&A (1x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*	1x3x50'	- Students learn about Network Layer - Students discuss addressing and routing functions	Criteria: Precision and mastery Form of assessment: • Active group discussion includes asking and answering (affective)	• Able to mention and explain the tasks of the Network layer • Able to mention the protocol at the Network layer	5

6	Quiz 1	From meeting 1 to 5	Written/Online Test	1x2x50'			Answer questions correctly	25
7-8	students can understand and explain the structure and type and use of IPv4 addresses on the network **(C2)**	1. IPv4 address 2. IPv4 Types and Uses 3. Calculation and Allocation of IPv4 for the network	• Form : 1. [Synchronous Online] Material review (2x30) 2. [Synchronous Online] Material explanation (2x50) 3. [Asynchronous Online] Learning videos (2x20) 4. [Offline] Practice Questions (1x50) 5. [Synchronous Online] discussion and Q&A (1x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and*	2x3x50'	- Students learn about IPv4 addressing - Students discuss the use of IPv4 - Students practice addressing networks using IPv4	Criteria: Precision and mastery Form of assessment: • Active group discussion includes asking and answering (affective) • Accuracy of Answers from practice questions (Cognitive)	• Able to mention and explain the function of the fields in the IPv4 structure • Able to mention various types and uses of IPv4 • Able to calculate and allocate IP addresses on networks with subnetting.	5

			online modules in LMS					
9	UTS / Quiz 2	From meeting 1 to 8	Written/online test	1x2x50'			Answer Questions Correctly	25
10-11	students can explain the role of the DataLink layer of the OSI model, the physical addressing of network devices and network topology logically. **(C2)**	1. Network Media Access Service 2. Local Media Transfer Control 3. DataLink Layer Frames 4. Connecting the Upper Layer to the Media 5. Data Link Layer Protocol 6. Physical Addressing 7. Network Topology	• Form : 1. [Synchronous Online] Material review (2x30) 2. [Synchronous Online] Material explanation (2x50) 3. [Asynchronous Online] Learning videos (2x20) 4. [Synchronous Online] discussion and Q&A (2x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*	2x3x50'	- Students learn about the Data Link Layer - Students discuss hardware physical addresses and network topology	Criteria: Precision and mastery Form of assessment: • Active group discussion includes asking and answering (affective)	• Able to redefine the functions/tasks of the Data Link layer • Be able to explain the structure of the frame • protocols/standards that exist at the Data Link layer • Able to explain various kinds of network topologies	5

12	students can explain the physical media used in computer network communications, the protocols and services that exist at the physical layer and the use of signal bits that represent *data frames.* **(C2)**	1. Communication Signals 2. Signaling and Coding 3. Physical Media	• Form : 1. [Synchronous Online] Material review (1x30) 2. [Synchronous Online] Material Explanation (1x50) 3. [Asynchronous Online] Learning video (1x20) 4. [Synchronous Online] discussion and Q&A (1x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*	1x3x50'	- Students learn about the physical layer - Students discuss services on the physical layer and the use of bit signals	Criteria: Precision and mastery Form of assessment: • Active group discussion includes asking and answering (affective)	• able to explain the various forms of communication signals • able to explain and give an example of the use of encoding bits in transmission • Able to mention and explain the criteria of various physical network media	5
13	Quiz 3	From Meetings 11 - 12	Writing test	1x2x50'			Answer Questions Correctly	20
14	students can identify and explain media requirements, connection types, devices needed to	1. Selection of Physical Connections -	• Form : 1. [Synchronous Online] Material	1x 3x50'	- Students learn about the construction	Criteria: Precision and mastery	• Able to mention the determining factors in the selection of	5

	build a computer network **(C2)**	devices and their selection factors 2. Selection of LAN and WAN topologies 3. Address Allocation 4. Subnet Calculation	review (1x30) 2. [Synchronous Online] Material Explanation (1x50) 3. [Asynchronous Online] Learning videos (2x20) 4. [Offline] Practice Questions (1x30) 5. [Synchronous Online] discussion and Q&A (1x20) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*		of computer networks - Students discuss case studies of building a computer network - Students practice subnet calculation questions	Form of assessment: • Active group discussion includes asking and answering (affective) • Accuracy of answers to practice questions (Cognitive)	network devices and connection types • Be able to allocate IP addresses and calculate subnets in problems	
15-16	students can explain how to use and configure basic routers and static routing **(C2)**	1. Cisco IOS 2. IOS Configuration and Mode Files	• Form : 1. [Synchronous Online] Material review	2x3x50'	- Students learn about routers - Students discuss	Criteria: Precision and mastery Form of	• Able to mention basic commands used in router configuration	5

		3. Basic IOS Command Structure 4. Network Connectivity Testing	(2x30) 2. [Synchronous Online] Material explanation (2x50) 3. [Asynchronous Online] Learning videos (2x20) 4. [Offline] Practice Questions (1x50) 5. [Synchronous Online] discussion and Q&A (1x50) • Method : *Remote Blended Learning (RBL): Virtual Classroom with Zoom, learning videos and online modules in LMS*		various types of routers - Students practice questions about router configuration	assessment: • Active group discussion includes asking and answering (affective) • Accuracy of answers to practice questions (cognitive)	• Able to mention router configuration files • Able to mention the commands in testing network connectivity	
1 7	UAS	From meeting 1 to 16	Written/Online Test	1x2x50'			Answer questions correctly	30

7. Computer Network Practicum

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D 4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits) / hour**	**SEMESTER**	**DATE. PREPARATION**
Computer Network Practicum	RTI214007	Core Courses	2 credits/4 hours	3	September 1, 2021
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Sofyan Noor Arief, S.ST, M.Kom.		Maybe Astiningrum, ST., M.Kom.	Priest Fahrur rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	S8 Internalize academic values, norms, and ethics. **KU2** Able to demonstrate independent, quality and measurable performance. **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc). **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.				
	Learning Outcomes Graduates charged to courses (CPL-MK)				
	Able to apply data communication principles on computer networks and LAN working principles				
Short Course Descriptions	In this course students are guided to understand the basic architecture of computer networks, network standard equipment, installation and configuration, use of equipment, use of network utility software, design based on network addressing and its implementation, and troubleshooting network problems.				

Learning Materials / Subjects	understand the basic architecture of computer networks, standard network equipment, installation and configuration, use of equipment, use of network utility software, design based on network addresses and their implementation, and troubleshooting network problems.
References	**Main :** 1. James F. Kurose & Keith Ross, "Computer Networking : A Top-Down Approach Featuring the Internet" Addison-Wesley, 2011 2. Cisco Systems, Inc." *CCNA Exploration I: Network Fundamentals"* . Indianapolis: Cisco Press, 2007 3. " *Ubuntu Server Guide* ". Creative Common ShareA Like, 2010. **Supporters:**

Instructional Media	**Software :**	**Hardware :**
	OS - WINDOWS & LINUX - UBUNTU, WEB BROWSER, WireShark, PacketTracer	PC & LCD PROJECTOR, HUB / SWITCH, ROUTER, LAN Tester, Crimping Pliers
Name of Lecturer		
Requirements Course	-	

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Students can install the NIC into the PC and also configure the NIC to use an IP address	NIC Installation: • NIC identification • Identification of PC Hardware • Network Configuration and Troubleshooting	• Lecture • Practice	1x4x45'			• Able to identify NIC, as well as Hardware devices • Able to configure NIC on PC • Make a clear report of the results of the practicum	5

2	Students know the types of cables, can prepare, use, and test UTP cables	• Kinds and Types of Network Cables • Cable Straight through, Crossover, rollover • LAN tester	• Lecture • Practice	1x4x45'	-		• Be able to mention the function of various types of cables • Able to make various types of network cables • Able to use LAN Tester to test LAN cables • Make a clear report of the results of the practicum	5
3	Students are able to configure the NIC to obtain configuration parameters from the DHCP server	• Dynamic IP client configuration • Troubleshooting Clients	• Lecture • Practice	1x4x45'	-		• Able to configure client to connect to DHCP server • Make a clear report of the results of the practicum	5
4	Students are able to use several Application layer protocols in the network	• DNS - dig, nslookup • FTP • Telnet • SSH	• Lecture • Practice	1x4x45'			• Able to use dig & nslookup commands according to their function • Able to use FTP protocol to download and upload data • Able to use telnet and SSH commands	5

							• Able to mention the protocol at the Network layer • Make a clear report of the results of the practicum	
5	Students are able to use network tools to observe how Transport layer protocols work	• TCP-3 way handshake • UDP client processes • Netstat and Nmap • Capture and identify TCP packets with WireShark	• Lecture • Practice	1x4x45'			• Be able to explain the process of establishing a TCP connection • Able to use Netstat and Nmap functions • Make a clear report of the results of the practicum	5
6	Students know how to troubleshoot problems with the Ping and route tools	• Workstation basic configuration • View configuration results • Ping utility • Route utility	• Lecture • Practice	1x4x45'			• Able to configure workstation/client statically • Able to use Ping and Route commands according to function • Make a clear report of the results of the practicum	5
7	Quiz 1	From meeting 1 to 6	Written/Online Test	1x4x45'			Answer questions correctly	5

8-9	Students can do network subnetting	• Class A subnetting • Class B subnetting • Class C subnetting	• Practice	2x4x45'			• Able to calculate and allocate IP addresses on networks with subnetting. • Be able to implement it on real/simulated devices. • Make a clear report of the results of the practicum	5
10	UTS / Quiz 2	From meeting 1 to 9	Written/online test	1x4x45'			Answer Questions Correctly	10
11	Students know and can use the ping and traceroute tools to observe paths to certain hosts	Traceroute	Lecture Practice	1x4x45'			• Able to use the Traceroute command and explain the output results • Make a clear report of the results of the practicum	5
12	Students know and can use the ARP Tool	ARP	Lecture Practice				• Able to use ARP/RARP commands and explain the output results • Make a clear report of the results of the practicum	5

13	Students can configure Access Points, install wifi adapters and connect wirelessly	Wireless Media : • Installing wireless adapters • Access Point Configuration • wifi connection	• Lecture • Practice	1x4x45'			• able to install a wireless adapter on the workstation • Able to configure Access point for local network • Make a clear report of the results of the practicum	5
14	Quiz 3	From Meetings 11 - 13	Writing test				Answer Questions Correctly	5
15-16	Students are able to design a local network	Local Network Design • Analysis and design of device requirements • Address allocation analysis and design	• Lecture • Practice	2x4x45'			• Able to formulate device design and requirements in building a local network • Able to formulate the addressing design needed in building a local network • Make a clear report of the results of the practicum	10
17-18	Students are able to configure routers with basic commands	Router Configuration • Name • Passwords • Interfaces	Practice	2x4x45'			• Able to perform basic configuration on the router • Make a clear report of the results of the practicum	5

19	UAS	From meeting 1 to 18	Written/Online Test	1x2x45'			Answer questions correctly	15

8. Advanced Web Programming

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Advanced Web Programming	**RTI214008**	Information Systems	3 credits/ 6 hours	3	February 5, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Ade Ismail S. Kom., M. TI 2. Dian Hanifudin Subhi, S. Kom., M. Kom. 3. Habibie Ed Dien, S. Kom., MT 4. Kadek Suarjuna Batubulan, S. Kom, MT 5. Million Ni'ma Shoumi, S.Kom., M.Kom 6. Moch. Zawaruddin Abdullah, S.ST., M.Kom 7. Putra Prima Arhandi, ST, M. Kom.	Yoppy Yunhasnawa, S.ST., M.Sc.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)
	S8 Internalize academic values, norms, and ethics.
	S9 Demonstrate a responsible attitude towards work in the field of expertise independently.
	PP2 Mastering ICT product development methods to provide the right solutions through one or more application domains.
	KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
	KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
	KU2 Able to demonstrate independent, quality and measurable performance.

	Learning Outcomes Graduates charged to courses (CPL-MK)
	Able to master website-based application development methods as a problem solving solution; Able to apply website-based application development tools in the form of a Web Framework with logical, critical, and measurable thinking; Able to make quality website-based applications, with a responsible attitude, and pay attention to academic values, norms, and ethics.
	Graduate Learning Outcomes that are charged to courses (CPL-MK Sub)
	- Students are able **to explain** the concepts and structure of the Web Framework (C2) - Students are able to **install** Web Framework (C1) - Student is able **explain** the concept of routing , controller, view, and model in Web Framework (C2) - Students **implement** routing and controllers on the Web Framework (C3) - Students are able to **apply** the template engine to the Web Framework (C3) view - Students are able *to* **do** layouts in the Web Framework (C3) view - Students are able **to make** connections to databases , schema migrations , and seeders (C 6) - Students are able **to create** case studies (C6) - Students **explain** the concept of authentication with Web Framework (C2) - Students are able **to make** registration and login forms (C6) - Students **explain** the concepts of ORM and ORM with relational databases (C2) - Students are able **to perform** CRUD operations with ORM and CRUD operations with relations on ORM (C6) - Students are able **to upload** files with the Web Framework (C3) - Students are able **to build** reporting features (C3) - Students **explain** the concept of RESTful (C2) - Students are able **to build** token authentication on RESTful API and CRUD with RESTful API (C3)

	- Students **build** projects based on selected case studies (C6) - Students **present** the results of projects that have been done (C3)
Short Course Descriptions	This course provides an understanding and mastery of the concept and use of web frameworks.
Learning Materials / Subjects	Basic Web Framework, MVC, Authentication, Object Relational Mapping (ORM), CRUD and RESTful API.
References	**Main :** *Muhammad Azamuddin, Hafid Mukhlasin, 2019. Laravel the PHP framework for web artisans, Kungfu Koding.* **Supporters:** 1. *Laravel Documentation - https://laravel.com/docs/ 8 .x* 2. Dayle Rees, 2016. Laravel: Code Smart. Leanpub

Instructional Media	**Software :**	**Hardware :**
	5. PHP 6. MySql 7. Laravel 8. Composer 9. Git	PCs/Laptops

Name of Lecturer	1. Ade Ismail S.Kom., M.TI 2. Dian Hanifudin Subhi, S.Kom., M.Kom. 3. Habibie Ed Dien, S. Kom., MT 4. Kadek Suarjuna Batubulan, S.Kom, MT

	5. Milyun Ni'ma Shoumi, S.Kom., M.Kom 6. Moch. Zawaruddin Abdullah, S.ST., M.Kom 7. Putra Prima Arhandi, ST, M.Kom.
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	- Students are able to **explain** the concept of Web Framework (C2) - Students are able to **install** Web Framework (C1) - Students are able to **describe** the structure of the Web Framework (C2)	Web Frameworks: ● Introduction to Web Frameworks ● Installing Web Frameworks ● Web Framework Structure	**Form :** Practice **- Online (*Online*) (1x50') Asinkron → video pembelajaran** **- Online (*online)*(1x50') Sinkron → Vcon , diskusi** **Learning methods:** ***Self Directed Learning (SDL)*** **Learning Resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 1*** *: Installing Web Framework and observing the structure of Offline Web Framework (4x50').*	1X3X50” - Online (*Online*) **(1x50') Asynchronous→** video pembelajaran - Online (*online)* **(1x50') Sync→** video conference, diskusi - Structured task **(1x50')**	By studying the Web Framework students can: 4. Understand the concept of Web Framework 5. Installing Web Frameworks 6. Understand the structure of the Web Framework	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Knowing about the concept of web framework ● Complete the web framework installation process ● Understand the structure of the web framework	5%
2	- Student is able **explain** Web Framework (C2) routing concept	Controllers & Routing: - Understanding of routing	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous→** video pembelajaran	1 x 6 x 50”	By studying Controller & Routing students can:	**Criteria:** Precision and mastery	● Knowing about the concept of routing web framework ● Complete the process of creating the routing web	5%

	- Students **apply** routing on the Web Framework (C3) - Students are able **to describe** the controller concept (C2) - Students are able to **implement** controllers on the Web Framework (C3)	- Routing implementation - Understanding of controllers	- Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 2** : Create a static website with a *Company Profile* case study (4x50') *Offline*		3. Understand the concept of routing web framework 4. Implement web routing framework 5. Understanding web framework controllers 6. Implement a web framework controller	**Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	framework ● Knowledge of web framework controllers ● Completed the creation of a web framework controller	
3	- Students **explain** the concept of views in the Web Framework (C2) - Students are able to **apply** the template engine to the Web Framework (C3) view - Students are able *to* **do** layouts in the Web Framework (C3) view	View - Introduction to views - engine templates - Layouts	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 3 : Modify the view on** *the Company Profile* case study using the *Offline template engine* (4x50').	1 x 6 x 50”	By studying the view students can: 1. Understand the concept of view web framework 2. Applying the template engine to the web framework view 3. Doing the *layout* on the view	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Knowing about the concept of view web framework ● Completed the implementation of the template engine in the view web framework ● Completed the layout process in the view web framework	5%

4	- Students are able to **explain** the concept of models in the Web Framework (C2) - Students are able to **make** a connection to the database (C 6) - Students are able to **make** schema migrations (C 6) - Students are able to **make** seeders (C 6)	Model: - Introduction to models - Introduction to migration - Introduction to seeding	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 4** : Development of *Company Profile* using data connected to *Offline* (4x50') database	1 x 6 x 50”	By studying the Web Framework model students can: 5. Understand the concept of web framework models 6. Establish a connection to the database 7. Create seeder schema migrations	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Knowing about the concept of the web framework model ● Finish establishing a connection to the database ● Completed schema migration creation ● Completed seeder creation	5%
5	- Students are able **to create** case studies (C6)	Quiz 1	**Form :** Practice - Online (*Online*) **Learning methods:** *Problem Based Learning (PBL)* **Assignment:** **Task 5** : Implement case studies by utilizing the concepts of routing, controllers, and views	1 x 6 x 50”	Quiz	**Criteria:** Assessment rubric **Form of assessment:** ● Developed application ● Clarity in describing the application being developed	Quiz	10%
6	- Students **explain** the concept of authentication with Web Framework (C2)	Authentication: - Authentication - Registration Form	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran	1 x 6 x 50”	By studying web framework authentication students can:	**Criteria:** Precision and mastery	● Knowing about the concept of web framework authentication ● Completing the creation of	5%

	- Students are able to **make** a registration form (C6) - Students are able to **create** a login form (C6)	- Login Form	- Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 6** : Implementation of authentication in the web admin case study by adding *Offline registration forms and login forms* (4x50')		1. Understand the concept of web framework authentication 2. Create a registration form 3. Create login forms	**Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	the registration form ● Completed the creation of the login form	
7	- Students **explain** the concept of ORM (C2) - Students are able **to perform** CRUD operations with ORM (C6)	ORMs: - Introduction to ORMs - CRUD with ORMs	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 7 : Implementation of ORM on Web Framework with** *Offline* web admin case study (4x50').	1 x 6 x 50”	By studying the web framework students can: 1. Understand the concept of ORM web framework 2. Perform CRUD operations with ORM	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Knowing about the concept of ORM web framework ● Completing CRUD operations with ORM	5%

8	- Students are able **to create** case studies (C6)	UTS	**Form :** Practice - Online (*Online*) **Learning methods:** *Problem Based Learning (PBL)* **Assignment:** **Task 8** : Implement case studies by utilizing the concepts of routing, controllers, views, authentication, register and login features, and CRUD operations	1 x 6 x 50”	UTS	**Criteria:** Assessment rubric **Form of assessment:** ● Developed application ● Clarity in describing the application being developed	UTS	10%
9	- Students are able to **explain** ORM concept with relational database (C 2) - Students are able **to perform** CRUD operations with relations in ORM (C6)	Data Management: - User management - Data management	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 9** : Making web admin features for CRUD with *Offline* (4x50') relations	1 x 6 x 50”	By studying the web framework students can: 3. Understand the concept of Web Framework 4. Installing Web Frameworks Understanding structure	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Completed the creation of user management ● Completing the creation of data management	5%

10	- Students are able **to upload** files with the Web Framework (C3) - Students are able **to build** reporting features (C3)	Upload and Reporting: - Upload files - Reporting	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 10** : Making features for uploading and reporting. (4x50') *Offline*	1 x 6 x 50”	By studying uploading and reporting students can: 1. Upload files with web framework 2. Build reporting features	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Completed the web framework file upload process ● Complete implementation of reporting features	5%
11	- Students **explain** the concept of RESTful (C2) - Students are able to **build** token authentication on RESTful API (C3) - Students are able to **build** CRUD with RESTful API (C3)	RESTful APIs: - Introduction to RESTful APIs - Authenticate with a RESTful API token - Build a CRUD RESTful API	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 11** : Build *an Offline* (4x50') RESTful API project	1 x 6 x 50”	By studying RESTful API students can: 1. Understand the concept of RESTful API 2. Building token authentication on a RESTful API 3. Building CRUD with RESTful APIs	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Knowing about the concept of RESTful API ● Completed token authentication build on RESTful API ● Completed CRUD build with RESTful API	5%

12	- Students are able **to create** case studies (C6)	Quiz 2	**Form :** Practice - Online (*Online*) **Learning methods:** *Problem Based Learning (PBL)* **Assignment:** **Task 12** : Implement case studies by utilizing the concepts of routing, controllers, and views	1 x 6 x 50”	Quiz	**Criteria:** Assessment rubric **Form of assessment:** ● Developed application ● Clarity in describing the application being developed	Quiz	10%
13 – 16	- Students **build** projects based on selected case studies (C6)	Project	**Form :** Practice - Online (*Online*) (1x50') **Asynchronous**→ video pembelajaran - Online (*online)* (1x50') **Sync**→ Vcon , diskusi **Learning methods:** *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1 3** : Building projects in groups based on selected case studies (4x50') *Offline*	1 x 6 x 50”	Project	**Criteria:** Precision and mastery **Form of assessment:** ● Practice ● Suitability of the project with the case study ● Completion of project features according to the case study	● Complete project development based on selected case studies	20%
17	- Students **present** the results of projects that have been done (C3)	UAS	**Form :** Practice - Online (*Online*)	1 x 6 x 50”	Presentation	**Criteria:** Precision and mastery	Presentation	15%

			Learning methods: *Project Based Learning (PjBL)* **Assignment:** **Task 14** : Presenting the projects that have been built in groups			**Form of assessment:** Project presentation		

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Computational Statistics	RTI214003	Basic Informatics	2 credits/4 hours	4	February 11, 2022

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	• Muhammad Afif Hendrawan, S.Kom., MT • Dr. Rakhmat Arianto, S.ST., M.Kom • Elok Nur Hamdana, ST, MT	**Maybe Astiningrum, ST, M. Kom.**	Imam Fahrur Rozi, ST, MT

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)
	• S8 : Internalizing academic values, norms, and ethics. • S9: Demonstrate a responsible attitude towards work in the field of expertise independently. • PP1: Mastering the concepts of applied mathematics, basic knowledge of ICT (Algorithms, Programming, Databases, Computer Networks, etc.), engineering science, and engineering principles in the field of ICT in depth. • PP4: Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth. • KK4: Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT / Science and Technology products.

	• KU2: Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK)
	• Understand the basic concepts of statistics. • Mastering the techniques of collecting and presenting data. • Understand trends in the concentration and distribution of data. • Understand the concept of opportunity • *sampling* techniques . • Mastering the concept of hypothesis. • Understand the concept of regression.
Short Course Descriptions	In the computational statistics course, students will learn the basic concepts of statistics. Students are also taught to be able to collect and represent data using software. Furthermore, in this course, students will be taught how to process the data that has been collected. In this course, students will also be equipped with the knowledge to analyze data. In addition, in the computational statistics course students are also accustomed to using software to process and analyze data.
Learning Materials / Subjects	• Introduction to statistics • Data collection • Data presentation • Data centralization • Data distribution • Probability • Distribution • sampling • hypothesis

	• Regression
References	**Main :**
	1. Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc. 2. Fosyth, David, 2018, Probability and Statistics for Computer Science, Springer
	Supporters:
	1. Kadir, 2015, Applied Statistics: Concepts, Examples and Data Analysis with the SPSS/Lisrel Program in Research, 3rd Edition, Rajawali Pers. 2. Widarjono, Agus, Applied Statistics with Excel and SPSS, UPP STIM YKPN, 2015
Instructional Media	**Software :** • OS – WINDOWS / LINUX • Ms. Excel • Jupyter Notebook (Virtual Laboratory) • Git **Hardware :** • Computer • LCD • Projector
Name of Lecturer	• Muhammad Afif Hendrawan, S.Kom., MT • Dr. Rakhmat Arianto, S.ST., M.Kom. • Elok Nur Hamdana, ST, MT
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students understand and can explain the	1. Understanding statistics	• Small Group Discussions	1x4x50'	Students can interact directly and share	• Question and answer	• Able to re-explain the	**1 %**

	basic concepts of statistics • Students are able to distinguish between descriptive and inferential statistics • Students know the use of computational statistics in general	2. Types of statistics 3. The benefits of computational statistics in various fields	• Virtual Class		knowledge related to the basic concepts of statistics and their use	•	basic concepts of statistics • Be able to distinguish between descriptive statistics and inferential statistics • Able to give examples of the application of computational statistics in various fields	
2	• Students understand the meaning of data • Students are able to distinguish the types of data • Students know data collection techniques	• Definition of data • Data types • Data collection technique	• Small Group Discussions • Virtual Class	1x4x50'	Students can actively explain opinions about data concepts. In addition, students can exchange opinions about data concepts.	• Question and answer • Task completion	• Able to explain the definition of data • Able to find examples for each type of data • Able to explain general data collection techniques	**1.5 %**
3	• Able to apply data collection techniques	• Primary data and secondary data	• Problem Based Learning	1x4x50'	Students can independently apply data collection	• Task completion • Presentation	• Able to apply data collection techniques	**1.5 %**

			• Virtual Class		techniques according to the problems given		according to the problem	
4	Quiz 1	QUIZ	Problem Based Learning	1x4x50'	QUIZ	QUIZ	QUIZ	**15 %**
5	• Students are able to understand the meaning of data centering • Students are able to understand and apply the mean, median, mode	• Definition of data centering • Means • Median • mode	• Discovery Learning • Virtual Class	1x4x50'	Students are able to apply the concept of data centering to a problem	• Question and answer • Task completion	• Students are able to explain the meaning of data centering • Students are able to apply mean, median, and mode calculations to real problems	**1.5 %**
6	• Students are able to explain the concept of data distribution • Students are able to explain and apply range, variance, and standard deviation calculations • Students are able to understand the tendency of data	• The basic concept of data distribution • Measures of data distribution (range, variance, standard deviation) • Symmetric and asymmetric	• Discovery Learning • Virtual Class	1x4x50'	Students are able to find the function and utilization of data distribution on a problem	• Question and answer • Task completion	• Able to define the distribution of data • Able to measure the distribution of data • Able to apply the concept of data distribution	**1.5 %**

	centers on data distribution	distribution of data						
7	• Students are able to understand the concept of opportunity • Students are able to understand calculation techniques in the concept of probability (permutations and combinations) • Students master the concept of set	• Definition of opportunity • Calculation techniques in odds • Set concept	• Small Group Discussions • Virtual Class	1x4x50'	Students interact and share knowledge related to lecture topics	• Question and answer Task completion	• Understand the concept of opportunity • Understand the technique of calculating odds • opportunity calculation • Understand the concept of sets	**1.5 %**
8	UTS	UTS	Problem Based Learning	1x4x50'	UTS	UTS	UTS	**20 %**
9	• Students are able to apply probability calculation techniques • Students are able to apply Bayesian rules	• Opportunity calculation technique application • Bayes Rule	• Small Group Discussions • Virtual Class	1x4x50'	Students can discuss lecture topics	• Question and answer Task completion	• Able to apply probability calculation techniques • Understand Bayes' rule	**1.5 %**

							• Able to apply Bayes' rule	
10	• Students are able to apply the normal distribution • Students are able to apply the concept of discrete distribution	• Normal Distribution	• Discovery Learning • Virtual Class	1x4x50'	Exercises and assignments	• Question and answer Task completion	• Able to read normal tables • Be able to state the probability and shaded area after finding the Z value from the table • Students are able to solve discrete distribution problems	**1.5 %**
11	• Students are able to understand the concept of population • Students are able to understand the sample concept • Students are able to understand sampling techniques	• Population Concept • Sample Concept • Sampling technique	• Small Group Discussions • Discovery Learning • Virtual Class	1x4x50'	• Students share experiences related to the topic given • Students are able to practice sampling techniques	• Question and answer Task completion	• Students understand the concept of population and sample • Students understand sampling techniques • Students are able to apply sampling techniques	**1.5 %**

	• Students are able to apply sampling techniques							
12	QUIZ 2	QUIZ	Problem Based Learning	1x4x50'	QUIZ	QUIZ	QUIZ	**15 %**
13	• Students understand Confidence Intervals • Students are able to understand the basic concept of a hypothesis • Students are able to understand the steps of hypothesis testing	• Confidence Intervals • Hypothesis testing steps	• Small Group Discussions • Virtual Class	1x4x50'	Students can discuss lecture topics	• Question and answer Task completion	• Able to determine Confidence Interval and apply it to the Normal table • Able to do hypothesis testing by applying the correct testing steps	**1.5 %**
14	• Students understand the types of hypotheses	• One Way Hypothesis • Two Way Hypothesis	• Small Group Discussions • Virtual Class	1x4x50'	Students can discuss lecture topics	• Question and answer Task completion	• Able to apply one-way and two-way hypothesis testing	
15	• Students understand and are able to apply techniques to	• Simple regression analysis	• Small Group Discussions	1x4x50'	Students can discuss lecture topics	• Question and answer	• Able to apply simple	**1.5 %**

	perform simple regression analysis		• Virtual Class			Task completion	regression calculations	
16	• Students understand and are able to apply techniques to perform multiple regression analysis	• Multiple regression analysis	• Small Group Discussions • Virtual Class	1x4x50'	Students can discuss lecture topics	• Question and answer Task completion	• Able to apply multiple regression calculations	**1.5 %**
17	UAS	UAS	Essay Exam	1x4x50'	UAS	UAS	UAS	**30 %**

Information :

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5th semester

Technopreneurship

1. Project 2

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Project 2	**RTI205002**	Expertise Courses	3 credits / 6 hours	5	August 30, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Deddy Kusbianto PA, Ir., M.Mkom. 2. Pramana Yoga Saputra, S.Kom., MMT. 3. Yuri Ariyanto, S.Kom., M.Kom. 4. Maybe Astiningrum, ST., M.Kom. 5. Eka Larasati Amalia, S.ST., MT. 6. Dhebys Suryani, S.Kom., MT 7. Yan Watequlis Syaifuddin, ST., M.MT.	Yuri Ariyanto, S.Kom., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)
	S5 : Respect the diversity of cultures, views, religions and beliefs, as well as other people's original opinions or findings. **S6** : Working together and having social sensitivity and concern for society and the environment. **S8** : Internalizing academic values, norms, and ethics.

	S9 : Demonstrate a responsible attitude towards work in the field of expertise independently. **PP2** : Mastering ICT product development methods to provide the right solutions through one or more application domains. **PP3** : Mastering documentation techniques and quality assurance of ICT products. **PP5** : Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development. **PP6** : Mastering knowledge of oral and written communication techniques using national and international languages. **KK1** : Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc). **KK2** : Able to identify and analyze needs, design, realize and test ICT / science and technology products. **KK3** : Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / Science and Technology products **KK5** : Able to manage resources in the form of time, human resources, costs for the development of ICT / science and technology products by utilizing project management software **KU1** : Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in the field of expertise and in accordance with work competency standards in the field concerned. **KU2** : Able to demonstrate independent, quality and measurable performance. **KU3** : Able to study cases of the application of science and technology that pays attention to and applies humanities values according to their field of expertise in order to produce prototypes, standard procedures, designs or works of art, compile the results of their studies in the form of working papers, design specifications, or art essays, and upload them on the college website. **KU4** : Be able to compile the results of application case studies in the area of expertise possessed in the form of working papers, design specifications, or art essays, and upload them on the college website. **KU5** : Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work. **KU6** : Able to maintain and develop a network of cooperation and results of cooperation within and outside the institution. **KU7** : Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers under their responsibility. **KU8** : Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently. **KU10** : Able to recognize needs, make adaptations and demonstrate ability to continue self-development (lifelong learning).
	Learning Outcomes Graduates charged to courses (CPL-MK)
	Able to apply software engineering principles and software project management according to best practice through a one semester long project, which includes proposal preparation, project planning, software design and implementation, testing, quality control, and user delivery

Short Course Descriptions	Project 2 courses are *Capstone courses* where students can implement and integrate course materials that are applied to make a product according to the correct project management stages.
Learning Materials / Subjects	Formation of project group A, preparation of project proposal A, evaluation of proposals and design of product A, evaluation of results of implementation of product A, evaluation of results of implementation and testing of Product A, evaluation of product results A, formation of groups and preparation of project proposals B, evaluation of project proposals B, evaluation progress of Product B (design), Evaluation of progress of product B implementation (Version Control System + prototype), Evaluation of progress and implementation of product B (product), Evaluation of progress of product B (testing), Evaluation of Product B results + peer Assessment
References	**Main :** 1. Shit, Daniel. 2012. *Needs Analysis in Software Engineering.* Yogyakarta: Andi. 2. Heryanto, Priest., Triwibowo, Totok. 2013. *Information Technology-Based Project Management* . Bandung: Informatics. 3. Tantara, Rudy. 2012. *Information Systems Project Management* . Yogyakarta: Andi. 4. The references are from the last 5 years and some are in English 5. Each team is expected to get 1 reference **Supporters:** 1.

Instructional Media	**Software :**	**Hardware :**
	1. Video conferencing 2. Collaboration Tools 3. Development Tools 4. Browsers	1. PCs / laptops

Name of Lecturer	1. Deddy Kusbianto PA, Ir., M.Mkom. 2. Pramana Yoga Saputra, S.Kom., MMT. 3. Yuri Ariyanto, S.Kom., M.Kom.

	4. Maybe Astiningrum, ST., M.Kom. 5. Eka Larasati Amalia, S.ST., MT. 6. Dhebys Suryani, S.Kom., MT 7. Yan Watequlis Syaifuddin, ST., M.MT.
Requirements Course	RTI194004 – Project 1

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Able to build a team to work on software development projects • Understand project lecture content 2	Lecture explanation Formation of Project group A	Lecture Group discussion Case study **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (*Online*) **(2x50')** **- ASK (4x50”)**	Giving assignments to students to form project teams	-	-	0 %
2	• Able to explain project description A • Understand how to prepare software project proposals	Preparation of Project proposals A	Lecture Group discussion Case study **Activity:** • Online face to face or also known as virtual face to face (TMD)	1X6X50” - Face to Face Online (*Online*) **(2x50')** **- ASK**	Giving assignments for preparing software project proposals	-	**-**	**0 %**

			• Collaborative asynchronous online activities (ASK)	**(4x50")**				
3	• Able to compile project proposal A according to the rules of software proposal documents • Able to explain project proposal A that has been made	Evaluation of proposals	Group discussion Case study **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50" - Face to Face Online (Online) (2x50') - ASK (4x50")	Conduct discussions to prepare a project proposal A Explaining the project proposal A to the supporting lecturer	Proposal evaluation rubric	1. Project background (importance) 2. Originality (idea, uniqueness) 3. Explanation of the problem 4. Methods/technology to solve problems 5. Project impact 6. Project planning (schedule, HR, and budgeting if necessary), 7. Software platform used (explanation about the technology and why use them), 8. Target customer(s) 9. Baselines 10.Experience	**5%**
4	• Able to arrange project design A in accordance with 4 design aspects (architecture, functional workflow, database, UI) • Able to explain the design of project A that has been made	Product design evaluation A	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50" - Face to Face Online (Online) (2x50') - ASK (4x50")		Design assessment rubric	1. System Architecture 2. Functional Workflows 3. Databases 4.UI	**10%**

5	• Able to implement (make program code, create database, create UI) in accordance with the design of project A that has been made	Product Implementation Progress A	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Practice implementing program code creation, database creation and UI creation	-	-	**0 %**
6	• Able to explain the results of the implementation of project A that has been implemented	Evaluation of product implementation and testing results A	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Students explain the results of implementing project A	Implementation assessment rubric	1. Implementation according to the target 2. Punctuality 3. Realization of features are all realized 4. Feature implementation success rate 5. Use of collaboration tools 6. Dev tools 7. Use of reusable code 8. UI efficiency 9. UI consistency 10. UI attractiveness	**10%**
7	• Able to explain the results of project A	Evaluation of Product results A	Group discussion Case study Project Base Learning (PjBL)	1X6X50” - Face to Face Online (Online)	Students explain the results of the products that have been made in project A to the supporting lecturers	**Evaluation Assessment Rubric**	Team 1. Error Handling	**5%**

	products that have been made		**Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	(2x50') - ASK (4x50")			2. Job Distribution 3. Presentation content 4. Submission of Presentations 5. Answer the question 6. Manual Book Individual 1. Fulfilling a Role in a Team 2. Sharing Work in Teams **3.** Listen to the suggestions of colleagues in the Team	
8	• Able to build a team to work on software development projects • Understand project lecture content • Able to explain project description B • Understand how to prepare software project proposals	Formation of Project Group B and Preparation of proposals	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50" - Face to Face Online (Online) (2x50') - ASK (4x50")	Giving assignments to students to form project teams	**-**	**-**	**0 %**

9	• Able to compile project proposal B according to the rules of software proposal documents • Able to explain project proposal B that has been made	Evaluation of Project B proposal	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Giving assignments for preparing software project proposals	Proposal evaluation rubric		10%
10	• Able to design project B according to 4 design aspects (architecture, functional workflow, database, UI) • Able to explain the design of project B that has been made	Evaluation of the progress of Product B (design)	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Conduct discussions to compile project B designs, Practice making project B designs	Design assessment rubric		**10%**
11	Able to implement (make program code, create database, create UI) according to project B design that has been made	Evaluation of the progress of implementation of Product B (Version Control System (GitHub etc.) + prototype)	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Practice implementing program code creation, database creation and UI creation			**0**

			• Collaborative asynchronous online activities (ASK)					
12	Able to implement (make program code, create database, create UI) according to project B design that has been made	Evaluation of the progress of implementation of Product B (product)	Group discussion Case study **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Practice implementing program code creation, database creation and UI creation	-	-	**0 %**
13	Able to implement (make program code, create database, create UI) according to project B design that has been made	Evaluation of the progress of implementation of Product B (product)	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Practice implementing program code creation, database creation and UI creation	-	-	**0 %**
14	Able to explain the results of the implementation of project B that has been implemented	Evaluation of the progress of implementation of Product B (product)	Group discussion Case study Project Base Learning (PjBL) **Activity:**	1X6X50” - Face to Face Online (Online) (2x50') - ASK	Students explain the implementation results to the supporting lecturers	Implementation assessment rubric	1. Implementation according to the target 2. Punctuality 3. Realization of features are all realized	**25%**

			• Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	(4x50")			4. Feature implementation success rate 5. Use of collaboration tools 6. Dev tools 7. Use of reusable code 8. UI efficiency 9. UI consistency UI attractiveness	
15	Able to explain the results of testing using project B testing tools that have been implemented	Evaluation of the progress of Product B (testing (tools testing)	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50" - Face to Face Online (Online) (2x50') - ASK (4x50")	Conduct discussions, practice testing			**10%**
16	Able to explain the evaluation results of project B that has been implemented, and conduct peer assessments	Evaluation of Product B results + peer assessment	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD)	1X6X50" - Face to Face Online (Online) (2x50') - ASK (4x50")		**-**	**-**	**0 %**

			• Collaborative asynchronous online activities (ASK)					
17	Able to explain the results of project B products that have been made	Evaluation of Product B results + peer assessment	Group discussion Case study Project Base Learning (PjBL) **Activity:** • Online face to face or also known as virtual face to face (TMD) • Collaborative asynchronous online activities (ASK)	1X6X50” - Face to Face Online (Online) (2x50') - ASK (4x50”)	Each group explains the results of project B products to the supporting lecturers	**Evaluation Assessment Rubric**	Team 1. Error Handling 2. Job Distribution 3. Presentation content 4. Submission of Presentations 5. Answer the question 6. Manual Book Individual 1. Fulfilling a Role in a Team 2. Sharing Work in Teams Listen to the suggestions of colleagues in the Team	**15%**

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
MOBILE PROGRAMMING	RTI20 5003	Expertise Courses	3 Credits / 6 Hours	5 (Five)	February 6 , 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Arie Rachmad Syulistiyo, S.Kom.M.Kom. Putra Prima Arhandi, ST., M.Kom. Dian Hanifudin Subhi, S.Kom., M.Kom.	Dwi Puspitasari, S.Kom., M.Kom.	**Imam Fahrur Rozi, ST, MT**

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.

S9 Demonstrate a responsible attitude towards work in the field of expertise independently.

PP2 Mastering ICT product development methods to provide the right solutions through one or more application domains.

KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).

KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.

KU2 Able to demonstrate independent, quality and measurable performance.

	Learning Outcomes Graduates charged to courses (CPL-MK)
	Able to understand programming concepts on mobile devices; Able to master ICT product development methods to provide the right solutions through mobile-based applications; Able to apply logical and critical thinking in developing mobile-based applications according to the various case studies given; Able to use mobile-based application development tools independently with a responsible attitude, and still pay attention to academic values, norms, and ethics.
	Graduate Learning Outcomes that are charged to courses (CPL-MK Sub)
	- Students are able to explain the flutter SDK installation process on the operating system used (C2) - Students are able to create a hello world project and run the application to the emulator / device they have, and are able to create a Git repository for the hello world project that is made (C6) - Students are able to explain the basics of Flutter Programming, create widget trees and compile flutter applications (C2, C6) - Students are able to explain the basics of Flutter Programming and create flutter applications on the basis of dart programming (C2, C6) - Students are able to distinguish statefulWidget and statelessWidget (C2) - Students are able to explain and map data to widgets, custom list items, styling containers, text, time, and theming (C2, C3) - Students are able to create applications that connect to other pages using the navigator, and create functions that can pass data from one page to another (C6) - Students are able to create applications that can receive input from the user and can process data according to the action chosen by the user (C6) - Students are able to create applications using widgets, custom widgets, and mapping data to widgets, as well as applications that can retrieve data from the server (C6) - Students are able to explain about JSON (C2) - Students are able to create applications that can create, update and delete data from the server (C6) - Students are able to explain No SQL and can create applications that can get and create data on the server (C2, C6) - Students are able to explain and implement HTTP in Flutter, and can create applications that can update and delete data on the server (C2, C3) - Students are able to create flutter applications consisting of user auth and storage in the cloud (C3)

Short Course Descriptions	Mobile Programming provides knowledge and understanding as well as how to make products in the form of mobile applications so that in this course students are able to design and implement a mobile application product on popular mobile devices.
Learning Materials / Subjects	1. An Introduction to Mobile Programming Using Flutter 2. Case study of the Simple Mobile Application Quiz Project 3. A case study of the Simple Mobile Expense Manager Project 4. Case Study of Project Mobile Adaptive UI 5. Case Study of Project Mobile with Multiple Screens 6. Project Shop App Case Study 7. Case Study Project with native android features
References	**Main :** 18. Flutter & Dart - The Complete Guide [2021 Edition] (https://www.udemy.com/course/learn-flutter-dart-to-build-ios-android-apps/) **Supporters:** 1. Alessandria, S. (2020). *Flutter Projects: A practical, project-based guide to building real-world cross-platform mobile applications and games* . Packt Publishing Ltd. 2. Biessek, A. (2019). *Flutter For Beginners An Introductory Guide to Building cross-platform Mobile Applications with Flutter and Dart 2* . Packt Publishing Ltd. 3. Napoli, ML (2019). *Beginning Flutter A Hands On Guide To App Development* . https://doi.org/10.1002/9781119550860 4. Syaifuddin. (2022). *Android learning teaching module book*
Instructional Media	**Software :** Visual Studio Code, Flutter SDK, Android Emulators **Hardware :** PCs/Laptops, Android smartphones
Name of Lecturer	1. Putra Prima Arhandi, ST., M.Kom 2. Dian Hanifudin Subhi, S.Kom., M.Kom.

	3. Arie Rachmad Syulistiyo S.Kom.M.Kom.
Requirements Course	RIF193008- Object Based Programming

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students are able to explain the flutter SDK installation process on the operating system used (C2) • Students are able **to make** hello world projects and run applications to the emulator / device they have. (C6) • Students are able **to create** a Git repository for the created hello world project (C6)	• Install Flutter SDK on Windows Operating System • Install Visual Studio Code • Install Git • Emulator Configuration • Android Device Configuration • Create and publish the git project hello world repository to github.	**Form :** Studying **Learning methods:** *Problem Based Learning (PBL)* group discussion **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1** : 1. Install and configure Visual Studio Code for Flutter development and build hello world app until it runs successfully to emulator (3 x50') *Offline* 2. Create and publish a hello world repository to github *(1x50') Offline*	2X4X50 ” _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying installation and configuration materials as well as hello world students can : 5. Understand and remember how to install Flutter SDK 6. Create a simple hello world project. 7. Running hello world project to emulator or real device.	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Mastery of the Flutter Installation Process • The accuracy of creating a hello world project using Flutter • Accuracy of project publication to github	**1.5%**

2	• Students are able to **explain** the basics of Flutter Programming (C2) • Students are able **to make tree** widgets and compile flutter applications (C6)	• Get to know widgets • Create widget trees • Compile the flutter application	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 2** : Create a simple UI with the widgets that have been described. The UI created consists of images, lists, text.	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the basics of programming with flutter students can : 1. Get to know and understand widgets in flutter 2. Create a simple UI consisting of images, text and lists	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Mastery and understanding of widgets in flutter • Create widget trees	**1.5%**
3	• Students are able to **explain** the basics of Flutter Programming (C2) • Students are able to **make** flutter applications based on dart programming (C6) • Students are able to **differentiate** statefullWidget and	• Create a flutter application based on dart programming • Understand the basic state • Understand and the difference between statefulWidget and statelessWidget • Create a flutter application using statefulWidget and statelessWidget	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 3** : make a temperature converter application from	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the basics of programming with flutter students can : 1. Know and understand the basic programming of darts 2. Create a flutter project that implements statefullWidget and statelessWidget 3. Understand the basic state	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Understand the difference between statefulWidget and statelessWidget • Implements statefullWidget	**1.5%**

	statelessWidget (C2)		Celsius to Kelvin and Reamur.					
4	• Students are able to **explain** and **map** data to widgets (C2, C3) • Students are able to **explain** and **create** custom list items (C2, C3) • Students are able to **explain** and **create** container, text, time, and theming styling (C2, C3)	• Understanding and mapping data to widgets • Understand and create custom list items • Understand and create container, text, time styling • Understanding and creating Theming	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 4** : edit the application in the jobsheet by adding a model according to the data to be displayed	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By learning widget content , styling and application logic with Flutter : 1. Able to create applications using various kinds of widgets in Flutter 2. Able to create applications related to data in flutter	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Implement several kinds of widgets • Processing data and displaying it in the flutter application	**1.5%**
5	Quiz 1	• Able to explain how to install flutter, upload projects to git, create widgets, and customize widgets	**Form :** Quiz **Learning methods:** Interview **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Quiz 1**	2X4X50 " _ _ - Online (*online)* **(4x50') Sync** → - Structured Assignments , Quizzes **(4 x50')**	**QUIZ 1**	**QUIZ 1**	**QUIZ 1**	**10%**
6	• Students are able **to create**	• Create applications that	**Form :** Studying	2X4X50 " _ _	By studying Navigation and Multiple Screen materials with Flutter :	**Criteria:** Scoring criteria rubric	• Implement the navigator	**1.5%**

	applications that connect to other pages using the navigator (C6) • Students are able to **create** functions that can pass data from one page to another (C6)	connect with other pages using the navigator • Create a function that can pass data from one page to another	**Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 5** : 1 . edit the jobsheet so that you can paste other data based on the case given. 2 . create functions for other data that need to be pasted to other pages	- Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	1. Able to create applications using navigator in flutter 2. Able to create flutter applications that can paste data between pages in flutter	**Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Processing data and displaying it in the flutter application	
7	• Students are able **to create** applications that can receive input from the user (C6) • Students are able **to create** applications that can process data according to the action	State Management and User Input	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 6** : 1. edit the jobsheet so that it can receive data from the user	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying State Management and User Input material : 1. Able to create applications that can process user input 2. Able to make the application take action according to the action chosen by the user	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Implement user input • Processing data and displaying it in the flutter application	**1.5%**

	chosen by the user (C6)		according to the case given. 2. Create an application that can take action according to the action chosen by the user					
8	Students are able to **create** applications using widgets, custom widgets, and mapping data to widgets (C6)	**UTS**	**Form :** UTS **Learning methods:** Practice *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** Create applications by utilizing widgets, custom widgets, and mapping data to widgets	2X4X50 " _ _ - Online (*online)* **(4x50')** **Asynchronous** → learning videos - Structured task **(4 x50')**	**UTS**	**UTS**	**UTS**	**25%**
9	• Students are able **to create** applications that can retrieve data from the server (C6) • Students are able to **explain** about JSON (C2)	Http Request, User Auth and Animation	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 7** :	2X4X50 " _ _ - Online (*Online*) **(2 x50')** **Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying Http Request material , User Auth and Animation : 1. Able to create applications that can get data from the server and display it on the Flutter application	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • Active discussion includes asking and answering (affective)	• Getting data from the server • Processing data and displaying it in the flutter application	**1.5%**

			edit the jobsheet so it can fetch data from the server.					
10	Students are able **to create** applications that can create, update and delete data from the server (C6)	Http Request, User Auth and Animation	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 8** : edit the jobsheet so that you can create, update and delete data from the server according to the given case .	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying Http Request material , User Auth and Animation : 1. Able to create applications that can create, update and delete data from the server and display it on the Flutter application	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● Create, update and delete data from the server ● Processing data and displaying it in the flutter application	**1.5%**
11	• Students are able to **explain** No SQL (C2) • Students can **create** applications that can get and create data on the server (C6)	Firestore	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the Firestore material : 1. Able to create applications that can get and create data from the server on flutter applications	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● get and create data from server ● Processing data and displaying it in the flutter application	**1.5%**

			Assignment: **Task 9** : edit the jobsheet so that you can get and create data on the server according to the given case .					
12	Students are able to **explain** and **implement** HTTP in flutter (C3)	Quiz 2	**Form :** Quiz **Learning methods:** Interview **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Quiz 1**	2X4X50 " _ _ - Online (*online)* **(4x50') Sync** → - Structured Assignments , Quizzes **(4 x50')**	**QUIZ 2**	**QUIZ 2**	**QUIZ 2**	**10%**
13	Students are able **to create** applications that can update and delete data on the server (C3)	Firestore	**Form :** Studying **Learning methods:** Group discussion Case study *Problem Based Learning (PBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 10** : edit the jobsheet so that you can update and delete data on the	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the Firestore material : 1. Able to create applications that can update and delete data from the server on the Flutter application	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● update and delete data on the server ● Processing data and displaying it in the flutter application	**1.5%**

			server according to the given case .					
14	Students are able **to create** flutter applications consisting of user auth and storage in the cloud (C3)	Project Tasks	**Form :** Studying **Learning methods:** Group discussion Case study *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1 1** : create a flutter application consisting of user auth and cloud storage using the selected case study	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the project material : 1. Able to create flutter applications consisting of user auth and storage in the cloud	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● create a flutter application consisting of user auth and storage in the cloud ● Processing data and displaying it in the flutter application	**5%**
15	Students are able **to create** flutter applications consisting of user auth and storage in the cloud (C3)	Project Tasks	**Form :** Studying **Learning methods:** Group discussion Case study *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1 2** : create a flutter application consisting of user auth and cloud storage	2X4X50 " _ _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the project material : 2. Able to create flutter applications consisting of user auth and storage in the cloud	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● create a flutter application consisting of user auth and storage in the cloud ● Processing data and displaying it in the flutter application	**5%**

			using the selected case study					
16	Students are able **to create** flutter applications consisting of user auth and storage in the cloud (C3)	Project Tasks	**Form :** Studying **Learning methods:** Group discussion Case study *Project Based Learning (PjBL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1 3** : create a flutter application consisting of user auth and cloud storage using the selected case study	2X4X50 " _ _ - Online (*Online*) **(2 x50')** **Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(4 x50')**	By studying the project material : 3. Able to create flutter applications consisting of user auth and storage in the cloud	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● Active discussion includes asking and answering (affective)	● create a flutter application consisting of user auth and storage in the cloud ● Processing data and displaying it in the flutter application	**5%**
17	UAS	UAS	**Form :** UAS **Learning methods:** Interview **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** UAS	2X4X50 " _ _ - Online (*online)* **(4x50') Sync** → - Structured assignments , UAS **(4 x50')**	**UAS**	**UAS**	**UAS**	**25%**

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM: D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
SOFTWARE TESTING	RTI205005	Software engineering	2 credits/ 4 hours	5	July 6, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Muhammad Afif Hendrawan, S.Kom., MT Muhammad Shulhan Khairy, S.Kom., M.Kom.	Putra Prima Arhandi, ST., M.Kom.	Imam Fahrur Rozi, ST, MT

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.

	KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
	KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
	KU2	Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK)	
	Able to master the concepts and methods of testing software in depth as a form of quality assurance/quality of ICT products; Able to make documentation and carry out quality assurance in every process of developing, using, modifying, and maintaining ICT/IPTEKS products independently with a responsible attitude; Able to use supporting software to create software testing scenarios automatically as the right solution through one or more application domains; Able to analyze software testing in a measurable manner by taking into account academic values, norms and ethics.	
Short Course Descriptions	In software testing courses students will learn how to perform software testing from planning to reporting test results. Students will learn software testing methods such as white box and black box testing as the basic foundation of software testing methods. After knowing the basic software testing methods, students learn to use supporting software to create test scenarios automatically. Students are also equipped with the ability to make software test results reports.	
Learning Materials / Subjects	1. Software Testing Flow 2. Software Testing Methods 3. Software Testing Planning 4. *Test Cases* 5. *Scenario Test* 6. Automated Software Testing	

	7. Reporting of Software Testing Results
References	**Main:** Myers, GJ; Sandler, C. & Badgett, T. (2012), *The art of software testing* , John Wiley & Sons , Hoboken and NJ **Supporters:** 1. Sommerville, I. (2016). *Software Engineering, 10th edition.* Essex: Pearson. 2. IEEE Computer Society. (2014). *SWEBOK, Guide to the Software Engineering Body of Knowledge version 3.0.* IEEE.
Instructional Media	**Software:** 1. Presentation tools 2. TextEditor 3. selenium 4. Cypress **Hardware:** 1. Computer
Name of Lecturer	1. Muhammad Afif Hendrawan, S.Kom., MT 2. Muhammad Shulhan Khairy, S.Kom., M.Kom.
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)

(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	● Students understand the importance of software testing ● Students understand when implementing software testing ● Students understand various software approaches	Introduction ●Explanation of Tasks / Project ●Lecture Contract Explanation ●Explanation of Assessment ●Syllabus Explanation ●Explanation of software testing	Online, Discovery learning	8 X 50”	Task	Task	● Be able to identify software testing approaches to application projects	1.5%
2	● Students are able to understand various software approaches ● Students are able to distinguish between white box, black box and gray box approaches	Overview of the types of software testing, including: ●White box ●Black box ●Gray box	On line, Small Group Discussion, Discovery Learning	8 X 50”	Exercises and assignments	Task	● Accuracy in explaining the definition and workings of white box, black box and gray box. ● Be able to explain the specification requirements that must be owned by a software tester in each approach	1.5%

							● Success in finding available automatic software according to each approach	
3	● Students are able to understand the benefits of the white box approach ● Students are able to understand how to do testing with a white box approach ● Students are able to define various techniques in the white box approach	White Box techniques	On line, Small Group Discussion, Discovery Learning	8 X 50”	Exercises and assignments	Task	● Able to apply software testing with white box techniques	1.5%
4	● Students are able to understand the benefits of the black box approach ● Students are able to understand how to do testing with a black box approach ● Students are able to define various techniques in the black box approach	Black Box techniques	On line, Small Group Discussion, Discovery Learning	8 X 50”	Exercises and assignments	Task	● Able to implement software testing with black box techniques	1.5%

5	• Students are able to understand and apply previous materials	Meeting materials 1-4	Online Quiz, Contextual Learning	8 X 50”	Case study completion	QUIZ	QUIZ	15%
6	• Students are able to understand the standard provisions of planning documents related to software testing • Students are able to make document test plans	Test Plan document	Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	• Students are able to make a test plan document • Students are able to define planning data before conducting software testing.	1.5%
7	• Students are able to define a test scenario on the software to be tested	Test Scenario document	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	• Students are able to create test scenario documents in accordance with the software to be tested.	1.5%
8	• Students are able to apply and integrate previous materials in a software testing case study.	Implementation of making software testing documents based on IEEE 829 document standards based on case studies.	On line, Contextual Learning	8 X 50”	Create official software testing documents based on real case studies	UTS	UTS	20%

9	• Students are able to define test cases for each test scenario based on real case studies. • Students are able to distinguish between test cases intended for successful conditions and failed conditions. • Students are able to define the requirements needed to execute each test case.	Test case document	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	• Students are able to create test case documents according to existing scenarios. • Students are able to define what data is needed in conducting software testing based on the test cases that are made.	1.5%
10	• Students understand the concept of bug reporting. • Students are able to understand the elements in the bug reporting document. • Students are able to create bug reporting documents.	Bug reports and bug report documents	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	• Able to create bug report documents with the required reporting elements	1.5%
11	• Students understand the	Testing metrics	On line,	8 X 50”	Exercises and assignments	Task	• Able to implement testing metrics using	1.5%

	concept of testing metrics ● Students are able to implement testing metrics in the software testing process	1. Percentage test cases executed 2. Passed test case percentages 3. Failed test case percentage 4. Blocked test case percentage. 5. Number of tests run per time period	Small Group Discussion, Discovery Learning, Cooperative Learning				the manual testing method.	
12	● Students understand the concept of automatic testing in software testing ● Students know the preparations that must be made before carrying out automatic testing. ● Students are able to distinguish the use of automatic testing tools in software testing using white box testing and black box testing methods.	Automatic testing concept	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	Able to mention the advantages and disadvantages of automatic testing tools on the market	1.5%

13	QUIZ 2	Meeting materials 9 to 11	On line, Contextual Learning	8 X 50”	QUIZ	QUIZ Form Online	QUIZ	15%
14	Students are able to apply test scenarios and test cases that have been made in automatic testing tools	Implementation of automatic testing tools using Selenium / Cypress	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	Able to create test scenarios and test cases using automatic testing tools	1.5%
15	Students are able to make a test report using an automatic testing tool	Testing report using automatic testing	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Task	Able to make test reports using automatic testing tools.	1.5%
16	Students understand the concept of User Acceptance Testing	User Acceptance Testing	On line, Small Group Discussion, Discovery Learning, Cooperative Learning	8 X 50”	Exercises and assignments	Q&A in class	Able to understand the concept and application of User Acceptance Testing in the software development process.	1.5%

17	Students are able to understand all the material presented in lectures	UAS	On line, Contextual Learning	8 X 50”	UAS	UAS in the Form of an Online Exam	UAS	30%

Indonesian → (NOT, Ms. Henny Purwaningsih)

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM: D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (SKS)/Hour	SEMESTER	DATE. PREPARATION
NAGEMENT ORMATION SYSTEM	RTI205007	Core Courses	2 Credits / 4 Hours	5	26 AUGUST 2022

THORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Farid Angga Pribadi, S.Kom., M.Kom Adevian Fairuz Pratama, S.ST, M, Eng Muhammad Unggul Pamenang, S.ST., MT Priska Choirina, SST, M.Tr.T		Imam Fahrur Rozi, ST., MT.

rning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

	Students are able to explain the role of information systems in business and how to use information systems as a competitive advantage and are able to analyze the needs of information systems in a business.
rt Course Descriptions	The Management Information Systems course is a course that teaches students about theoretical concepts about management information systems, information needs at every level in an organization, aspects of information systems in an organization.
rning Materials / Subjects	- System Basic Concepts - Basic Concepts of Information Technology - Concept of Facts, Data and Information - Management Information System Concept - Basic Concepts of Management and Organization in Management Information Systems - Information System Based Decision Making Concept - Technology Concepts in Information Systems for Management Information Systems - Information System Applications at Organizational Functions and Levels - Strategic Information Systems and Inter-Organizational Systems - Supporting Information System Applications in Management Information Systems - Database and Database Management System - Information and Communication Technology for Management Information Systems - Management Information System Development
erences	**Main :** 1. Rusdiana A. and Irfan Moch. , " Management Information Systems ", Setia Library Bandung , 201 4 .
	Supporters:

tructional Media	**Software :**	**Hardware :**
	1.	1.
me of Lecturer	1. Farid Angga Pribadi, S.Kom., M.Kom 2. Adevian Fairuz Pratama, S.ST, M, Eng 3. Muhammad Unggul Pamenang, S.ST., MT 4. Priska Choirina, SST, M.Tr.T	
-requisite Courses	Information Systems	

Week	**Planned Final Capability (Sub-CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estimated time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Rating Weight (%)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	• Students are able to understand the contents of the syllabus and lecture contracts; • Students are able to understand the basic concepts of the system	• system essence • System characteristics, design and life cycle • Form, type, classification, and system actors • system models	• Lecture • Discussion	4 X 50”	• Listen to material from lecturers and discuss; • Discussions about the basic concepts of the system are guided by presentation material from the subject lecturer	Criteria: Accuracy in answering questions Form: Oral test	• Accuracy explains the basic concept of the system	0.8 %
2	• Students are able to understand the basic concepts and	• Basic concept of information technology	• Lecture • Discussion	4 X 50”	• Listen to material from lecturers and discuss;	Criteria:	• Accuracy in explaining the basic concepts and	0.8 %

	developments of information technology	• Development of information technology			• Discussions regarding the basic concepts and developments of information technology are guided by presentation material from the subject lecturer	Accuracy in answering questions Form: Oral test	developments of information technology	
3	• Students are able to understand the basic concepts of facts, data and information	• Basic concept of fact • Data base concept • The basic concept of information	• Lecture • Discussion	4 X 50”	• Listen to material from lecturers and discuss; • Discussions regarding the basic concepts of facts, data, and information are guided by presentation material from the subject lecturer	Criteria: Accuracy in answering questions Form: Oral test	• Accuracy explains the basic concepts of facts, data, and information	0.8 %
4	• Students are able to understand the concept of management information systems • Students are able to understand the components and	• The essence of management information systems • The scope and benefits of management information	• Lecture • Discussion	4 X 50”	• Listen to material from lecturers and discuss; • Discussions about the concept of management information systems are	Criteria: Accuracy in answering questions Form:	• The accuracy of explaining the concept of management information systems • Accuracy in explaining the	0.8 %

	structure of management information systems	systems ● Components and structure of management information systems			guided by presentation materials from lecturers who teach the subject	Oral test	components and structure of the management information system	
5	● Students are able to answer quiz questions properly and correctly related to meeting material 1 - 4.	**Quiz 1** Meeting materials 1-4	**Written Exam (Multiple Choice 20 questions)**	4 X 50”	● Answer quiz questions	Criteria: Accuracy in answering questions Form: Written/online test	● Accuracy in answering questions.	**12.5%**
6	● Students are able to understand the concept of organization in management information systems	● The Nature and Concept of Management ● Activities in the Management function ● Type of management activity ● Oversight in Management	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● Discussions about the concept of organization are guided by the presentation material of the subject lecturer	Criteria: ● Accuracy in answering questions ● Liveliness in discussion Form: Oral test	● Accuracy in explaining organizational concepts in management information systems	0.8 %
7	● Students are able to understand the concept of	● The basic framework for decision-making	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss;	Criteria: ● Accuracy in	● Accuracy in explaining the concept of	0.8 %

	information system-based decision making	based on information systems ● The basic concept of management decision making ● Types of management decisions ● Mechanisms, stages, and models of decision-making in organizations			● Discussions regarding the concept of information system-based decision-making were guided by presentation material from the subject lecturer	answering questions ● Liveliness in discussion <u>Form:</u> Oral test	information system-based decision making	
8	UTS	UTS	**Written Examination (Multiple Choice 40 questions)**	4 X 50”				
9	● Students are able to understand the concept of technology and information systems for management information systems	● The nature of technology and information systems ● Communication technology ● Information system	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● Discussions regarding the concept of technology and information systems for	<u>Criteria:</u> ● Accuracy in answering questions ● Liveliness in discussion	● Accuracy in explaining the concepts of technology and information systems for management information systems	0.8 %

		technology ● Evolution of the development and future prospects of information technology			management information systems are guided by presentation material from the subject lecturer	Form: Oral test		
10	● Students are able to understand the concept of information system applications at organizational functions and levels	● The Nature of Information Systems in Organizational Functions ● IS Application on Organizational Functions ● IS Applications at the Organizational Level ● ERPs and SAPs	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● Discussions regarding the concept of information system-based decision-making were guided by presentation material from the subject lecturer	Criteria: ● Accuracy in answering questions ● Liveliness in discussion Form: Oral test	● Accuracy in explaining the concept of information system applications at organizational functions and levels	0.8 %
11	● Students are able to understand the concept of strategic information systems and inter-organizational systems	● Strategic Information System ● Interorganizational Information Systems ● Information System Supports	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● Discussions regarding the concept of information system-based	Criteria: ● Accuracy in answering questions ● Liveliness in discussion	● Accuracy in explaining the concept of strategic information systems and inter-organizational systems	0.8 %

		Company Strategy ● Use of IS in Supporting Corporate Strategy			decision-making were guided by presentation material from the subject lecturer	Form: Oral test		
12	● Students are able to understand the concept of supporting information systems in management information systems	● The essence of management support information systems ● Management Support System ● Database Management System ● Artificial Intelligence	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● Discussions regarding the concept of information system-based decision-making were guided by presentation material from the subject lecturer	Criteria: ● Accuracy in answering questions ● Liveliness in discussion Form: Oral test	● Accuracy in explaining the concept of supporting information systems in management information systems	0.8 %
13	● Students are able to answer quiz questions properly and correctly related to meeting material 9 - 12.	**Quiz 2** Meeting Materials 9-12	**Written Exam**	4 X 50”	● Answer quiz questions	Criteria: Accuracy in answering questions Form: Written/online test	● Accuracy in answering questions.	
14	● Students are able to understand	● Database Nature ● Database	● Lecture	4 X 50”	● Listen to material from lecturers	Criteria:	● Accuracy describes databases and	0.8 %

	databases and database management systems	Management System ● Database System Development ● Management of Database Systems in Management Information Systems	● Discussion		and discuss; ● Discussion about databases and database management systems with presentation material from lecturers who teach the subject	● Accuracy in answering questions ● Liveliness in discussion Form: Oral test	database management systems	
15	● Students are able to understand information and communication technology for management information systems	● The Nature of Information and Communication Technology ● Data communication ● Data Communication Application ● System Computerization	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● Discussions on information and communication technology for management information systems are guided by presentation material from the subject lecturer	Criteria: ● Accuracy in answering questions ● Liveliness in discussion Form: Oral test	● Accuracy describes information and communication technology for management information systems	0.8 %
16	● Students are able to understand about the development of management information systems	● The Nature of Management Information System Development	● Lecture ● Discussion	4 X 50”	● Listen to material from lecturers and discuss; ● The discussion regarding the	Criteria: ● Accuracy in answering questions ● Liveliness in	● Accuracy describes the development of management information systems	0.8 %

		• Information Systems Development Methodology and Approach • Management Information System Development and Implementation Model • Information System Development Implementation			development of a management information system was guided by presentation material from the subject lecturer	discussion Form: Oral test		
17	•	**UAS**	**Written Examination (Multiple Choice 40 questions)**	4 X 50”	•		•	

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Cloud Computing	RTI205008	Network and Multimedia	2 Credits/4 Hours	5	August 30, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Dian Hanifudin Subhi, S.Kom., M.Kom. Grezio Arifiyah P., S.Kom., M.Kom. Habibie Ed Dien, S. Kom., MT Noprianto, S.Kom., MT	Dwi Puspitasari, S.Kom., M.Kom.	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP7	Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.
KK6	Able to use the latest technology related to the field of ICT / science and technology to present information technology solutions.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to master the concept of cloud computing and its services in depth by taking into account the latest technological developments and issues; Able to use devices in the form of a number of virtual machines as a quality and scalable solution, so as to produce High Availability

	infrastructure; Able to apply concepts and solutions in a cloud computing environment independently with a responsible attitude and pay attention to academic norms and ethics.
Short Course Descriptions	This course discusses cloud computing services, project deployment in a cloud environment.
Learning Materials / Subjects	1. Cloud Environments 2. Cloud Service 3. IaaS 4. Virtual Cloud Networks 5. PaaS 6. SaaS 7. CloudStorage 8. Containers 9. CI/CD 10. Serverless Computing 11. High Availability
References	**Main :** *Tomasz, Michal., "Practical Oracle Cloud Infrastructure", Apress, 2020* **Supporters:** 1. Ramklass, Roopesh. Oracle Infrastructure Architect Associate. McGraw-Hill Education, 2020

Instructional Media	**Software :**	**Hardware :**
	1. Oracle Cloud Accounts	Computer or Laptop

	2. Web Browsers 3. PuTTY / SSH Client 4. Terminal	
Name of Lecturer	**Dian Hanifudin Subhi, S.Kom., M.Kom.** **Grezio Arifiyah P., S.Kom., M.Kom.** **Habibie Ed Dien, S. Kom., MT** **Noprianto, S.Kom., MT**	
Requirements Course		

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	- Know and be able to explain the concept of cloud computing (C1) - Able to identify the characteristics of cloud computing (C2)	- Cloud computing concept - Cloud computing characteristics	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions,*	1x4x50”	Study the concepts and characteristics of cloud computing	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Knowing about the concept of cloud computing - Understand the characteristics of cloud computing	**1.67 %**

			Contextual Teaching and Learning (CTL) **Assignment:** **Task 1** : ● Activate Oracle Cloud Infrastructure (OCI) account registration ● Install the application (2x50') *Offline*					
2	- Able to know the services offered by cloud computing, especially Oracle Cloud Infrastructure (OCI)	- OCI service category - OCI core services	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions,*	1x4x50”	Learn about the various OCI service categories	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Know the services offered by cloud computing, especially OCI	**1.67 %**

			Contextual Teaching and Learning (CTL) **Assignment:** **Task 2** : ● Tried the cloud services available at OCI (2x50') *Offline*					
3	- Able to know OCI Compute services - Able to create virtual machines (VM) in the OCI Compute service	- OCI Compute Service - Virtual machine (VM) creation	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)*	1x4x50”	Learn about the OCI Compute service	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Able to know OCI Compute services - Able to create virtual machines (VMs) in the OCI compute service	**1.67 %**

			Assignment: **Task 3** : ● Create a virtual machine in OCI ● Install the application (2x50') *Offline*					
4	- Able to know the Virtual Cloud Network service - Able to make Virtual Cloud Network configuration	- Virtual Cloud Networks - Configuring Virtual Cloud Networks	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 4** : ● Perform VCN	1x4x50”	Configuring a Virtual Cloud Network on the Cloud	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Know the Virtual Cloud Network service - Create a Virtual Cloud Network configuration	**1.67 %**

			settings on the VM according to the case study (2x50') *Offline*					
5	- Able to know PaaS services on OCI - Able to implement PaaS based solutions	- PaaS service concept on Oracle Cloud Infrastructure - Deployment of PaaS-based solutions	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 5** : ● Perform application deployment on the PaaS	1x4x50”	Designing PaaS solutions on OCI	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Knowing PaaS services on OCI - Implement a PaaS based solution	**1.67 %**

			platform (2x50') *Offline*					
6	Test deployment of an Open Source project in a VM	Quiz 1	Quiz	1x4x50”	Quiz	**Quiz**	Quiz	**10%**
7	- Able to know SaaS services on OCI - Able to implement SaaS based solutions	- SaaS service concept on Oracle Cloud Infrastructure - Deployment of SaaS-based solutions	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 6** : ● Design and build solutions on the SaaS	1x4x50”	Designing a Saas solution on Oracle Cloud Infrastructure	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Knowing SaaS services on OCI - Implement a SaaS based solution	**1.67 %**

			platform (2x50') *Offline*					
8	- Able to know Cloud Storage services - Able to implement Cloud Storage-based solutions	- Cloud Storage service concept - Implementation of cloud storage solutions	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 7** : ● Doing static website deployment using *Offline cloud storage (2x50').*	1x4x50”	Designing solutions on cloud computing with cloud storage	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Know the Cloud Storage service - Implementing a Cloud Storage based solution	**1.67 %**

9	Open Source project deployment test in VM combined with cloud Storage	UTS	UTS	1x4x50”	UTS	**UTS**	**UTS**	20%
10	- Able to know the concept of container - Able to build images with containers	- Containers concept - Building images with containers	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 8** : ● Building the image using *the Offline (2x50') docker container*	1x4x50”	Build images using containers	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Know the concept of containers - Build images with containers	**1.67 %**

11	- Able to figure out docker compose - Able to do orchestration using docker compose	- The concept of docker compose - Docker compose orchestration	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 9** : ● Deploy using docker compose (2x50') *Offline*	1x4x50”	Perform orchestration using docker compose	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)	- Knowing docker compose - Perform orchestration using docker compose	**1.67 %**
12	- Able to know the concept of CI/CD - Able to do deployment	- CI/CD concept - Deployment with CI/CD	**Form :** Studying - Online (*Online*)	1x4x50”	Doing deployment with CI/CD concept	**Criteria:** Precision and mastery	- Know the concept of CI/CD - Doing deployment with CI/CD concept	**1.67 %**

	with CI/CD concept		(1x50') **Asynchronous** → learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 10** : ● Doing deployment on cloud computing using CI/CD (2x50') *Offline*			**Form of assessment:** ● Presentation Individual activity and group discussions include asking and answering (affective)		
13	● Able **to understand** the concept of Serverless Computing in the Cloud (C2)	Serverless Computing	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous**	1x4x50”	Designing solutions with the concept of serverless computing	**Criteria:** Precision and mastery **Form of assessment:**	- Understand the concept of serverless computing - Implementing the concept of	**1.67 %**

	• Able **to apply** the concept of Serverless Computing (C3)		→ learning video - Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 11** : • *offline* serverless (2x50') cloud computing solution			• Presentation Individual activity and group discussions include asking and answering (affective)	serverless computing	
14	Deployment of projects using Containers	Quiz 2	Quiz	1x4x50”	Quiz	Quiz	Quiz	**10%**
15	- Able to know the concept of High Availability in the cloud - Able to design High	- High Availability concept - High Availability architectural design	**Form :** Studying - Online (*Online*) (1x50') **Asynchronous** → learning video	1x4x50”	Create a High Availability solution design in the cloud	**Criteria:** Precision and mastery **Form of assessment:** • Presentation	- Know the concept of High Availability in the cloud - Create a High Availability plan in the cloud	**1.67 %**

	Availabilty on the cloud		- Online (*online)* (1x50') **Sync** → Vcon , discussion **Learning methods:** *small group discussions, Contextual Teaching and Learning (CTL)* **Assignment:** **Task 12** : ● Design cloud solutions with high availability architecture (2x50') *Offline*			Individual activity and group discussions include asking and answering (affective)		
16	Project deployment presentation according to case study	Project Presentation	**Form :** Studying - Online (*online)* (4x50') **Sync** → Vcon , discussion **Learning methods:** *Project*	1x4x50”	**Project presentation**	**Criteria:** Precision and mastery **Form of assessment:** ● Presentation Individual activity and	Conduct project deployment presentations according to case studies.	**20%**

			Assignment: **Big Tasks** : ● Conduct project presentations based on case studies (4x50') *Offline*			group discussions include asking and answering (affective)		
17	**Project deployment tests according to the case studies taken**	**UAS**	**UAS**	1x4x50”	**UAS**	**UAS**	**UAS**	**20%**

6th semester

1. Job Preparation English

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
ENGLISH PREPARATION FOR WORK	RTI206001	Basic Informatics	2 credits/ 3 hours	3	August 1, 2018

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Atiqah Nurul Asri, S.Pd, M.Pd Farida Ulfa, S.Pd, M.Pd Satrio Binusa S., SS, M.Pd	Atiqah Nurul Asri, S.Pd, M.Pd	Ir. Deddy Kusbianto PA, MMKom

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
KU2	Able to demonstrate independent, quality and measurable performance.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KU11	Able to communicate using international languages orally and in writing.

Learning Outcomes Graduates charged to courses (CPL-MK)

1. Read and understand job advertisements.
2. Understand the words used in job advertisements.

	3. Mention and explain the strengths and weaknesses possessed. 4. Read and understand how to write a job application letter. 5. Write a job application letter. 6. Read and understand how to make a Curiculum Vitae. 7. Writing Curriculum Vitae. 8. Read and understand how to conduct a test interview and its kinds. 9. Practicing test interviews. 10. Read and understand how to make an effective presentation 11. Practice effective presentations 12. Understand how to do TOEIC ® questions. 13. Practice the TOEIC ® test.
Short Course Descriptions	The name of this course is *English Informatics* 2 is taught to students of the Informatics Management Study Program which are focused on training their abilities and skills in preparing themselves for the world of work and taking the TOEIC ® or PECT (Polytechnic English Competency Test) test. Methods used during the teaching and learning process include lectures, discussions, *role plays* , presentations, and individual and group projects.
Learning Materials / Subjects	1. Reading Job Advertisements 1.1 Assessing Yourself 1.2. Parts of Job Advertisement 1.3. Questions to Ask Yourself after Reading Job Ads 1.4. Terms and Abbreviations Usually Found in Job Advertisements 2. Writing a Job Application Letter 2.1. Things to Consider Before Writing A Job Application Letter 2.2. Online Application Letters 2.3. Job Application Letter Template 2.4. Sample of Job Application Letter 3. Writing Curriculum Vitae

	3.1. Things to Consider Before Writing a Curriculum Vitae 3.2. Information a CV Should Include 3.3. Curriculum Vitae Template 3.4. Sample of CV 4. Conducting a Job Interview 4.1. Kinds of Job Interview 4.2. Things to Prepare before Having a Job Interview4.3. Things Supposed to Do on a D Day (of the Job Interview)4.4. Common Questions Asked by the Interviewer 5. Delivering an Effective Presentation 5.1. Factors Make People Irritated during Presentation 5.2. Things to Consider before Presentation 5.3. Things to Consider in Making Power Point Slides 5.4. Things to Do during Presentations 6. Preparing for TOEIC ® 6.1 Preparing for Listening Test 6.2 Preparing for Reading Test
References	Main: Asri, Atiqah Nurul, et.al. 2018. *English for Job Preparation* : Fourth Edition. Polynema Press **Supporters:** 1. Downes, Colm. 2012. Cambridge English for Job Hunting. Cambridge: Cambridge University Press. 2. Grussendorf, Marion. 2011. Oxford English for Presentations. Oxford: Oxford University Press. 3. Moss, James, Lee, Clayton, and Atkinson, Peter. 2007. Presenting for Success. Business English Pod. 4. Pledger, Path. 2015. Oxford English for Human Resources. Oxford: Oxford University Press. 5. Trew, Grant. 2008. Tactics for TOEIC ® Listening and Reading Strategies. Oxford: Oxford University Press.
Instructional Media	**Software :** / **Hardware :** Computers, LCD Projectors, Audio and Video Files, and Speakers
Name of Lecturer	1. Atiqah Nurul Asri, S.Pd, M.Pd

	2. Farida Ulfa, S.Pd, M.Pd 3. Satrio Binusa S., SS, M.Pd
Requirements Course	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1-2	● Read and understand job advertisements and choose the right type of job according to your strengths and weaknesses.	1. Reading Job Advertisements 1.1 Assessing Yourself 1.2 Parts of Job Advertisement 1.3 Questions to Ask Yourself after Reading Job Ads 1.4 Terms and Abbreviations Usually Found in Job Advertisements	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** ● Lecture ● group discussion ● Presentation	6 x 50 minutes	● State and explain the words used to describe strengths and weaknesses ● Do exercises 1, 2 and 4 in the Main Module. ● Understand and complete the table in exercise 3 about the phrases used to mention strengths and weaknesses. ● Mention and explain the strengths and weaknesses of each student in terms of *personal characteristics* and *qualifications* (*academic skills, skills, experiences*) by means of brainstorming as in exercise 1.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** ● Oral test: presentation ● Writing test: - make a summary of the advantages and disadvantages - make an analysis of job advertisements in accordance with the qualifications of each student	Accuracy and mastery of student communication using English in: ● State and explain the words used to describe strengths and weaknesses ● Do exercises 1, 2 and 4 in the Main Module. ● Understand and complete the table in exercise 3 about the phrases used to mention strengths and weaknesses. ● Mention and explain the strengths and weaknesses of each student in terms of *personal characteristics* and *qualifications* (*academic skills, skills, experiences*) by means of brainstorming as in	5%

					• Write down students' strengths and weaknesses by using vocabulary in exercises 1, 2, and 4 and using the phrases found in exercise 3. • Presenting the strengths and weaknesses of students in front of the class. • Mention and explain the parts contained in the job advertisement. • Mention and explain things to ask yourself when reading a job advertisement. • Completing and explaining the tables in exercise 5 and 6 regarding the abbreviations contained in job advertisements. • Match the pieces of the job advertisement with the type of job that fits the advertisement by doing exercise 7-12. • Look for several job advertisements on the internet or newspapers and analyze the job		exercise 1. • Write down students' strengths and weaknesses by using vocabulary in exercises 1, 2, and 4 and using the phrases found in exercise 3. • Presenting the strengths and weaknesses of students in front of the class. • Mention and explain the parts contained in the job advertisement. • Mention and explain things to ask yourself when reading a job advertisement. • Completing and explaining the tables in exercise 5 and 6 regarding the abbreviations contained in job advertisements. • Match the pieces of the job advertisement with the type of job that fits the advertisement by doing exercise 7-12 • Look for several job vacancy advertisements	

					advertisements found earlier according to the strengths and weaknesses of each student by answering questions and completing the tables in exercise 13 and 14. ● Write down the results of the analysis on the previous activity along with the reasons.		on the internet or newspapers and analyze the job vacancies advertisements found earlier which are in accordance with the strengths and weaknesses of each student by answering questions and completing the tables in exercises 13 and 14 ● Write down the results of the analysis on the previous activity along with the reasons.	
3-4	● Write a job application letter	2. Writing a Job Application Letter 2.1. Things to Consider Before Writing A Job Application Letter 2.2. Online Application Letters 2.3. Job Application Letter Template 2.4. Sample of Job Application Letter	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** ● Lecture ● group discussion ● Case study ● Presentation	6 x 50 minutes	● List and explain the types of letters. ● Mention and explain the things that need to be considered in writing a letter. ● Mention and explain the parts of a letter. ● Mention and explain things that are not allowed in writing a letter. ● Understand job application letter templates and examples.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** ● Oral test: question and answer ● Writing test: ● write a job application letter	Accuracy and mastery of student communication using English in: ● List and explain the types of letters. ● Mention and explain the things that need to be considered in writing a letter. ● Mention and explain the parts of a letter. ● Mention and explain things that are not allowed in writing a letter.	10%

					• Doing exercise on Unit 2 Main Module. • Write a job application letter according to the advertisement according to the qualifications (previous unit exercise).		• Understand job application letter templates and examples. • Doing exercise on Unit 2 Main Module. • Write a job application letter according to the advertisement that matches the qualifications (previous unit exercise)	
5-6	• Write a CV	3. Writing a Curriculum Vitae 3.1. Things to Consider Before Writing a Curriculum Vitae 3.2. Information a CV Should Include 3.3. Curriculum Vitae Template 3.4. Sample of CV	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** • Lecture • group discussion • Case study • Presentation	6 x 50 minutes	• Mention and explain the things that are considered in writing a CV. • Mention and explain things that should be written on a CV. • Understand the template of a CV. • Mention and explain the vocabulary contained in a CV and do the exercises in the Main Module Unit 3. • Write a CV according to the qualifications you have and the intended job according to the advertisement you found.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** • Oral test: question and answer • Writing test: - Write a CV	Accuracy and mastery of student communication using English in: • Mention and explain the things that are considered in writing a CV. • Mention and explain things that should be written on a CV. • Understand the template of a CV. • Mention and explain the vocabulary contained in a CV and do the exercises in the Main Module Unit 3. • Write a CV according to the qualifications you have and the intended	10%

							job according to the advertisement you found.	
7-8	● Practicing Job Interviews	4. Conducting a Job Interview 4.1. Kinds of Job Interviews 4.2. Things to Prepare before Having a Job Interview 4.3. Things Supposed to Do on a D Day (of the Job Interview) 4.4. Common Questions Asked by the Interviewer	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** ● Lecture ● group discussion ● Case study ● Presentation	6 x 50 minutes	● List and explain the different types of job interviews. ● Mention and explain things that need to be prepared before a job interview. ● Mention and explain the things that should be done during a job interview. ● Understand the vocabulary used in job interviews by doing exercises in the Main Module unit 4.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** ● Oral test: job interview ● Written test: questions	Accuracy and mastery of student communication using English in: ● List and explain the different types of job interviews. ● Mention and explain things that need to be prepared before a job interview. ● Mention and explain the things that should be done during a job interview. ● Understand the vocabulary used in job interviews by doing exercises in the Main Module unit 4.	10%
9	**Midterm exam**							20%
10-11	● Practice effective presentations	5. Delivering an Effective Presentation 5.1. Factors Make People Irritated during Presentation 5.2. Things to Consider before Presentation 5.3. Things to Consider in	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** ● Lecture ● group discussion	6 x 50 minutes	By using English students can: ● Mention and explain the factors that cause the audience to be distracted during the presentation. ● Mention and explain the things that are	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** ● Oral test: presentation ● writing test	Accuracy and mastery of student communication using English in: ● Mention and explain the factors that cause the audience to be distracted during the presentation. ● Mention and explain the things that are	10%

		Making Power Point Slides 5.4. Things to Do during Presentations	● Case study ● Presentation		considered in preparing an effective presentation. ● Understand the terms used in presentations by doing exercises in Main Module Unit 5. ● Mention, explain, and make presentations using Powerpoint. ● Practice effective presentation methods.		considered in preparing an effective presentation. ● Understand the terms used in presentations by doing exercises in Main Module Unit 5. ● Mention, explain, and make presentations using Powerpoint. ● Practice effective presentation methods.	
12-16	● Understand the tips and do the TOEIC ® or PECT	6. Preparing for TOEIC ® or PECT (Polytechnic English Competency Test) 6.2. Strategies and Practice of Speaking Tests of TOEIC ® or PECT 6.3. Strategies and Practice of Written Tests of TOEIC ® or PECT	**Forms of Learning:** Lectures & Assignments/Tutorials **Learning methods:** ● Lecture ● group discussion ● Case study ● Presentation	15 x 50 minutes	By using English students can: ● Understand tips for working on Listening questions on the TOEIC ® or PECT. ● Working on Listening TOEIC ® or PECT questions in the Main Module Unit 6. ● Understand tips for working on Reading questions on TOEIC ® or PECT. ● Working on Reading TOEIC ® or PECT questions in the Main Module Unit 6. ● Working on TOEIC ® or PECT questions.	**Criteria:** Accuracy and mastery of communicating in English **Form of assessment:** - Oral test: question and answer ● Written test: working on TOEIC ® or PECT questions.	Accuracy and mastery of student communication using English in: ● Understand tips for working on Listening questions on the TOEIC ® or PECT. ● Working on TOEIC ® or PECT Listening questions. ● Understand tips for working on Reading questions on TOEIC ® or PECT. ● Working on Reading TOEIC ® or PECT questions. ● Working on TOEIC ® or PECT questions.	10%

17	**Final exams**							25%

2. Decision Support System

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
Decision Support System	RTI206002	Information Systems	3 credits/6 hours	5	
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Ulla Defana Rosiani, ST, MT Rudy Ariyanto, ST., M.Cs. Muhammad Afif Hendawan, S.Kom., MT Candra Bella Vista, S. Kom., MT. Rakhmat Arianto, S.ST., M.Kom		Faisal Rahutomo, ST., M.Kom., Dr. Eng.	Imam Fahrur Rozi, ST, MT	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				

S8	Internalize academic values, norms, and ethics.
KU2	Able to demonstrate independent, quality and measurable performance.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.

	KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
	Learning Outcomes Graduates charged to courses (CPL-MK) Able to understand the concepts and applications of the Introduction to SPK, System Model, SAW Method , AHP Method, Moora Method, Electre Method, Topsis Method, GDSS, Fuzzy Modeling .
Short Course Descriptions	This course discusses technology for developing decision support system applications in order to support management in making decisions, where decision making is no longer only supported by the leader's intuition but is supported by the results of analyzing a set of data using certain methods.
Learning Materials / Subjects	Introduction to SPK, System Model, SAW Method , AHP Method, Moora Method, Electre Method, Topsis Method, GDSS, Fuzzy Modeling .
References	**Main :** 1. Shimizu, Tamio, and friends, 2006, Strategic Alignment Process and Decision Support Systems: Theory and Case Studies, by Idea Group Inc. 2. Goul,Michael, and Karen Corral, 2005, Enterprise model management and next generation decision support, Elsevier BV All rights reserved. 3. Yao, JingTao, 2010, Web-based Support Systems, Springer-Verlag London Limited. 4. Gray, P., 1994, Decision Support and Executive Information Systems, Prentice Hall. 5. Turban, E., 1995, Decision Support and Expert Systems, Prentice Hall 6. Eta S. Berner, 2016,Clinical Decision Support Systems: Theory and Practice, Springer. 7. Frada Burstein, et al., 2007, Handbook on Decision Support Systems 1: Basic Themes, Springer Science & Business Media. 8. Jason Papathanasiou, et al., 2016, Real-World Decision Support Systems: Case Studies, Springer. **Supporters:**
Instructional Media	**Software :** | **Hardware :**

	OS - WINDOWS, MS.OFFICE, WEB BROWSER,MYSQL, PHP, HTML, PROGRAMMING LANGUAGE	LCDs and Projectors
Name of Lecturer	Ulla Defana Rosiani, ST, MT Rudy Ariyanto, ST., M.Cs. Muhammad Afif Hendawan, S.Kom., MT Candra Bella Vista, S. Kom., MT. Rakhmat Arianto, S.ST., M.Kom	
Requirements Course	-	

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students can explain the role and influence of decision making in everyday life. • Students can explain the forming elements of decision making and explain the uses and Management Information Systems. • Students can explain the advantages of using managerial decision making and management information systems • Students can explain the functions, processes that occur and the types of	a. Managerial Decision Making and Management Information Systems b. Framework for decision support c. Definition of Decision Support System d. GDSS e. EIS, ES, AI f. The difference between MIS and DSS	• Seminars , *Contextual Instruction* • *Role-play simulation* • *Small group discussions*	1x6x50 '	Practical exercises and assignments	• Question and answer Task completion	a. The accuracy of explaining the role, influence of decision-making and Management Information Systems in life b. Able to re-explain the basic differences between MIS and DSS, EIS, ES, AI c. Be able to mention the decision-making function as a decision-making phase (Intelligence,	

	decisions and decision-making phases	g. Decision-making h. The decision-making phase (Intelligence, design, choice, implementation i. Structured Decisions j. Semi-structured decisions k. Unstructured Decisions					design, choice, implementation) d. Be able to name several decisions and their uses correctly	
2	● Students understand and are able to apply the *Weighted Sum Product, Weighted Product,* and SAW methods ● Students understand the definition and use of Process Analytical Hierarchy (AHP) ● Students are able to understand making a comparison matrix according to AHP rules ● Students are able to check the Consistency Index on each matrix in	a. *Multicriteria Decision Making* method *Weighted Product* b. *Multicriteria Decision Making* method Analytic Hierarchy Process (1)	• Seminars , *Contextual Instruction* • *Role-play simulation* • *Small group discussions*	1x6x50'	Practical exercises and assignments	• Question and answer Task completion	• Able to make flowcharts of SAW and AHP methods in CI search • Able to apply the method SAW and AHP in CI search in excel	

	AHP							
3-4	• Students know the stages of ranking with the AHP method • Students are able to find the eigenvector values in the matrix between AHP criteria • Students are able to find the eigenvector values in the matrix between alternatives on each criterion of the AHP method • Students are able to find the final weight to be sorted as AHP output	*Multicriteria Decision Making* method Analytic Hierarchy Process	• Seminars , *Contextual Instruction* • *Role-play simulation* • *Small group discussions*	1x6x50'	Practical exercises and assignments	• Question and answer Task completion	• Able to make AHP method flowcharts • Able to apply the AHP method in excel	
5	Quiz 1	From meeting 1 to 4	Written/Online Test	1x6x50'	Quiz 1	Quiz 1	Answer questions correctly	20%

6	• Students know the stages of ranking using the Elimination Et Choix Traduisant la Realité (ELECTRE) method • Students can distinguish *concordance* and *discordance* on ELECTRE • Students are able to find the final weight to be sorted as ELECTRE output	*Multicriteria Decision Making* method ELECTRE	• *Contextual Instruction* Seminar • *Role-play simulation* • *Small group discussions*	1x6x50 '	Practical exercises and assignments	• Question and answer • Task completion	• Able to make flowcharts of the Electre method • Able to apply the Electre method in excel	
7	• Students know the stages of ranking using the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) method • Students can distinguish positive ideal solutions and negative ideal solutions in TOPSIS • Students are able to find the final weight to be sorted as TOPSIS output	Multicriteria Decision Making TOPSIS method	• *Contextual Instruction* Seminar • *Role-play simulation* • *Small group discussions*	1x6x50 '	Practical exercises and assignments	Question and answer Task completion	• Able to make flowcharts of the TOPSIS method • Able to apply the TOPSIS method in excel	
8	UTS	From meeting 1 to 7	Written/online test	1x6x50'	UTS	UTS	Answer Questions Correctly	30%
9	• Students understand the definition and use of *the Multi-Objective Optimization Method on*	Multicriteria Decision Making method Moora(1)	• *Contextual Instruction* Seminar • *Role-play*	1x6x50 '	Practical exercises and assignments	Question and answer Task completion	• MOORA method flowcharts	

	The Basic of Ratio Analysis (MOORA) ● Students are able to understand making decision matrices according to MOORA rules ● Students know the stages of ranking using the Multi-Objective Optimization Method on The Basic of Ratio Analysis (MOORA) ● Students are able to determine the criteria that are ordered as the MOORA ranking ● Students are able to find the final weight to be sorted as MOORA output		*simulation* • *Small group discussions*				• Able to apply the MOORA method in excel	
1 0	● Students know the meaning of GDSS ● Students can simulate GDSS either directly or using a prototype ● Students get to know the ranking between groups of decision makers	*Group Decision Support System* and various BORDA/HARE rankings	• Lecture • Discussion Practice	1x6x50'	Practical exercises and assignments	• Question and answer Task completion	• Able to mention the meaning and function of GDSS • Able to mention the use of GDSS • Able to simulate GDSS	

11	• Students know various combinations of DSS methods • Students look for journals related to SPK research	Combination of Methods	• Discussion • Presentation from student group	1x6x50'	Presentation	Q&A and collaboration in groups	• Able to explain various combinations of SPK methods	
12	Quiz 2	From Meeting 9 - 11	Writing test	1x6x50'			Answer Questions Correctly	20%
13	• Students can know the meaning and purpose of fuzzy in SPK • Students know the types of fuzzy including the Fuzzy Inference System • Students know and are able to make membership matrices in fuzzy	Introduction to Fuzzy	• *Contextual Instruction* Seminar • *Role-play simulation* • *Small group discussions*	1x 6x50'	Practical exercises and assignments	Question and answer Task completion	• Be able to mention the meaning of fuzzy and its role in SPK • Able to mention the types of fuzzy	
14	• Students understand and know Sugeno's FIS stages • Students know and are able to apply fuzzification to the Sugeno method • Students are able to apply Sugeno's FIS calculation solutions in implementing SPK	Fuzzy Inference System (Sugeno)	• *Contextual Instruction* Seminar • *Role-play simulation* • *Small group discussions*	1x 6x50'	Practical exercises and assignments	Question and answer Task completion	• Able to make a flowchart of Sugeno's FIS method • Able to apply Sugeno's FIS method in excel	
15	• Students understand and know Tsukamoto's FIS stages	Fuzzy Inference System (Tsukamoto)	• *Contextual Instruction* Seminar • *Role-play*	1x 6x50'	Practical exercises and assignments	Question and answer Task completion	• Able to make flowcharts of the	

	• Students know and are able to apply fuzzification to the Tsukamoto method • Students are able to apply Tsukamoto's FIS calculation solutions in implementing SPK		*simulation* • *Small group discussions*				Tsukamto FIS method • Able to apply Tsukamoto's FIS method in excel	
16	Students are able to make a project from one of the methods that have been taught in the SPK course	Final project presentation	Presentation	1x 6x50'	Practical exercises and assignments	Question and answer Task completion	Able to complete one of the methods taught in the SPK course in program implementation	
17	UAS	From meeting 1 to 16	Written/Online Test	1x6x50'	UAS	UAS	Answer questions correctly	30%

3. Big Data

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D 4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits)/ hour**	**SEMESTER**	**DATE. PREPARATION**
Big Data	RTI206003	Expertise Courses	3 credits/6 hours	6	March 1, 2022
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dian Hanifudin Subhi, S.Kom., M.Kom. 3. Vipkas Al Hadid Firdaus, ST., MT 4. Habibie Ed Dien, S. Kom., MT 5. M. Hasyim Ratsanjani S.Kom., MKom. 6. M. Shulhan Khairy, S.Kom., M.Kom. 7. Noprianto S. Kom., M. Eng.		Dwi Puspitasari, S.Kom., M.Kom.	Imam Fahrur Rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	1. **[S8]** Internalizing academic values, norms, and ethics. 2. **[S9]** Demonstrates a responsible attitude towards work in his field of expertise independently. 3. **[PP1]** Mastering the concepts of applied mathematics, basic knowledge of ICT (Algorithms, Programming, Databases, Computer Networks, etc.), engineering science, and engineering principles in the field of ICT in depth. 4. **[PP7]** Mastering knowledge about technological developments and the latest issues (ethical, social, legal and economic) related to the ICT field.				

<table>
<tr><td></td><td>
5. [KK1] Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics) , embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
6. [KK6] Able to use the latest technology related to the field of ICT / science and technology to present information technology solutions.
7. [KU1] Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in the field of expertise and in accordance with work competency standards in the field concerned.
8. [KU2] Able to demonstrate independent, quality and measurable performance.
Learning Outcomes Graduates charged to courses (CPL-MK)
Able to explain the concept of Big Data, its current needs, trends and relevance. Able to explain the architecture, Hadoop ecosystem and its components. Be able to explain the meaning and workings of the Hadoop File System (HDFS), work with HDFS, and create applications that interact with HDFS. Be able to explain the meaning and workings of the MapReduce framework and create MapReduce Job applications with Java. Able to give examples and explain the use of Big Data technology in the context of modern research/research.
<table>
<tr><td>SUB-CPMK 1</td><td>Students are able to explain the concept of Big Data. [C2]</td></tr>
<tr><td>SUB-CPMK 2</td><td>Students are able to explain concepts, and work with HDFS [C1, C2, C4, C5]</td></tr>
<tr><td>SUB-CPMK 3</td><td>Students are able to explain concepts, and work with MapReduce. [C1, C2, C3, C5]</td></tr>
<tr><td>SUB-CPMK 4</td><td>Students are able to explain the description of research and development with Big Data [C2, C3, C6]</td></tr>
<tr><td>SUB-CPMK 5</td><td>Students are able to give examples and explain the use of Big Data technology in modern research fields. [C2, C4, C5, C6]</td></tr>
</table>
</td></tr>
<tr><td>Short Course Descriptions</td><td>In this course students will learn about the ins and outs of Big Data technology which includes basic theory, history, relevance, and development. Students will also learn about Hadoop and its two main components, namely HDFS and MapReduce. In addition, students will also be given insight into the use of Big Data in currently developing research fields.</td></tr>
<tr><td>Learning Materials / Subjects</td><td>
1. Big Data Theory
2. HDFS
3. MapReduce
4. Research and Development with Big Data
5. Review Big Data Publications
</td></tr>
<tr><td>References</td><td>Main :</td></tr>
</table>

<table>
<tr><td></td><td colspan="2">1. Nataraj Dasgupta. 2018. "Practical Big Data Analytics".
2. Buyya, Rajkumar. Calheiros, Rodrigo N. Dastjerdi, Amir Vahid. 2016."Big Data Principles and Paradigms".
3. Morgan Kaufmann., J. Lescovec, A. Rajaraman, and J. Ullman, “Mining of Massive Datasets”.
Supporters:
2. Udemy - The Ultimate Hands-On Hadoop: Tame your Big Data!</td></tr>
<tr><td>Instructional Media</td><td>Software :
Teaching
1. Microsoft PowerPoint
2. Google Forms
3. Google Classroom
Practice
1. LinuxUbuntu
2. VirtualBox
3. Hadoop
4. JRE
5. VPNs
6. SSH</td><td>Hardware :
1. Laptops/PCs
2. Projector LCDs
3. Projector Screen</td></tr>
<tr><td>Name of Lecturer</td><td colspan="2">1. Yoppy Yunhasnawa, S.ST., M.Sc.
2. Dian Hanifudin Subhi, S.Kom., M.Kom.
3. Vipkas Al Hadid Firdaus, ST., MT
4. Habibie Ed Dien, S. Kom., MT
5. M. Hasyim Ratsanjani S.Kom., MKom.
6. M. Shulhan Khairy, S.Kom., M.Kom.</td></tr>
</table>

	7. Noprianto S. Kom., M. Eng.
Requirements Course	-

Week:	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1-3	Students are able to **explain** the concept of Big Data.	- Definition of Big Data - Background Emergence of Big Data technology - Benefits of Big Data Technology - Definition of Hadoop - History of the Emergence of Hadoop - Hadoop Ecosystem - Storage on Hadoop - Parallel Processing on Hadoop	Lectures, discussions.	6 x 50”	- Able **to explain** the meaning of Big Data. - Able **to explain** the background of the emergence of Big Data technology. - Able **to explain** the benefits of Big Data technology. - Be able **to explain** the meaning of Hadoop - Be able **to explain** the history of the emergence of Hadoop - Able **to explain** the concept of Hadoop Ecosystem	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion. - Students submit reports on answers to practice questions in a timely manner.	3%

					- Be able **to explain** the concept of storage in Hadoop - Be able **to explain** the concept of parallel processing in Hadoop			
4	Quiz-1	Material week-1 sd week-3	Theory Exam	6 x 50”	Working on written exam questions in the form of multiple choice and/or descriptions .	Number of correct answers.	Value is obtained based on the calculation of the number of correct answers.	9%
5-7	Students are able to explain concepts, and work with HDFS.	- Definition and How HDFS Works - Name nodes & Data Nodes - Works with HDFS - Create applications that interact with HDFS	Lectures, discussions.	6 x 50”	- Be able **to explain** the definition and workings of HDFS - Be able **to explain** the meaning of Name Node and Data Node, and how the two work together in the context of Hadoop. - Able **to explain** the syntax and usage of basic HDFS commands. - Able **to identify** an issue that causes basic Hadoop	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion. - Students submit reports on answers to practice questions in a timely manner.	12%

					commands to not run - Able **to analyze** the needs of HDFS applications - Able **to design** HDFS application schemes. - Able **to code** HDFS applications.			
8	UTS	Material week-5 to week-7	Practicum Exam	6 x 50”	Students create a Java application that can perform read-write operations to the Hadoop cluster.	- Complete application features. - Completion speed.	- Applications that are collected with complete features, the value will be better. - If the completeness of the application is the same, then the one who collects it first is the one with better value.	9%
9-11	Students are able to explain concepts, and work with the MapReduce framework.	- Understanding MapReduce - Mappers & Reducers	Lectures, discussions.	6 x 50”	- Be able to **explain** the meaning of MapReduce. - Be able **to explain** examples of cases	- Liveliness in discussion Collection of answers to practice questions.	- Students take part in the discussion. Students submit reports on answers to	12%

		- The MapReduce daemon - Definition of MapReduce Job - Create MapReduce Jobs - Another Example of MapReduce Job Implementation			that can be solved with MapReduce. - Be able to **explain** the meaning and difference between Mappers and Reducers. - Be able to **explain** the meaning and workings of the MapReduce daemon on Hadoop. - Be able **to explain** the purpose of MapReduce Job. - Able **to design** MapReduce Job based on specific case examples. - Able **to create** a MapReduce Job with prepared case examples. - Able to independently **identify** examples of other cases where a MapReduce Job can be made. - Able **to design** and **create** a MapReduce Job		practice questions in a timely manner.	

					from independently identified case examples.			
12	Quiz-2	Material week-9 to week-11	Theory Exam	6 x 50”	Working on written exam questions in the form of multiple choice and/or descriptions .	Number of correct answers.	Value is obtained based on the calculation of the number of correct answers.	6%
13	Students are able to explain an overview of research and development with Big Data.	- Research - Development - Current developments in Big Data Technology - Some examples of the latest technologies in the Hadoop ecosystem - Examples of using big data in scientific research. - Examples of popular big data products.	Lectures, discussions.	6 x 50”	- Be able **to explain** the meaning of research. - Be able to **explain** the meaning of development. - Be able **to explain** the differences and similarities of research vs development. - Able **to describe** the current development of Big Data technology. - Able **to mention** and **explain** some examples of the latest technology in the Hadoop ecosystem. - Able to explain examples of the	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion. - Students submit reports on answers to practice questions in a timely manner.	3%

					use of big data in scientific research. - Able to mention and explain examples of the use of big data in today's popular end-user products.			
14-16	Students mention and explain examples of using Big Data in the field of modern research.	- Scientific Publication Concept - Searching for Scientific Publication Articles - Big Data research in the field of handling Covid-19 - Big Data Research in Education. - Big Data research in the industrial/retail sector.	Lectures, discussions.	6 x 50”	- Able **to explain** the concept of scientific publications. - Able **to find** scientific articles on Big Data. - Be able to **explain** the role of Big Data in handling the Covid-19 pandemic based on scientific articles. - Able **to explain** the role of Big Data in the world of Education based on scientific articles. - Able **to explain** the role of Big Data in industry or retail based on scientific articles.	- Liveliness in discussion - Collection of answers to practice questions.	- Students take part in the discussion. - Students submit reports on answers to practice questions in a timely manner.	3%

17	UAS	Capstones	Project	3 x 50”	Create Big Data portfolio applications	- The complexity of the application made. - Quality of presentation/explanation.	- Application complexity is simple, moderately complex, or complex. - Explanations submitted incomplete, complete, or complete and interesting.	12%

4. Research methodology

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Research methodology	RTI206004	**Expertise Courses**	2 credits/4 hours	7	February 1, 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	1. Ulla Delfana Rosiani, ST., MT. 2. Banni Satria Andoko, S. Kom., M.MSI 3. Rakhmat Arianto, S.ST., M.Kom 4. Robby Anggriawan SE., ME.	Dwi Puspitasari, S.Kom., M.Kom	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)	Learning Outcomes of Study Program Graduates (CPL-Prodi)
	S8 Internalize academic values, norms, and ethics.
	S9 Demonstrate a responsible attitude towards work in the field of expertise independently.
	PP6 Mastering knowledge of oral and written communication techniques using national and international languages.
	KU2 Able to demonstrate independent, quality and measurable performance.
	KU5 Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
	KU9 Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.
	Learning Outcomes Graduates charged to courses (CPL-MK)

	Able to understand the concept of introductory research; Able to choose research topics and preliminary studies; Able to formulate problems and hypotheses; Be able to choose a research approach; Being able to choose variables; Able to determine data sources; Able to determine and arrange research instruments; Able to collect data, analyze data, and draw conclusions; Able to compile research reports in a systematic, quality and measurable manner;	
Short Course Descriptions	Understand and be able to conduct scientific research with a complete, sequential, and precise methodology.	
Learning Materials / Subjects	Introduction, basic research concepts, problem identification, literature review, research design, methods, techniques, instruments Quantitative analysis, Qualitative analysis, Thesis progress report, Writing skills, Paper section, Final check	
References	**Main :** 1. Zainal A. Hasibuan, Research Methodology in the Field of Computer Science and Information Technology Concepts, Techniques, and Applications, Filkom UI, 2007 2. Adrian Wallwork, English for Writing Research Papers, Springer, 2011 3. Rudy Ariyanto et al, Guidelines for Writing Final Reports and Thesis Version 2.3, Department of Information Technology, State Polytechnic of Malang, 2017 **Supporters:**	
Instructional Media	**Software :**	**Hardware :**
	Ms. office	LCDs and Projectors
Name of Lecturer	**Ulla Delfana Rosiani, ST., MT.** **Banni Satria Andoko, S. Kom., M.MSI** **Rakhmat Arianto, S.ST., M.Kom**	

	Robby Anggriawan SE., ME.							
Requirements Course	-							
Week	**Planned Final Capability (Sub-CP-MK)**	**Study material (Learning materials)**	**Learning Forms and Methods**	**Estimated time**	**Student Learning Experience**	**Assessment Criteria & Forms**	**Assessment Indicator**	**Rating Weight (%)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	Students master the basic concepts of research	• Basic Concepts of Research • Logical thinking (deductive reasoning, inductive) • Research methods and research methodology • Methodological benefits • Research process	Contextual Learning	1x4x50'	• Listen to lecture material • Discuss with group mates	• Accuracy in answering questions • Activeness in class	Accuracy in explaining the basic concepts of research, logical thinking, methodology, and research processes	-
2	Students are able to do *a literature review*	• Understanding • Benefit • steps • sources • Citation	Contextual Learning	1x4x50'	• Listen to lecture material • Discuss with group mates to understand the basics of reference	• Accuracy in answering questions • Activeness in class	• Able to understand scientific references • Able to apply reference citation methods	-
3	Students are able to identify problems	• Identification and formulation of the problem • problem formulation steps • Example of problem	Contextual Learning	2x4x50'	• Listen to lecture material • Discuss with group mates	• Accuracy in answering questions • Activeness in class	• Able to mention and identify problems in research topics • Able to formulate problems with the	-

		formulation • Research hypothesis					right steps	
4	Students are able to create a framework	• Identify the main ideas in the framework • Pouring out the basics of literacy reference • Determine the methods that are appropriate to the research • Build stages of research	Discovery Learning	1x4x50'	• Listen to lecture material • Discuss with group mates to understand the basics of reference	• Accuracy in answering questions • Activeness in class	Accurate understanding of research design	
5	Students master research methods, techniques and instruments	• Instrument • Interview • Questionnaire • Designing a Questionnaire	Contextual Learning	1x4x50'	• Listen to lecture material • Discuss with group mates to understand the basics of reference	• Accuracy in answering questions • Activeness in class	• Able to conduct interviews with the right questions to get the data needed in research • Be able to tell the integrity of the research that is being planned in a formal document	
6	Students understand the principle of analyzing quantitatively	• Quantitative research • formulation in quantitative research • Variable • Validity and reliability • Data collection	Contextual Learning	1x4x50'	• Listen to lecture material • Discuss with group mates to apply quantitative analysis	• Accuracy in answering questions • Activeness in class	• Able to perform quantitative analysis • Able to tell quantitative analysis activities	

		• Quantitative data analysis • Frequency distribution • Cross tabulation • Correlation • Regression						
7	Students understand the principle of analyzing qualitatively	• Qualitative research • problem formulation in qualitative research • Qualitative data • Qualitative data analysis • Sample in qualitative research • Differences in quantitative and qualitative research	• Lecture • Discussion	1x4x50'	• Listen to lecture material • Discuss with group mates to understand quantitative analysis	• Accuracy in answering questions • Activeness in class	• Able to do qualitative analysis • Able to tell the activity of qualitative analysis	
8	UTS	Meeting 1 - 7	Personal Tests	1x4x50'	• Answer questions / questions UTS	• Accuracy in answering questions • write	Able to answer correctly	30
9-11	Students understand writing skills	• Planning and preparation for writing • Word order • Break up long sentences	Discovery Learning	3x4x50'	• Listen to lecture material • Discuss with a groupmate about writing skills	• Accuracy in answering questions • Activeness	Able to write according to precise scientific principles	

		• Compose paragraphs and sentences • Concise, avoid redundancy • Avoid ambiguity and obscurity • Clarify who does what • Highlight your discoveries • Protection against criticism • Describe in your own words, avoid plagiarizing/paraphrasing			• Writing practice • Presentation of exercise results	in class		
12-15	Students are able to understand how to write the right according to the parts of the paper	• Title • Abstract • Introduction • Literature review • Methodology • Results • Discussion • Conclusion • Reference • Award (acknowledgment)	Discovery Learning	4x4x50'	• Listen to lecture material • Discuss with a groupmate about writing skills • Writing practice • Presentation of exercise results	• Accuracy in answering questions • Activeness in class	Accuracy in writing in each part of existing scientific writings	

		• Helpful phrases						
17	UAS	From meeting 1 to 16	Personal Tests	1x1x50'	• Answer UAS questions/questions	Accuracy in answering written questions	Answer questions correctly	40

5. Internet Of Things

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D 4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits) / hour	SEMESTER	DATE. PREPARATION
IoT (Internet of Things)	RTI206005	Technique Informatics	3 credits/6 hours	1	
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Dodit Suprianto Vipkas Al Hadid Noprianto Muhammad Shulhan Khairy				

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.
S9 Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1 Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP2 Mastering ICT product development methods to provide the right solutions through one or more application domains.
KK1 Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the field of software development (desktop, web and mobile), computer networks and other ICT / Science and Technology fields (vision -
KK4 Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
KU1 Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

- Students are able to apply Microcontroller Units (Arduino and NodeMCU)

	• Students can implement hardware remote control with TCP/IP Sockets • Students are able to apply and understand the concept of edge computing (Optional) • Students are able to understand and implement IoT cloud computing (Public, Ubuntu Server & Raspberry Pi 3) • Students are able to explain the concept of the MQTT transport protocol	
Short Course Descriptions	• Explains the IoT architecture which consists of device constraints, edge computing and IoT cloud computing and how to implement them. • Create a microcontroller hardware control program that is controlled locally or remotely (remote control)	
Learning Materials / Subjects	• IoT architecture • Microcontroller Unit (Arduino & NodeMCU), Hardware communication interfacing (I^2C, SPI, UART) • Edge Computing • IoT Server Clouds • Implement IoT	
References	**Main :** 2. Arduino Programming For Beginners, 2019, Jasakom 3. **Supporters:**	
Instructional Media	**Software :**	**Hardware :**
	Fritzing Designer, Linux Ubuntu Desktop Version, Linux Raspbery Pi 3 Version, Arduino IDE, Visual Studio 2017 C#, Notepad++	Arduino, RaspBerry Pi 3, ESP8266-01, NodeMCU Amica, Personal Computer, Project Board, Various Sensors, Various Actuators, LCD, and other Supporting Components
Name of Lecturer		
Requirements Course	C Programming, C# UI Desktop Programming, C# Socket Programming, Distributed Programming, Basic Electronics (Analog/Digital), Computer Networking, Computer Network Management, Network Security, Databases	

M in g gu Ke	Planned Final Capability (Sub- CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Understanding the concept and architecture of IoT	• Device Constraints (Microcontroller Units, sensors, actuators) • Edge Computing • Cloud Computing	• Lecture • Discussion	6 x 45”			• Able to understand the concept and architecture of IoT and its supporting components	**3%**
2	• microcontrollers	• Board introduction and pin definition • MCU Input-Output • ADC-DAC (Analog to Digital Converter) • Interfacing Protocols (UART, I2C, SPI) • Voltage Divider	• Lecture • Discussion	6 x 45”			• Able to understand MCU (Microcontroller Unit • Able to understand input/output, ADC/DAC (Analog to Digital Converter) and types of interfacing to other devices • Understanding Voltage and Current in best practice	**3%**
3	• Software & hardware installation & configuration support • How to operate the software • Assembling MCU with multiple sensors, actuators and LCD	• Fritzing Designer • Arduino IDE • Visual Studio 2017 Community • Debugging with Serial Monitor • Assembling on the project board: 5 different LEDs,	• Lecture • Practice	6 x 45”			• Have skills in mastering supporting tools • Have skills in assembling components and devices (Device Constraints) • Able to configure MCU (port assignment) • Able to operate programs	**4%**

	• Basic MCU coding and Writing	DHT11, LCD1602, LDR • Added NodeMCU libraries					and write to MCU devices	
4	• Project 1: Implementation of Running LED Program	• Explain how digitalWrite works • Implementation of Running LED Coding • LED simulation development	• Lecture • Pre k tech	6 x 45”	-		• Able to assemble a series of LEDs that are controlled by the program • Able to understand how the HIGH and LOW instructions work on the LED from the MCU • Able to develop running LED applications in other forms	**4%**
5	• Project 2: Implementation of the DHT11 Temperature & Humidity Sensor Program	• Explain how the DHT11 sensor works • Explains how analogRead works • Displays temperature and humidity in degrees and farenheit on the 1602 I2C LCD in real time	• Lecture • Practice	6 x 45”			• Able to understand how the DHT11 temperature and humidity sensor works • Able to make a program to display humidity sensor data to the LCD screen • Able to understand how the temperature and humidity program works	**4%**
6	• Project 3: Implementation of the LDR Light Sensor Program	• Explain how the LDR light sensor works • Calculates and displays the light intensity received by the LDR sensor analogously • Displays temperature and humidity values to the I2C LCD screen	• Lecture • Practice	6 x 45”			• Able to understand how the LDR light sensor works • Able to make a program to display LDR light sensor data to the LCD screen • Able to make a simple classification program for the intensity of light	**4%**

		• Makes a description classification on the LCD: “Dark”, “Dim”, “Bright”					received by the sensor into "Dark", "Dim", "Bright" information • Able to understand how the light intensity program works	
7	• Project 4: Implementation of Ultrasonic Sensor Program	• Describes the distance calculation process based on waves sent and received • Displays the distance between the obstacle with ultrasonic to the I2C LCD screen in cm and inches	• Lecture • Practice	6 x 45”			• Able to understand how the ultrasonic sensor works • Be able to understand how to calculate the distance between the obstacle and the ultrasonic sensor based on the wave signal sent and received • Able to make a program to calculate the distance between the obstacle and the sensor in units of cm and inches which is displayed on the I2C LCD screen	**4%**
8	• Project 5: Implementation of the RFID Program	• Explain how the RFID card works and its frequency • Reads RFID card ID TAG • Turns on the LED if an RFID TAG is registered in the program • Displays the description of "Registered Card" and "Rejected Card" for each card read	• Lecture • Practice	6 x 45”	-		• Able to understand how the RFID sensor works • Able to make a program to read RFID card ID TAG • Able to make a program to detect whether the RFID card has been registered or not • Able to make a program to display “REGISTER” or “NOT REGISTER”	**4%**

		• Develop applications according to the scenario of each working group					information on the LCD screen and instruct the LED to turn on or off when an RFID card is detected	
9	• UTS : • Making Microcontroller Projects	• Create independent projects based on learned sensors • The group is tasked with creating a project scenario	• DemoProjects –	6 x 45”			• Able to understand how the program that has been made works. Proof of UTS project assignments	**10%**
10	• Project 6: Creating a socket client program	• Explain the concept of TCP/IP communication • Explains the concept of the Socket TCP/IP protocol so that the MCU can communicate with other devices • Create a socket client program on the MCU side that is tasked with sending sensor data to the Socket Server C# Desktop GUI in real-time	• Lecture • Practice	6 x 45”			• TCP/IP socket client communication protocol • Able to make communication program between MCU as client socket and computer as server socket with C# • Able to create a program to send sensor data from MCU to computer in real-time with TCP/IP socket communication protocol	**6%**
11	• Project 7: • Create a Socket server program	• Explains how socket servers work as "listening" for all connected client sockets • Explaining the Asyncrounus socket concept with C# • Creating a Socket Server program with GUI C#, Java, Python, etc. to receive MCU sensor data, then display it in	• Lecture • Practice	6 x 45”			• Able to understand TCP/IP socket client communication protocol • Able to make communication program between MCU as server socket and computer as client socket with C# • Able to create programs to	**6%**

		real-time on the socket server side					listen to clients (listening) and receive sensor data from the MCU to the computer in real-time with the TCP/IP socket communication protocol	
12	• Project 8: • Installation and configuration of IoT Local Server with Raspberry Pi 3	• Explains the steps for installing Blynk IoT Server on Raspberry PI 3 • Configuring Blynk Server on Raspberry PI 3	• Lecture • Practice	6 x 45”	-		• Able to install and configure Linux Mate and IoT application Blynk Server on Raspberry Pi 3 • Able to run IoT service Blynk server on Raspberry Pi 3	**6%**
13	• Project 9: Monitoring & Controlling on IoT Local Server	• Installing the Blynk (subscriber) application on mobile devices (Android, IPhone) • Make design and configuration of blynk client (subscriber), adjusted to Device MCU (sensor on publisher) • Displays sensor logger data to the blynk mobile application • Controlling the MCU (actuator) of the subscriber blynk client	• Lecture • Practice	6 x 45”			• Able to install and configure Blynk Client on android or iPhone mobile devices • Able to design blynk client interface as a subscriber • Able to display sensor data from MCU (publisher) to blynk client mobile (subscriber) • Able to control MCU from blynk mobile	**6%**
14	• Project 10: Monitoring &	• Registration, configuration and designing dashboard on	• Lecture	6 x 45”			• Able to register and configure public IoT Server	**6%**

	Controlling on IoT Public Server (Cloud IoT)	public IoT Server (https://thinger.io) • Displays MCU sensor data to thinger.io • Controlling MCU actuators from the public IoT server thinger.io	• Practice				(thinger.io or others) • Able to design a dashboard system to display sensor data while controlling the MCU from a public IoT server	
15	• Project 11: • IOT Data Security	• Send encrypted sensor data from MCU side for data security • Displays the results of data that has been encoded to the IoT Server	• Lecture • Practice	6 x 45”			• Able to understand the concept of data encryption in IoT architecture • Able to make a program to encode data on the MCU side that will be sent to the IoT Server • Able to display encoded data on IoT Server side	**6%**
16	• Review and evaluation	• Review and evaluation of the final project as a UAS score that was planned at the beginning of the 10th meeting	• Lecture • Demo projects	6 x 45”			• Able to show the progress of work that has been done	**6%**
17	• UAS: Demo Project IoT	•	• DemoProjects _	6 x 45”			• Able to demonstrate the results of project work	**20%**

6. Image Processing And Computer Vision

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits)/hour**	**SEMESTER**	**DATE. PREPARATION**
Digital Image Processing and Computer Vision	RTI206006	Software Engineering	3 credits / 6 hours	2	February 6, 2021
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Rosa Andrie Asmara, ST., MT., Dr. Eng Cahya Rahmad, ST., M.Kom., Dr. Eng Agung Nugroho Pramudhita, ST, MT Kadek Suarjuna Batubulan, S.Kom., MT Mustika Mentari, S.Kom., M.Kom Milyun Ni'ma Shoumi, S.Kom., M.Kom		Yoppy Yunhasnawa, S.ST., M.Sc.	Imam Fahrur Rozi, ST., MT.	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				

	S8 Internalize academic values, norms, and ethics. **S9** Demonstrate a responsible attitude towards work in the field of expertise independently. **PP1** Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth. **PP2** Mastering ICT product development methods to provide the right solutions through one or more application domains. **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc). **KK4** Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products. **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned. **KU2** Able to demonstrate independent, quality and measurable performance.
	Learning Outcomes Graduates charged to courses (CPL-MK) Able to understand techniques for performing operations on images/images and perform recognition of images/images by applying logical, innovative, quality thinking ; Able to apply techniques to perform operations on images/images and perform recognition of images/images as an appropriate solution through one or more application domains ; Able to apply the use of image operations to solve problems/projects that use image/video data as input data by internalizing academic values, norms, and ethics ;
	Graduate Learning Outcomes that are charged to courses (CPL-MK Sub) - Students are able to create Repositories on Github and Python Notebooks on Google Colaborator (C6) - Students are able to apply how to access pixels in images and how to open image files from personal Google Drive (C3) - Students are able to explain the basics of the OpenCV library in Python and the color channels in OpenCV and their conversion (C2) - Students are able to explain and implement Linear Brightness Transformation, Image Contrast, Inverse Image, Logarithmic Brightness, and types of Grayscale operations using Google Colab (C2, C3) - Students can make Gamma Correction applications (C6) - Students can create image simulations with the specified image depth (C6) - Students can implement denoising using Averaging, image masking using logical operators (C3)

	- Students are able to explain image histograms, histogram equalization, and dithering, and apply them in Python programs (C2, C3) - Students are able to explain the concept of Spatial Filters and several types of Spatial Filters (C2) - Students can create simple filters using available Kernel filters and perform convolution calculations. (C6) - Students are able to explain the concept of Morphology and several Morphology techniques (C2) - Students can make several morphology techniques using Python on Google Colab (C6) - Students are able to explain the concept of thresholding and apply image thresholding in the program (C2, C3) - Students are able to explain the concept of image compression and apply image compression to programs (C2, C3) - Students are able to explain the concept of detection and apply or implement image face detection in programs (C2, C3) - Students are able to implement the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3) - Students are able to explain image processing and computer vision projects that have been developed in groups (C2)
Short Course Descriptions	This course discusses the Understanding of Image, Image Format, Quantization, Histogram, Brightness and contrast point operations, Thresholding, Frame operations, Image blending, Transformation of geometric operations
Learning Materials / Subjects	1. The basics of image processing include image capture, image modeling, and image processing. 2. Introduction to human and computer vision systems, structure of the human eye, adaptation and discrimination of brightness, contrast sensitivity, Weber ratio, Brightness as a function of intensity, mach band patterns, simultaneous contrast, signal time, spatial and spatial temporal, analog and digital, sampling and quantization , image representation, light intensity function. gray level, number of bits and resolution, checkerboard effect and false counting, non-uniform sampling, non-uniform quantization. 3. Image quality improvement: types of image quality improvement techniques, pixel processing, negative images, contrast stretching, thresholding, gray level transformation, gray level slicing, bit plane slicing, histogram equalization, specific equalization histogram, image quality improvement with logical and arithmetic operations. 4. Image filtering: filtering principles, convolution. 5. Noise reduction in images: low pass filter, uniform noise, Gaussian noise, salt n paper noise, speckle noise. 6. Image edge detection: high pass filter, robert operator, prewit operator, sobel operator.

<table>
<tr><td></td><td>7. Color image: color concept, color space, color gamut, and color conversion.
8. Extraction of color features in images: understanding image color features, obtaining color histograms, RGB histograms, HSV histograms, CMYK histograms.
9. Image shape feature extraction: edge detection, projection histogram, angle histogram, LBP, and LTP
10. Morphology: the notion of image morphology, element structure, dilation, erosion, opening, closing, hit or miss transform, thinning.
11. Image recognition application projects with color features or shape features: selecting project themes that can be completed by image processing, creating system block diagrams, performing feature extraction, carrying out the matching process, observing</td></tr>
<tr><td>References</td><td>Main :
19. Rafael C. Gonzales, Richard E. Woods,” Digital Image Processing 3rd edition ”, Prentice Hall, 2010.
Supporters:
1. Rosa Andrie Asmara, " Digital image processing: theory, practice and exercises " , ISBN: 978-602-6695-90-1, Polinema Press 2018
2. Wanasanan Thongsongkrit, “ Lecture Notes Digital Image Processing Chapter 1,2,9 ”, Department of Computer Engineering , Faculty of Engineering, Chiang Mai University
3. Prof. Dr. Aniati Murni, Dina Chahyati, SKom, " Image Processing Lecture Notes ", Fasilkom UI
4. Achmad Basuki, Nana Ramadijanti, Fadilah Fahrul, " Image Processing Practical Module with C# 2012 ", EEPIS-2013
5. Nana Ramadijanti, Achmad Basuki, Fadilah Fahrul, " Image Processing Textbook ", EEPIS-2014</td></tr>
<tr><td>Instructional Media</td><td><table><tr><th>Software :</th><th>Hardware :</th></tr><tr><td>OS - WINDOWS, MS.OFFICE, PHOTOSHOP/GIMP, GOOGLE COLAB , Python</td><td>PCs/Laptops</td></tr></table></td></tr>
<tr><td>Name of Lecturer</td><td>1. Rosa Andrie Asmara, ST., MT., Dr. Eng
2. Cahya Rahmad, ST., M.Kom., Dr. Eng</td></tr>
</table>

	3. Mustika Mentari, S.Kom., M.Kom 4. Milyun Ni'ma Shoumi, S.Kom., M.Kom
Requirements Course	-

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Students are able **to create** Repositories on Github (C6) • Students are able **to create** Python Notebooks in Google Colaborator (C6) • Students are able **to apply** how to access pixels in images (C3)	• Use of Github and Google Colaboratory • Reading and displaying images	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 1** : Create a program to implement reading and how to display images in various	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	By studying the use of Github and Google Colaboratory materials in reading and displaying images students can: • Create Repositories on Github • Creating a Python Notebook in Google Colaborator • Store and access Python Notebook from Google Colaborator • Opening Image Files from Code Python • Accessing pixels in the image	**Criteria:** Scoring criteria rubric **Form of assessment:** • jobsheets practice • Independent task	• Understanding of using Github and Google Colaboratory to read and display imagery • The accuracy of making the program as the implementation of the reading and the procedure for displaying images in several conditions	2 %

			conditions in Python using Google Colab (2 x50') *Offline*					
2	• Student **implement** how to open image files from personal Google Drive (C3) • Capable student _ **explains** the basics of the OpenCV library in Python (C2) • Capable student _ **explain** the color channel in OpenCV and its conversion (C2)	• Use of Numpy and OpenCV • Introduction Image Processing Applications	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module *Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment: Task 2** : Create a program for the implementation of using Numpy and OpenCV on Python with Google Colab based on the case given (2 x50') *Offline*	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	By studying the materials using Numpy and OpenCV students can: 1. Open image files from personal Google Drive 2. Understand the basics of the OpenCV library in Python and how to use it 3. Understanding the color channels in OpenCV and their conversion and usage	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of using Numpy and OpenCV in Python with Google Colab • The accuracy of making the program as an implementation of using Numpy and OpenCV on Python with Google Colab	2 %

3	• Student able to **explain** and **implement** Linear Transformation Brightness using Google Colab (C2, C3) • Students are able to **explain** and **implement** Image Contrast using Google Colab **(** C2, C3) • Student is able understand and **implement** Inverse Image (C2, C3) • Students can explain and **implement** Logarithmic Transformation Brightness (C2, C3) • Students can **explain** and **implement** types of Grayscale operations (C2, C3)	• Operations – Linear Brightness, Contrast, Inverse, Logarithmic Brightness, and Grayscale Image	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module *Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment: Task 3** : Create a program for implementing Simple Image Operations – Linear Brightness, Contrast, Inverse, Logarithmic Brightness, and Grayscale Image in Python with Google	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	By studying simple image operations material students can: 1. Understand and implement Linear Transformation Brightness uses Google Colab 2. Understand and implement Image Contrast using Google Colab 3. Understand and implement Inverse Image 4. Understand and implement Logarithmic Transformation brightness 5. Understand and implement the types of Grayscale operations	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of Simple Image Operations – Linear Brightness, Contrast, Inverse, Logarithmic Brightness, and Grayscale Image • Programming precision as implementation Simple Image Operations – Linear Brightness, Contrast, Inverse, Logarithmic Brightness, and Grayscale Image in Python with Google Colab	2 %

			Colab based on a given case (2 x50') *Offline*					
4	**Quiz 1**		**Form :** Online Lectures (Online) **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 4** : Do multiple choice quiz questions online (2 x50') *Offline*	**1X6X50 ” _**				**10%**
5	● Students can **make** Gamma Correction applications (C6) ● Students can **create** image simulations with the specified image depth (C6) ● Students can **implement** denoising by using	● Arithmetic and Logic Operations ● Gamma Correction ● Image Depth, ○ PSNR, ● Average Denoising,	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions	By studying Arithmetic and Logic operations material students can: 1. Create a Gamma Correction application 2. Create an image simulation with the specified image depth 3. Perform denoising using Averaging 4. Perform image masking using logical operators	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	● Understanding of the concepts of arithmetic and logical operations (Gamma Correction, Image Depth, PSNR, Average Denoising, Image	2 %

	Averaging (C3) ● Students can **implement** image masking using logical operators (C3)	● Image Masking	*Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 5** : Create a program for implementing Arithmetic and Logic operations (Gamma Correction, Image Depth, PSNR, Average Denoising, Image Masking) in Python with Google Colab based on the given cases (2 x50') *Offline*	- Structured task **(2 x50')**			Masking) ● Accuracy of making arithmetic and logical operation programs (Gamma Correction, Image Depth, PSNR, Average Denoising, Image Masking) in Python with Google Colab	
6	● Students are able **to explain** about image histograms and **apply them** in Python programs (C2, C3) ● Students are able **to explain** about	● histograms , ● Histogram Equalization, ● Dithering ●	**Form :** Online Lectures (Online) **Learning methods:** Group discussion	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** →	By studying Histogram, Histogram Equalization, Dithering material students can: 1. Have the ability to implement the creation and calculation of histogram calculations, histogram equalization, image dithering in Python language	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets	● Understanding of the concept of Histogram, Histogram Equalization, Dithering ● The accuracy of making the	2 %

	histogram equalization and **implementing it** in a Python program (C2, C3) ● Students are able **to explain** image dithering and **apply it** in Python programs (C2, C3)		Virtual Practice Digital Module **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment: Task 6** : Create a program histogram, histogram equaliziation, dithering in Python with Google Colab (2 x50') *Offline*	video conferencing, discussions - Structured task **(2 x50')**		● Independent task	program as the implementation of Histogram, Histogram Equalization, Image Dithering in Python with Google Colab	
7	● Students are able to **explain** the concept of Spatial Filter (C2) ● Students can **describe** several types of Spatial Filters (C2) ● Students can **create** simple filters using available Kernel filters and perform convolution calculations. (C6)	● Filter Low Pass Filter, ● High Pass Filter, ● Point detection , ● Line Detection, ● Edge Detection	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module **Learning Resources:** E-learning https://slc.polin	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	By studying the spatial filter students can: 1. Have the ability to implement Spatial Filter methods Low Pass Filter, High Pass Filter, Point Detection, Line Detection, Edge Detection in the program	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets ● Independent task	● understanding about the concept of Spatial Filter Low Pass Filter, High Pass Filter, Point Detection, Line Detection , Edge Detection ● Manufacturing precision program as implementation of Spatial	2 %

			ema.ac.id/spada/ **Assignment:** **Task 7** : Create a program for Spatial Filters Low Pass Filter, High Pass Filter, Point Detection, Line Detection, Edge Detection in Python with Google Colab (2 x50') *Offline*				Filter Low Pass Filter, High Pass Filter, Point Detection, Line Detection, Image Edge Detection in Python with Google Colab	
8	**UTS**		**Form :** Online Lectures (Online) **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Assignment 8** : Do multiple choice UTS questions online	**1X6X50 ” _**				**20%**

			(2 x50') *Offline*					
9	• Students are able to **explain** the concept of Morphology (C2) • Students can **describe** several techniques Morphology (C2) • Students can **create** some morphology techniques using Python on Google Colab . (C6)	• Several image morphology techniques (Erosion, Dilation, Opening, Closing, Top-hat and Bottom-hat Transformation, Skeleton, Thickening)	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module *Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 9** : Create a program for the implementation of the morphology technique in Python with Google Colab based on the case given (2 x50') *Offline*	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	By studying morphology material students can: 1. Have the ability to implement image morphology techniques in Python programs	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	• Understanding of the concept of morphology • Manufacturing precision program as an implementation of image morphology techniques (Erosion, Dilation, Opening, Closing, Top-hat and Bottom-hat Transformation, Skeleton, Thickening) of images in Python with Google Colab	2 %
10	• Students are able to	• Global	**Form :**	1X6X50 ” _	By studying thresholding material students can:	**Criteria:**	• Understanding	2 %

	explain the concept of thresholding • Students are able **to apply** image thresholding in the program (C3)	Thresholding • Object Optimal Thresholding • Optimum Thresholding (Otsu's Mehod) • Local Thresholding with Moving Averages	Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module *Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment: Task 10** : Create a program to implement some thresholding techniques based on the given cases (2 x50') *Offline*	- Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	1. Have the ability to implement various thresholding techniques in the program	Scoring criteria rubric **Form of assessment:** • Practicum worksheets • Independent task	of the concept of image thresholding • Manufacturing precision program as an implementation of several image thresholding techniques in Python with Google Colab	
11	• Student is able **explain** the concept of image compression (C2) • Students are able **to apply** image	• Basic Image Compression • Image compression steps	**Form :** Online Lectures (Online) **Learning methods:**	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos	By studying image compression material students can: 1. Have the ability to implement various image compression techniques in the program	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practicum	• Understanding of the concept of image compression • Understanding of image	2 %

	compression on program (C3)		Group discussion Virtual Practice Digital Module *Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 11** : Create a program for the implementation of several image compression techniques based on a given case (2 x50') *Offline*	- Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**		worksheets ● Independent task	compression steps ● Manufacturing precision program as an implementation of several image compression techniques in Python with Google Colab	
12	● Students are able to **explain** the concept of detection (C2) ● Students are able **to apply** or **implementing** image face detection in the	● Basic Face Detection ● Scanning Aspects in face detection (Distance between eyes, nose width,	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video	By studying face detection material students can: 1. Have the ability to implement image face detection techniques in the program	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practicum worksheets	● Understanding of the concept of face detection ● Understanding of scanning aspects in face detection	2%

	program (C3)	etc.) ● Face detection stages ● Face Detection Method	Practice Digital Module *Problem Based Learning (PBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment: Task 1 2** : Create a program for implementation of face detection based on the given case (2 x50') *Offline*	conferencing, discussions - Structured task **(2 x50')**		● Independent task	● Understanding of face detection steps ● Understanding of face detection methods ● Manufacturing precision program as implementation of face detection in Python with Google Colab	
13	**Quiz 2**		**Form :** Online Lectures (Online) **Learning methods:** *Self Directed Learning (SDL)* **Learning Resources:** E-learning https://slc.polin	**1X6X50 ” _**				**10 %**

			ema.ac.id/spada/ **Assignment:** **Assignment 13** : Do multiple choice quiz questions online (2 x50') *Offline*					
14 -16	Students are able **to implement** the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)	• FinalProject _	**Form :** Online Lectures (Online) **Learning methods:** Group discussion Virtual Practice Digital Module *Project Based Learning (PjBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 1 4-16** : Students in groups make an implementation of image	1X6X50 ” _ - Online (*Online*) **(2 x50') Asynchronous** → learning videos - Online (*online)* **(2 x50') Sync** → video conferencing, discussions - Structured task **(2 x50')**	By creating a project on image processing and computer vision students can: 1. Have the ability to implement applications with image processing techniques and computer vision which have been explained in the previous practicum meeting	**Criteria:** Scoring criteria rubric **Form of assessment:** • Final project application • Final Project Documentation	• understanding making Image processing and computer vision applications use techniques that have been taught in previous meetings	15%

			processing and computer vision from the material that has been taught previously using Python (2 x50') *Offline*					
17	Students are able **to explain** image processing and computer vision projects that have been developed in groups (C2)	**UAS**	**Form :** Online Lectures (Online) **Learning methods:** *Project Based Learning (PjBL)* **Learning Resources:** E-learning https://slc.polinema.ac.id/spada/ **Assignment:** **Task 17** : Students in groups explain an image processing and computer vision project using Python (2 x50') *Offline*	**1X6X50 ” _**				**25 %**

MALANG STATE POLYTECHNIC

INFORMATION TECHNOLOGY DEPARTMENT

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

SUBJECT	CODE	COURSE CULTURE	WEIGHT (credits)/hour	SEMESTER	DATE. PREPARATION
Framework Based Programming	RTI206007	Software Engineering	3 credits / 6 hours	6 (six)	06 February 2021

AUTHORIZATION	RPS Developer Lecturer	MMK Coordinator	Ka PRODI
	Habibie Ed Dien, S. Kom., MT Dimas Wahyu Wibowo.,ST,MT Meyti Eka Apriyani, ST., MT Candrasena Setiadi, ST., M.MT	**Yoppy Yunhasnawa, S.ST., M.Sc.**	Imam Fahrur Rozi, ST., MT.

Learning Achievement (CP)

Learning Outcomes of Study Program Graduates (CPL-Prodi)

- **S8** Internalize academic values, norms, and ethics.
- **S9** Demonstrate a responsible attitude towards work in the field of expertise independently.
- **PP2** Mastering ICT product development methods to provide the right solutions through one or more application domains.
- **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
- **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
- **KU2** Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

	Mastering modern javascript concepts to provide appropriate solutions through web-based application domains; Mastering the use of the ReactJS framework, calling API, react router, using redux, firebase, Laravel backend by applying logical, innovative, quality thinking, and paying attention to academic ethics. **Graduate Learning Outcomes that are charged to courses (CPL-MK Sub)** - Students can explain the concept of modern javascript (C2) - Students can create variables and other parameters (C6) - Students can explain ReactJS concepts and create projects using ReactJS (C2, C6) - Students are able to describe concepts , components , and interactions in reactJS (C2) - Students are able to install reactrouter (C3) - Students can explain the concept of reactrouter and state management in redux (C2) - Students can apply redux in reactapp (C3) - Students can explain the concept of redux in reactApp and State management with context API (C2) - Students are able to create case studies (C6) - Students know and can explain the concept of Global API and firebase (C2) - Students can create their own firebase (C6) - Students know and are able to explain the concept of redux thunk in projects , as well as the concept of firebase (C2) - Students can create CRUD on firebase (C6) - Students are able to explain and install laravel (C2, C6) - Students are able to explain the concept of validation in Laravel , as well as the combination of React and Laravel - Students are able to explain and implement reactJS in large assignments (C2, C3)
Short Course Descriptions	Framework-Based Programming Course is a course that is expected to provide knowledge and skills in creating web applications using the ReactJS framework, firebase, and the Laravel backend.

Learning Materials / Subjects	1. Introduction to Modern JavaScript 2. Understand Frontend Development using the ReactJS Javascript Framework 3. Understand making Backend using the Laravel Framework 4. Understand the creation of a Management Information System using the ReactJS frontend and Laravel backend	
References	**Main :** 1. Frank Zammetti. 2020. Full-Stack Development Using TypeScript, React, Node.js, Webpack, and Docker. Apress. **Supporters:** 1. Jason Beaird, The principles of Beautiful Web Design 2. Rian Ariona, Learn HTML and CSS (Fundamental Tutorial on learning HTML and CSS) 3. Adi Hadisaputra, HTML and CSS Fundamentals from Roots to Leaves 4. John Duckett, HTML and CSS design and build websites 5. Glenn Johnson, Programming in HTML 5 with Javascript and CSS 3 6. Desrizal, Javascript Guide 7. Tutorials Point Simply Easy Learning, Java Script Language 8. Jonathan Caffer and Karl Swedberg, Learning Jquery 1.3 (Better Interaction Design and Web development with simple Jawa Script Techniques) 9. Andre Pratama, PHP Uncover – PHP Learning Guide for beginners 10. Endy Muhardin, PHP Programming Fundamentals and MySql Fundamentals 11. Bootstrap Tutorial (Simply Easy Learning by Tutorials.com)	
Instructional Media	**Software :**	**Hardware :**
	Visual Studio Code, XAMPP, browser, ReactJS, Node.js, NPM, Git, Laravel	PCs/Laptops
Name of Lecturer	Habibie Ed Dien, S. Kom., MT Dimas Wahyu Wibowo.,ST,MT Meyti Eka Apriyani, ST., MT Candrasena Setiadi, ST., M.MT	
Requirements Course	Mobile Programming	

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Weigh t (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	• Student can **explain** the concept of modern javascript (C2) • Students can create variables and other parameters (C6)	• ModernJavaScript _ • Creating variables using const • Creating variables using let • Template strings • Default parameters • Arrow functions • Arrow function and this keyword • Destructuring objects • Destructuring an array • Restructuring • Spread and rest operators	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion of *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 1** : Create a simple javascript program with variables and parameters (1x50') *Offline*	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create other variables and parameters 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** • Practice • jobsheet tasks	• Ability implementing modern concepts of Javascript • Accuracy in completing practicum jobsheet assignments	1,8

		● Classes constructor and super						
2	● Students can **explain** ReactJS concepts and **create** projects using ReactJS (C2, C6)	● Introduction to ReactJS ● Simple components ● Add react to existing projects ● Create react with create react app	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion of *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 2** : Create a Hello World project with ReactJS (1x50') *Offline*	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create a new project using ReactJS 2. Implements Javascript concepts for ReactJS	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement ReactJS ● Accuracy in completing practicum jobsheet assignments	1,8
3	● Students are able **to describe** concepts and components in reactJS (C2)	● Stateless component & statefull component ● Dynamic components use props	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion of	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran	By studying this material students can: 1. Creating simple components with ReactJS 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement components in ReactJS ● Accuracy in completing practicum jobsheet	1,8

		● Parent update by child component ● Lifecycle components 1 & 2	*Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 3** : Create a simple component with ReactJS (1x50') *Offline*	- Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**			assignments	
4	● Students are able **to explain** the concept of interaction in in reactJS (C2)	● Interaction with the calling api (get) backend ● Interaction with the summon api backend (fake api) ● Interaction with the calling api backend (delete) ● Interaction with the calling api backend (post) ● Interaction with the invoking api (put) backend	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion of *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 4** : Create API interaction with ReactJS	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create API interactions with ReactJS 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement API with ReactJS ● Accuracy in completing practicum jobsheet assignments	1,8

			(1x50') *Offline*					
5	● Students are able **to** install reactrouter (C3) ● Students can **explain** the concept of reactrouter (C2)	● Introduction to how to install react router ● Switch between pages with react router ● Tidy up the folder structure and rename browserrouter ● Sending params to the react router detail page	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Problem Based Learning (PBL)* group discussions **Learning Resources:** E-learning lms.polinema.ac .id **Assignment: Task 5** : Create a simple application with react router using a specific case study (1x50') *Offline*	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create a simple application with react router 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement react router ● Accuracy in completing practicum jobsheet assignments	1,8
6	● Students can **explain** the concept of state management in redux (C2)	● Introduction of state management using redux or context ● Understand the concept of redux (create	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion of	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran	By studying this material students can: 1. Making state management in redux and reactapp 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement state management in redux and reactapp ● Accuracy in completing practicum	1,8

	● Students can **apply** redux in reactapp (C3)	store & reducers) ● Understand the concept of redux (dispatch & subscription) ● Redux implementation in react app (setup, createStore, reducer)	*Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 6** : Make state management in redux and reactapp (1x50') *Offline*	- Online (*online)* **(3x50')** **Sync**→ video conference, diskusi - Structured tasks **(2x50')**			jobsheet assignments	
7	● Students can **explain** redux concept in reactApp and State management with context API (C2)	● Redux implementation in react app (provider, connect) ● Deployment of redux on reactApp (reducer separation) ● State management with context API (consumer) ● Refactoring Context API with HOC-Context	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Problem Based Learning (PBL)* group discussions **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:**	1X6X50” - Online (*Online*) **(1x50')** **Asynchronous** → video pembelajaran - Online (*online)* **(3x50')** **Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create state management with API context 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement state management with context API ● Accuracy in completing practicum jobsheet assignments	1,8

			Task 7 : Create state management with context API using specific case studies (1x50') *Offline*					
8	Students are able **to create** case studies (C6)	**UTS** Evaluation on modernJS, reactJS, reactJS and redux components	Practicum Exam **Learning methods:** *Problem Based Learning (PBL)* **Assignment:** **Task 8** : Implement a case study by leveraging the concepts of modernJS, reactJS, reactJS and redux components	1X6X50”	**UTS**	**Criteria:** Scoring criteria rubric **Form of assessment:** Practicum Exam	**UTS**	20
9	Students know and can **explain** the concept of Global API (C2)	● Global API services (GET) ● Global API Service (post) ● Global api service (put & delete) ● React hooks Introduction and implementation	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Problem Based Learning (PBL)* group	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video	By studying this material students can: 1. Build a simple app using react hooks and global API 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement react hooks and global API ● Accuracy in completing practicum jobsheet assignments	1,8

		● React hooks side effects or life cycle hooks	discussions **Learning Resources:** E-learning lms.polinema.ac .id **Assignment:** **Task 8** : Create a simple application with react hooks and global API using a specific case study (1x50') *Offline*	conference, diskusi - Structured tasks **(2x50')**				
10	● Students know and are able **to explain** the concept of firebase (C2) ● Students can **create** their own firebase (C6)	● Create a firebase project ● Firebase integration with reactjs project ● The registration/sign up process uses Firebase ● Setup redux on the project	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Problem Based Learning (PBL)* group discussions **Learning Resources:** E-learning lms.polinema.ac .id	1X6X50” - Online (*Online*) **(1x50')** **Asynchronous** → video pembelajaran - Online (*online)* **(3x50')** **Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create a react web application with firebase 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement react js with firebase ● Accuracy in completing practicum jobsheet assignments	1,8

			Assignment: **Task 9** : Create a react web application with firebase using a specific case study (1x50') *Offline*					
11	Students know and are able **to explain** the concept of redux thunk in projects (C2)	● Setup redux thunk on the project ● Login using firebase ● Get to know callbacks, promises, and async/await in javascript	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion of *Self Directed Learning (SDL)* **Learning Resources:** E-learning lms.polinema.ac .id **Assignment:** **Task 10** : Make login with react and firebase async (1x50') *Offline*	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create a login page with react and firebase in async 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement async with react and firebase ● Accuracy in completing practicum jobsheet assignments	1,8
12	● Student is able **explain** the	● Post/create to firebase database	**Form :** Lectures , tutorials, and practicum	1X6X50” - Online (*Online*)	By studying this material students can: 1. Creating CRUD operations from	**Criteria:** Scoring criteria rubric	● Ability to implement CRUD	1,8

	concept of firebase (C2) ● Students can **create** CRUD on firebase (C6)	● Get/Read firebase database + react js localStorage ● Put/Update firebase database ● Delete firebase databases ● How to setup eslint in javascript and react js	**Learning methods:** *Problem Based Learning (PBL)* group discussions **Learning Resources:** E-learning lms.polinema.ac .id **Assignment:** **Task 11** : Create CRUD operations from firebase in ReactJS using a specific case study (1x50') *Offline*	**(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	firebase in ReactJS 2. Implement Javascript concepts to complete the case study	**Form of assessment:** ● Practice ● jobsheet tasks	operations from firebase in ReactJS ● Accuracy in completing practicum jobsheet assignments	
13	Students are able to **explain** and **install** laravel (C2, C6)	Laravel Introduction and Installation, Creation of CRUD in Laravel, Login in Laravel	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Problem Based Learning (PBL)* group discussions	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi	By studying this material students can: 1. Creating CRUD operations with the Laravel backend 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement CRUD operations with the Laravel backend ● Accuracy in completing practicum jobsheet assignments	1,8

			Learning Resources: E-learning lms.polinema.ac.id **Assignment:** **Task 12** : Create CRUD operations with the Laravel backend using a specific case study (1x50') *Offline*	- Structured tasks **(2x50')**				
14	Students are able to explain the concept of validation in laravel	Validation In Laravel, Restful API in Laravel	**Form :** Lectures , tutorials, and practicum **Learning methods:** Group discussion Case study **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 13** : Create validation and Restful API in Laravel	1X6X50” - Online (*Online*) **(1x50')** **Asynchronous** → video pembelajaran - Online (*online)* **(3x50')** **Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Creating a validation and Restfull API in Laravel 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement validation and Restful API in Laravel ● Accuracy in completing practicum jobsheet assignments	1,8

			(1x50') *Offline*					
15	Students are able to **explain** the concept of a combination of React and Laravel (C2)	React + Laravel + MySQL - How to Build a CRUD Todo List App	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Problem Based Learning (PBL)* group discussions **Learning Resources:** E-learning lms.polinema.ac .id **Assignment: Task 14** : Create a simple Todo List application with React and Laravel (1x50') *Offline*	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(3x50') Sync**→ video conference, diskusi - Structured tasks **(2x50')**	By studying this material students can: 1. Create a simple Todo List application with React and Laravel 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement React frontend and Laravel backend ● Accuracy in completing practicum jobsheet assignments	1,8
16	Students are able to **explain** and **implement** reactJS in large assignments (C2, C3)	Final project	**Form :** Lectures , tutorials, and practicum **Learning methods:** *Project Based Learning (PjBL)* group	1X6X50” - Online (*Online*) **(1x50') Asynchronous** → video pembelajaran - Online (*online)* **(1x50')**	By studying this material students can: 1. Create web applications using ReactJS 2. Implement Javascript concepts to complete the case study	**Criteria:** Scoring criteria rubric **Form of assessment:** ● Practice ● jobsheet tasks	● Ability to implement the ReactJS framework ● Accuracy in completing practicum jobsheet assignments	30

			discussions **Learning Resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 15** : Create a web application with a specific case study (1x50') *Offline*	**Sync**→ video conference, diskusi - Structured tasks **(4x50')**				
17	UAS	• ReactJS • Firebase • Redux	Practice Exams **Learning methods:** *Project Based Learning (PjBL)* **Assignment:** **Task 1 6** : Create a web application with a specific case study (1x50') *Offline*	1X6X50”		**Criteria:** Scoring criteria rubric **Form of assessment:** Practicum Exam	The accuracy of implementing the ReactJS framework in a web application	25

7th semester

Industrial Internship 1

Industrial Internship 2

Thematic KKN

Teaching in schools

Study

Entrepreneurial Activities 1

Independent Project 1

Humanity Project

Semester 8

1. **Thesis (YET)**

Career development

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
SEMESTER LEARNING PLAN (RPS)					
SUBJECT	**CODE**	**COURSE CULTURE**	**WEIGHT (credits) / hour**	**SEMESTER**	**DATE. PREPARATION**
Career development	RTI198002	**GENERAL COURSES (P)**	**2 credits/4 hours/week**	**8**	**August 22, 2021**
AUTHORIZATION	**RPS Developer Lecturer**		**MMK Coordinator**	**Ka PRODI**	
	Atiqah Nurul Asri, S.Pd., M.Pd. **Deddy Kusbianto PA, Ir., M.Mkom.** **Qonitatul Hasanah, S.ST, M.Tr.T** **Rizdania ST., MKom.** **Vit Zuraida, S.Kom., M.Kom.** **Adevian Fairuz Pratama, S.ST, M.Eng** **Diana Mayangsari Ramadhani, S.ST, M.Tr.T**		**Deddy Kusbianto PA, Ir., M.Mkom.**	**Imam Fahrur Rozi, ST., MT.**	
Learning Achievement (CP)	**Learning Outcomes of Study Program Graduates (CPL-Prodi)**				
	1. S8: Internalize academic values, norms, and ethics. 2. S9: Demonstrate a responsible attitude towards work in the field of expertise independently. 3. KK1: Able to apply mathematics and basic engineering in the field of software development (desktop, web and mobile), computer networks and other ICT fields according to defined needs. 4. KK2: Able to transform problem solving models into algorithms and transform algorithms into source programs with the latest				

	programming languages according to the technology platform required in the Software Requirements Specifications (SRS). 5. KU1: Able to complete a broad scope of work through the development of application software by applying a variety of appropriate methods, both standard and unfinished. 6. KU2: Able to demonstrate quality and measurable performance. 7. KU3: Able to prepare accurate and valid process and results reports and communicate them effectively to other parties who need them. 8. KU4: Able to work together, communicate, and innovate in their work. 9. KU5: Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers under their responsibility.
	Learning Outcomes Graduates charged to courses (CPL-MK) Understand, identify, and categorize a career according to the stages in Career Development theory, and be able to apply and implement it to themselves
Short Course Descriptions	This course aims to make students understand Career Development, namely that individuals who enter the world of work need to manage and develop their careers appropriately so that they can achieve career satisfaction and success. Students are also expected to be able to apply the theory of Career Development through the practice of discussing and categorizing careers through individual projects.
Learning Materials / Subjects	1. Personal Branding 2. Informatics Profession 3. Career in Organization 4. Career of a Freelancer 5. Career Management 6. Public Speaking 7. Career Planning 8. Career Development 9. John Holland's Career Orientation Theory 10. Edgar Schien's Career Anchor Theory 11. Protean Career 12. Careers in the Industrial Age 4.0 13. Internationalization of Career

	14. Managerial Cultural Differences Between Countries
References	**Main :** Widyanti, R. (2021). Career Management (Theory, Concept and Practice). Indonesian Science Media. **Supporters:** Sinambela, LP (2021). Human Resource Management: Building a solid work team to improve performance. Script Earth.
Instructional Media	**Software :** Microsoft Office, LMS, WA, and Zoom **Hardware :** Gadgets, Laptops, Wifi Networks
Name of Lecturer	**Deddy Kusbianto PA, Ir., M.Mkom.** **Qonitatul Hasanah, S.ST, MT.Tr.** **Rizdania ST., MKom.** **Vit Zuraida, S.Kom., M.Kom.** **Adevian Fairuz Pratama, S.ST, M.Eng** **Diana Mayangsari Ramadhani, S.ST, M.Tr.T**
Requirements Course	1. Communication Studies in Organizations 2. Information Technology Concept

Week	Planned Final Capability (Sub-CP-MK)	Study material (Learning materials)	Learning Forms and Methods	Estimated time	Student Learning Experience	Assessment Criteria & Forms	Assessment Indicator	Rating Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	1) Get to know the goals, processes and outputs and outcomes of the course 2) Able to explain the importance of Personal Branding and how to apply it to themselves	1) Definition of Personal Branding 2) How to apply to themselves as needed	Lectures, Questions and Answers, Discussions, Assignments	1x4x45	- Answer Personal Branding issues for themselves	- Accuracy of explanation - Task completion speed	- Objectivity and relevance of explanation - Novelty of ideas and ideas	**3 %**

	according to their potential and needs							
2	Able to explain the various professions in the field of informatics and able to choose the most suitable for himself	1) Variety of informatics professions 2) IT Profession Standardization 3) IT professional level	Lectures, Literature studies, Discussions, Assignments	1x4x45	- Responding to the need for choosing the right profession and expertise related to informatics competencies that must be pursued and mastered	- Accuracy of explanation - Task completion speed	- The accuracy of students explaining related to the choice of profession that will support their future career development	**2 %**
3	● Understand the rules of career development in organizations ● Able to find problems and formulate solutions of career development for himself in accordance with organizational rules	1) Career development rules in organizations 2) Various choices of informatics professions that are appropriate and in line with organizational rules	Lectures, Questions and Answers, Discussions, Assignments	1x4x45	- Responding to the need for choosing the right profession and expertise related to informatics competencies that must be pursued and mastered and in accordance with the	- Accuracy of explanation - Creativity - Task completion speed	- The accuracy of students explaining related to the choice of profession that will support their career development in the organization	**3 %**

					organization that oversees them			
4	Able to find problems and formulate solutions for career development for himself as a freelancer according to his potential and competence	1) Variety of freelance professions 2) Terms and provisions to become a freelancer	Lectures, Literature studies, Discussions, Assignments	1x4x45	- Responding to the need for choosing the right profession and expertise related to informatics competencies that must be taken and mastered to become a freelancer	- Accuracy of explanation - Creativity - Task completion speed	- The accuracy of students explaining related to the choice of competencies that will support their career development as a freelancer	**2 %**
5	Understand the stages in career management (career exploration, career goals, career strategies, career assessment)	1. Career exploration 2. Career Goals 3. Career Strategy 4. Career Assessment	Lectures, questions and answers, discussions, assignments	1x4x45	- Answering questions about how students explore themselves and their environment, the desired end result, a series of activities to	- Accuracy of explanation - Creativity - Task completion speed	- The accuracy of students in exploring themselves and their environment, the desired end result, a series of activities to achieve goals, and get feedback.	**2%**

					achieve goals, and get feedback.			
6	● Understand the method of public speaking ● Know the basics of public speaking ● Understand the benefits of public speaking in a career	1. The public speaking method 2. The basics of public speaking 3. The benefits of public speaking	Lectures, Discussions, Assignments	1x4x45	- Answering the question of how students know the methods, basics and benefits of public speaking in a career.	- Accuracy of explanation - Creativity - Task completion speed	- The accuracy of students explaining related methods, basics and benefits of public speaking in a career.	**3%**
7	● Understand the basic concept of career planning ● Understand the purpose and benefits of career planning ● Understand the career planning cycle ● Understand the role of the organization in individual career planning	1. The basic concept of career planning 2. Purpose and benefits of career planning 3. Career planning cycle 4. The role of organization in individual career planning	Lectures, discussions, assignments	1x4x45	Answering the question of how students know the concepts, goals, and benefits of career planning and the role of organizations in individual career planning	- Accuracy of explanation - Creativity - Task completion speed	- Student creativity in explaining future career planning	**2%**
8	UTS	Evaluation	Written Exam	1x2x45	-	-	-	**30 %**
9	● Understand the goals and benefits of career development	1. Career development goals and benefits	Lectures, discussions, assignments	1x4x45	Answering the question of how students know the goals,	- Accuracy of explanation - Creativity	- Student creativity in explaining	**3%**

	● Understand employee demands regarding career development ● Career development stage ● Career development models ● Career development program	2. Employee demands regarding career development 3. Career development stage 4. Career development models 5. Career development program			benefits, stages, models, and career development programs	- Task completion speed	future career development	
10	● Understand the basic theory of Holland's concept ● Understanding the characteristics of Holland's theory ● Understand the strengths and weaknesses of Holland's theory	1) John Holland's career selection theory (RIASEC) 2) The characteristics of Holland's theory 3) The strengths and weaknesses of John Holland's theory 4) Research research on John Holland's theory 5) The application of John Holland's theory to the	Lectures, discussions, assignments	1x4x45	- Answering the question of how students know the basic concepts, kinds of characteristics and strengths and weaknesses of John Holland's theory in choosing a career according to personality.	- Accuracy of explanation - Creativity - Task completion speed	- The student's accuracy in explaining John Holland's orientation theory	**2%**

		application of career counseling guidance						
11	● Understand the basic concepts of Edgar Schien ● Understanding Edgar Schien's anchor theory ● Understand how to apply Edgar Schien's anchor theory	1) The basic theory of Edgar Schien's concept 2) 8 Schien's anchor theory 3) How to apply anchor theory to prepare a career development plan	Lectures, discussions, assignments	1x4x45	- Answering the question of how students know the basic concepts, Schien's anchor theory and its application.	- Task completion speed	- The accuracy of students explaining related to Edgar Schien's anchor theory	**3%**
12								
13		1)				-	-	
14		1)				-	-	
15		1)				-	-	
16	UAS	Evaluation	Written Exam	1x2x45	-	-	-	**35 %**
17	Remedy	Revision		1x4x45	-	-	-	-

Industrial Internship 3

Entrepreneurial Activities 2

Independent Project 2

Appendix 3 Course Assessment Plan

ASSESSMENT AND EVALUATION PLAN
SOFTWARE TESTING

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students understand the importance of software testing • Students understand when implementing software testing • Students understand various software approaches	Introduction • Explanation of Tasks / Project • Lecture Contract Explanation • Explanation of Assessment • Syllabus Explanation Explanation of software testing	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	• Students are able to understand various software approaches Students are able to distinguish between white box, black box and gray box approaches	Overview of the types of software testing, including: • White box • Black box Gray box	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	• Students are able to understand the benefits of the white box approach • Students are able to understand how to do testing with a white box approach Students are able to define various techniques in the white box approach	White Box techniques	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	• Students are able to understand the benefits of the black box approach • Students are able to understand how to do testing with a black box approach • Students are able to define various techniques in the black box approach	Black Box techniques	• Oral test • UTS (8 questions) • UAS (2 questions)	
6	• Students are able to understand the standard provisions of planning documents related to software testing • Students are able to make document test plans	Test Plan document	• Oral test • UTS (8 questions) • UAS (2 questions)	

7	• Students are able to define a test scenario on the software to be tested	Test Scenario document	• Oral test • UTS (8 questions) • UAS (2 questions)	
8	**UTS**			
9	• Students are able to define test cases for each test scenario based on real case studies. • Students are able to distinguish between test cases intended for successful conditions and failed conditions. • Students are able to define the requirements needed to execute each test case.	Test case document	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 7: % Task 8: % Task 9: % Task 10: % Task 11: % Task 12: % Quiz 2: % U A S: %
10	• Students understand the concept of bug reporting. • Students are able to understand the elements in the bug reporting document. • Students are able to create bug reporting documents.	Bug reports and bug report documents	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
11	• Students understand the concept of testing metrics • Students are able to implement testing metrics in the software testing process	Testing metrics 1. Percentage test cases executed 2. Passed test case percentages 3. Failed test case percentage 4. Blocked test case percentage. 5. Number of tests run per time period	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
12	• Students understand the concept of automatic testing in software testing • Students know the preparations that must be made before carrying out automatic testing. • Students are able to distinguish the use of automatic testing tools in software testing using white box testing and black box testing methods.	Automatic testing concept	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
13	**Quiz 2**			

14	• Students are able to apply test scenarios and test cases that have been made in automatic testing tools	Implementation of automatic testing tools using Selenium / Cypress	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	• Students are able to make a test report using an automatic testing tool	Testing report using automatic testing	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	• Students understand the concept of User Acceptance Testing	User Acceptance Testing	• Oral test • UTS (6 questions) • UAS (2 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Software Testing				
CODE	RTI204002	**WEIGHT (credits) / hour**	2	**SEMESTER**	5
SUPPORTING LECTURER	M. Afif Hendrawan S.Kom., M.Kom.				

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

- Students understand the importance of software testing
- Students understand when implementing software testing
- Students understand various software approaches
- Students are able to understand various software approaches
- Students are able to distinguish between white box, black box and gray box approaches
- Students are able to understand the benefits of the white box approach
- Students are able to understand how to do white box testing
- Students are able to define various techniques in the white box approach

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 4	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Myers, GJ; Sandler, C. & Badgett, T. (2012), *The art of software testing* , John Wiley & Sons , Hoboken and NJ	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Software Testing				
CODE	RTI204002	**WEIGHT (credits) / hour**	2	**SEMESTER**	5
SUPPORTING LECTURER	M. Afif Hendrawan S.Kom., M.Kom.				

ASSESSMENT FORMS

UTS

ASSESSMENT TITLE

UTS

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to understand the benefits of the black box approach
- Students are able to understand how to do black box testing
- Students are able to define various techniques in the black box approach
- Students are able to understand the standard provisions of planning documents related to software testing
- Students are able to make document test plans
- Students are able to define test scenarios on the software to be tested

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 8	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Myers, GJ; Sandler, C. & Badgett, T. (2012), *The art of software testing* , John Wiley & Sons , Hoboken and NJ	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Software Testing				
CODE	RTI204002	**WEIGHT (credits) / hour**	2	**SEMESTER**	5
SUPPORTING LECTURER	M. Afif Hendrawan S.Kom., M.Kom.				

ASSESSMENT FORMS

Quiz 2

ASSESSMENT TITLE

Quiz 2

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to define test cases for each test scenario based on real case studies.
- Students are able to distinguish between test cases intended for success and failure conditions.
- Students are able to define the requirements needed to execute each test case.
- Students understand the concept of bug reporting.
- Students are able to understand the elements in the bug reporting document.
- Students are able to make bug reporting documents.
- Students understand the concept of testing metrics
- Students are able to implement testing metrics in the software testing process
- Students understand the concept of automatic testing in software testing
- Students know the preparations that must be made before carrying out automatic testing.
- Students are able to distinguish the use of automatic testing tools in software testing using white box testing and black box testing methods.

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 13	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Myers, GJ; Sandler, C. & Badgett, T. (2012), *The art of software testing* , John Wiley & Sons , Hoboken and NJ	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Software Testing				
CODE	RTI204002	**WEIGHT (credits) / hour**	2	**SEMESTER**	5
SUPPORTING LECTURER	M. Afif Hendrawan S.Kom., M.Kom.				

ASSESSMENT FORMS

UAS

ASSESSMENT TITLE

UAS

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to apply test scenarios and test cases that have been made in automatic testing tools
- Students are able to make test reports using automatic testing tools
- Students understand the concept of User Acceptance Testing

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course

IMPLEMENTATION SCHEDULE

Week 17	30 minutes

OTHERS REQUIRED:
REFERENCES
Myers, GJ; Sandler, C. & Badgett, T. (2012), *The art of software testing* , John Wiley & Sons , Hoboken and NJ

ASSESSMENT AND EVALUATION PLAN

Project 1

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to understand the concepts and terminology of software development projects Students are able to understand the roles and functions of each personnel associated with the project	Project and project management concepts and terminology Personnel in project management Sample software project	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	Students are able to understand processes in software project management	5 Processes in project management 10 Project management knowledge areas	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	Students are able to understand integration management 1	Good integration management Making Project Charters Creating a Project Management Plan	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	Students are able to understand integration management 2	Direction and arrangement of project work Project monitoring and controlling Project closing	• Oral test • UTS (8 questions) • UAS (2 questions)	
6	Students are able to understand scope management	Process in scope management WBS	• Oral test • UTS (8 questions) • UAS (2 questions)	
7	Students are able to understand about time management (time management)	Process in time management Network Diagrams Gantt Chart	• Oral test • UTS (8 questions) • UAS (2 questions)	
8	**UTS**			
9	Students are able to understand about cost management (cost management)	The importance of cost management Process in cost management	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 7: % Task 8: % Task 9: % Task 10: %

				Task 11: % Task 12: % Quiz 2: % U A S: %
10	Students are able to understand about quality management (quality management)	The importance of quality management Process in quality management Tools and techniques in quality control	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
11	Students are able to understand about human resource management (human resource management)	The importance of human resource management Processes in human resource management Tools and techniques in human resource management	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
12	Students are able to understand about communication management (communication management)	The importance of good communication management Process in communication management Methods for improving communication within projects	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
13	**Quiz 2**			
14	Students are able to understand stakeholder management	The importance of stakeholder management Process in stakeholder management	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	Students are able to understand risk management	The importance of risk management Process in risk management Risk identification	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	Students are able to understand procurement management	The importance of procurement management Process in procurement management	• Oral test • UTS (6 questions) • UAS (2 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Project 1				
CODE	RTI204002	**WEIGHT (credits) / hour**	3	**SEMESTER**	4
SUPPORTING LECTURER	Deddy Kusbianto PA, Ir., M.Mkom.				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					

S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
S6	Working together and having social sensitivity and concern for society and the environment.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).

DESCRIPTION
Solve the problems given by the lecturer
WORKING METHOD
1. Define the problem 1. Looking for the best solution 2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id
OUTER FORMAT
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE
30 minutes
OTHERS REQUIRED:
REFERENCES
5. Study Program Committee, 2013, Project Implementation and Reporting Guidelines, Level II Project Implementation Guidelines, Polynema, Malang. 6. Santoso, Nurudin, 2007, Project Management, Teaching Module, Polynema, Malang. 7. Santoso, Nurudin, 2007, Project Management Practicum, Teaching Module, Polynema, Malang. 8. Sprague, RH and McNurlin, BC , 2002, Information Systems Management in Practice, 5th edition, Prentice-Hall.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Project 1				
CODE	RTI204002	**WEIGHT (credits) / hour**	3	**SEMESTER**	4
SUPPORTING LECTURER	Deddy Kusbianto PA, Ir., M.Mkom.				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					

S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
S6	Working together and having social sensitivity and concern for society and the environment.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).

DESCRIPTION	
Solve the problems given by the lecturer	
WORKING METHOD	
1. Define the problem 1. Looking for the best solution 2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
	30 minutes
OTHERS REQUIRED:	
REFERENCES	
9. Study Program Committee, 2013, Project Implementation and Reporting Guidelines, Level II Project Implementation Guidelines, Polynema, Malang. 10. Santoso, Nurudin, 2007, Project Management, Teaching Module, Polynema, Malang. 11. Santoso, Nurudin, 2007, Project Management Practicum, Teaching Module, Polynema, Malang. 12. Sprague, RH and McNurlin, BC , 2002, Information Systems Management in Practice, 5th edition, Prentice-Hall.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Project 1				
CODE	RTI204002	**WEIGHT (credits) / hour**	3	**SEMESTER**	4
SUPPORTING LECTURER	Deddy Kusbianto PA, Ir., M.Mkom.				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					

S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
S6	Working together and having social sensitivity and concern for society and the environment.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).

DESCRIPTION
Solve the problems given by the lecturer
WORKING METHOD
1. Define the problem 1. Looking for the best solution 2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id
OUTER FORMAT
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE
30 minutes
OTHERS REQUIRED:
REFERENCES
13. Study Program Committee, 2013, Project Implementation and Reporting Guidelines, Level II Project Implementation Guidelines, Polynema, Malang. 14. Santoso, Nurudin, 2007, Project Management, Teaching Module, Polynema, Malang. 15. Santoso, Nurudin, 2007, Project Management Practicum, Teaching Module, Polynema, Malang. 16. Sprague, RH and McNurlin, BC , 2002, Information Systems Management in Practice, 5th edition, Prentice-Hall.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Project 1				
CODE	RTI204002	**WEIGHT (credits) / hour**	3	**SEMESTER**	4
SUPPORTING LECTURER	Deddy Kusbianto PA, Ir., M.Mkom.				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					

S5	Respect the diversity of cultures, views, religions and beliefs, as well as the opinions or original findings of others.
S6	Working together and having social sensitivity and concern for society and the environment.
PP2	Mastering ICT product development methods to provide the right solutions through one or more application domains.
PP3	Mastering documentation techniques and quality assurance of ICT products.
PP5	Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK2	Able to identify and analyze needs, design, realize and test ICT / science and technology products.
KK3	Able to document and carry out quality assurance in every process of development, use, modification, maintenance and security of ICT / science and technology products
KK5	Able to manage resources in the form of time, human resources, costs for developing ICT / science and technology products by utilizing project management software
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU7	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers who are under their responsibility.
KU8	Able to carry out the process of self-evaluation of work groups under their responsibility, and able to manage learning independently.
KU10	Able to recognize needs, adapt and demonstrate ability to continue self-development (lifelong learning).

DESCRIPTION	
Solve the problems given by the lecturer	
WORKING METHOD	
1. Define the problem 1. Looking for the best solution 2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Meeting 16	30 minutes
OTHERS REQUIRED:	
REFERENCES	
17. Study Program Committee, 2013, Project Implementation and Reporting Guidelines, Level II Project Implementation Guidelines, Polynema, Malang. 18. Santoso, Nurudin, 2007, Project Management, Teaching Module, Polynema, Malang. 19. Santoso, Nurudin, 2007, Project Management Practicum, Teaching Module, Polynema, Malang. 20. Sprague, RH and McNurlin, BC , 2002, Information Systems Management in Practice, 5th edition, Prentice-Hall.	

ASSESSMENT AND EVALUATION PLAN

Artificial intelligence

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Able **to explain** the basic concepts of artificial intelligence and understand how to solve problems based on artificial intelligence (C2) techniques	Introduction to Artificial Intelligence, definitions, reasons for learning, artificial intelligence applications, installing python, refreshing digital theory	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	• Be able to **explain** the concept of fuzzy reasoning (C2) Be able to **explain** the difference between fuzzy tsukamoto, sugeno, mamdani	(Reasoning) : Fuzzy-=>Fuzzy tsukamoto, sugeno, mamdani	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	Able **to apply** the concept of fuzzy reasoning (C3)	(Reasoning) : Fuzzy=> Fuzzy application examples for tsukamoto, sugeno, and mamdani	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	Be able **to explain** the search strategy (C2)	(Problem Solving) : Searching->Breadth-First Search, Depth-First Search, Best-First Search, Hill Climbing, A*	• Oral test • UTS (8 questions) • UAS (2 questions)	
6	Able **to apply** search strategy (C3)	(Problem Solving): examples of Depth-First Search applications, Hill Climbing	• Oral test • UTS (8 questions) • UAS (2 questions)	
7	Able **to explain** the concept of knowledge representation and agent (C2)	(Knowledge Representation) : Introduction to Knowledge representation, Agent	• Oral test • UTS (8 questions) • UAS (2 questions)	
8	**UTS**			
9	• Be able **to explain the concept of** forward and backward chaining (C2) Be able to **explain the difference between** forward and backward chaining (C2)	(Knowledge Representation) : Forwards and Backward Chaining	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 7: % Task 8: % Task 9: % Task 10: % Task 11: %

10	Able **to apply** forward and backward chaining (C3)	(Knowledge Representation): Examples of Forwards and Backward Chaining applications	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 12: % Quiz 2: % U A S: %
11	• Be able **to explain the concept of** bayes theory (C2) Be able to **solve** the problem of a case study using Bayes' theory (C3)	(Knowledge Representation) : uncertainty of Bayes' theorem + example application of uncertainty of Bayes' theorem	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
12	• Able **to explain** the concept of ANN (C2) • Be able **to explain** the concept of perceptron Be able to **describe** the perceptron algorithm in the form of calculations for the OR/AND(C3) case	(Machine Learning/JST) : Introduction to Supervised, Unsupervised and Reinforcement Learning, Perceptron + examples of perceptron applications, deep learning	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
13	**Quiz 2**			
14	• Be able **to explain** the concept of decision tree (C2) Be able to **describe** the perceptron algorithm in the form of calculations for a case study (C3)	(Machine Learning/JST): Decision Tree + Example of a Decision Tree application	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	• Be able **to explain** the concept of genetic algorithm (C2) Able **to apply** genetic algorithm (C3)	Machine Learning/ANN): Evolutionary Algorithm Genetic Algorithm + Practicum	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	• Able **to give** examples of the application of NLP(C2) Be able to explain the basic concepts of NLP(C2)	(NLP) : Introduction	• Oral test • UTS (6 questions) • UAS (2 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Artificial intelligence				
CODE	RTI213003	**WEIGHT (credits) / hour**	3	**SEMESTER**	3
SUPPORTING LECTURER	Vipkas Al Hadid Firdaus, ST,. MT				

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand Problem Solving, Knowledge Representation, Expert Systems, Natural Language Processing, Uncertainty, Fuzzy Logic, Neural Networks, Searching, Planning (C2); Understand various kinds of artificial intelligence algorithms and their application to solve problems in various fields; Able to analyze appropriate artificial intelligence techniques to solve problems with full responsibility and ethics;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution

2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 4	30 minutes
OTHERS REQUIRED:	
REFERENCES	
4. Harris C, Michael, 2011, Artificial Intelligence, Marshall Cavendish Benchmark 5. Norvig, Peter, 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp. 6. Joshi, Prateek , 2017, Artificial Intelligence with Python Second Edition, Packt Publishing Ltd.	

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHOD

SUBJE	Artificial intelligence				
CODE	RTI213003	**WEIGHT (credits) / hour**	3	**SEMESTER**	3
SUPPORTING LECTURER	Vipkas Al Hadid Firdaus, ST,. MT				

ASSESSMENT FORMS

UTS

ASSESSMENT TITLE

UTS

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand Problem Solving, Knowledge Representation, Expert Systems, Natural Language Processing, Uncertainty, Fuzzy Logic, Neural Networks, Searching, Planning (C2); Understand various kinds of artificial intelligence algorithms and their application to solve problems in various fields; Able to analyze appropriate artificial intelligence techniques to solve problems with full responsibility and ethics;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution

2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course

IMPLEMENTATION SCHEDULE

Week 8	30 minutes

OTHERS REQUIRED:

REFERENCES

1. Harris C, Michael, 2011, Artificial Intelligence, Marshall Cavendish Benchmark
2. Norvig, Peter, 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp.
3. Joshi, Prateek , 2017, Artificial Intelligence with Python Second Edition, Packt Publishing Ltd.
4.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Artificial intelligence				
CODE	RTI213003	**WEIGHT (credits) / hour**	3	**SEMESTER**	3
SUPPORTING LECTURER	Vipkas Al Hadid Firdaus, ST,. MT				

ASSESSMENT FORMS

Quiz 2

ASSESSMENT TITLE

Quiz 2

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)	
S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.
KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)
Able to understand Problem Solving, Knowledge Representation, Expert Systems, Natural Language Processing, Uncertainty, Fuzzy Logic, Neural Networks, Searching, Planning (C2); Understand various kinds of artificial intelligence algorithms and their application to solve problems in various fields; Able to analyze appropriate artificial intelligence techniques to solve problems with full responsibility and ethics;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE
Week 14 | 30 minutes
OTHERS REQUIRED:
REFERENCES
7. Harris C, Michael, 2011, Artificial Intelligence, Marshall Cavendish Benchmark 8. Norvig, Peter, 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp. 9. Joshi, Prateek , 2017, Artificial Intelligence with Python Second Edition, Packt Publishing Ltd.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Artificial intelligence				
CODE	RTI213003	**WEIGHT (credits) / hour**	3	**SEMESTER**	3
SUPPORTING LECTURER	Vipkas Al Hadid Firdaus, ST,. MT				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					

Learning Outcomes of Study Program Graduates (CPL-Prodi)	
S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP1	Mastering the concepts of applied mathematics, basic ICT knowledge (Algorithms, Programming, Databases, computer networks, etc.), engineering science, and engineering principles in the ICT field in depth.
PP4	Mastering the principles of intelligent computing in logical and mathematical proof techniques (logic & mathematical proof) to generate effective alternative solutions in depth.
KK1	Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the fields of software development (desktop, web and mobile), computer networks and other ICT / science and technology fields (vision - graphics, embedded, Information Systems, Intelligent systems, Business Intelligence, etc).
KK4	Able to utilize intelligent computing in the process of solving problems based on analysis and information on ICT products.

KU1	Able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned.
KU2	Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand Problem Solving, Knowledge Representation, Expert Systems, Natural Language Processing, Uncertainty, Fuzzy Logic, Neural Networks, Searching, Planning (C2); Understand various kinds of artificial intelligence algorithms and their application to solve problems in various fields; Able to analyze appropriate artificial intelligence techniques to solve problems with full responsibility and ethics;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course

IMPLEMENTATION SCHEDULE

Week 17	30 minutes

OTHERS REQUIRED:

REFERENCES

10. Harris C, Michael, 2011, Artificial Intelligence, Marshall Cavendish Benchmark
11. Norvig, Peter, 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp.
12. Joshi, Prateek , 2017, Artificial Intelligence with Python Second Edition, Packt Publishing Ltd.

ASSESSMENT AND EVALUATION PLAN

Research methodology

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students master the basic concepts of research	• Basic Concepts of Research • Logical thinking (deductive reasoning, inductive) • Research methods and research methodology • Methodological benefits Research process	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	Students are able to do *a literature review*	• Understanding • Benefit • steps • sources Citation	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	Students are able to identify problems	• Identification and formulation of the problem • problem formulation steps • Example of problem formulation Research hypothesis	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	Students are able to create a framework	• Identify the main ideas in the framework • Pouring out the basics of literacy reference • Determine the methods that are appropriate to the research Build stages of research	• Oral test • UTS (8 questions) • UAS (2 questions)	
6	Students master research methods, techniques and instruments	• Instrument • Interview • Questionnaire Designing a Questionnaire	• Oral test • UTS (8 questions) • UAS (2 questions)	
7	Students understand the principle of analyzing quantitatively	• Quantitative research • problem formulation in quantitative research • Variable • Validity and reliability • Data collection • Quantitative data analysis • Frequency distribution	• Oral test • UTS (8 questions) • UAS (2 questions)	

		• Cross tabulation • Correlation Regression		
8	**UTS**			
9	Students understand the principle of analyzing qualitatively	• Qualitative research • problem formulation in qualitative research • Qualitative data • Qualitative data analysis • Sample in qualitative research Differences in quantitative and qualitative research	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 7: % Task 8: % Task 9: % Task 10: % Task 11: % Task 12: % Quiz 2: % U A S: %
10	Students understand writing skills	• Planning and preparation for writing • Word order • Break up long sentences • Compose paragraphs and sentences • Concise, avoid redundancy • Avoid ambiguity and obscurity • Clarify who does what • Highlight your discoveries • Protection against criticism Describe in your own words, avoid plagiarizing/paraphrasing	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
11	Students understand writing skills	• Planning and preparation for writing • Word order • Break up long sentences • Compose paragraphs and sentences • Concise, avoid redundancy • Avoid ambiguity and obscurity • Clarify who does what • Highlight your discoveries • Protection against criticism Describe in your own words, avoid plagiarizing/paraphrasing	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
12	Students understand writing skills	• Planning and preparation for writing • Word order • Break up long sentences • Compose paragraphs and sentences • Concise, avoid redundancy	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	

		• Avoid ambiguity and obscurity • Clarify who does what • Highlight your discoveries • Protection against criticism Describe in your own words, avoid plagiarizing/paraphrasing		
13	**Quiz 2**			
14	Students are able to understand how to write the right according to the parts of the paper	• Title • Abstract • Introduction • Literature review • Methodology • Results • Discussion • Conclusion • Reference • Award (acknowledgment) Helpful phrases	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	Students are able to understand how to write the right according to the parts of the paper	• Title • Abstract • Introduction • Literature review • Methodology • Results • Discussion • Conclusion • Reference • Award (acknowledgment) Helpful phrases	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	Students are able to understand how to write the right according to the parts of the paper	• Title • Abstract • Introduction • Literature review • Methodology • Results • Discussion • Conclusion • Reference • Award (acknowledgment)	• Oral test • UTS (6 questions) • UAS (2 questions)	

		Helpful phrases		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Research methodology				
CODE	RTI187005	**WEIGHT (credits) / hour**	2	**SEMESTER**	7
SUPPORTING LECTURER	Ulla Delfana Rosiani, ST., MT., Dr.				

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand the concept of introductory research;
Able to choose research topics and preliminary studies;
Able to formulate problems and hypotheses;
Be able to choose a research approach;
Being able to choose variables;
Able to determine data sources;
Able to determine and arrange research instruments;
Able to collect data, analyze data, and draw conclusions;
Able to compile research reports in a systematic, quality and measurable manner;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution

2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 4	30 minutes
OTHERS REQUIRED:	
REFERENCES	
4. Zainal A. Hasibuan, Research Methodology in the Field of Computer Science and Information Technology Concepts, Techniques, and Applications, Filkom UI, 2007 5. Adrian Wallwork, English for Writing Research Papers, Springer, 2011 6. Rudy Ariyanto et al, Guidelines for Writing Final Reports and Thesis Version 2.3, Department of Information Technology, State Polytechnic of Malang, 2017	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Research methodology				
CODE	RTI187005	**WEIGHT (credits) / hour**	2	**SEMESTER**	7
SUPPORTING LECTURER	Ulla Delfana Rosiani, ST., MT., Dr.				

ASSESSMENT FORMS

UTS

ASSESSMENT TITLE

UTS

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand the concept of introductory research;
Able to choose research topics and preliminary studies;
Able to formulate problems and hypotheses;
Be able to choose a research approach;
Being able to choose variables;
Able to determine data sources;
Able to determine and arrange research instruments;
Able to collect data, analyze data, and draw conclusions;
Able to compile research reports in a systematic, quality and measurable manner;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution

2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 8	30 minutes
OTHERS REQUIRED:	
REFERENCES	
1. Zainal A. Hasibuan, Research Methodology in the Field of Computer Science and Information Technology Concepts, Techniques, and Applications, Filkom UI, 2007 2. Adrian Wallwork, English for Writing Research Papers, Springer, 2011 3. Rudy Ariyanto et al, Guidelines for Writing Final Reports and Thesis Version 2.3, Department of Information Technology, State Polytechnic of Malang, 2017	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Research methodology				
CODE	RTI187005	**WEIGHT (credits) / hour**	2	**SEMESTER**	7
SUPPORTING LECTURER	Ulla Delfana Rosiani, ST., MT., Dr.				

ASSESSMENT FORMS

Quiz 2

ASSESSMENT TITLE

Quiz 2

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand the concept of introductory research;
Able to choose research topics and preliminary studies;
Able to formulate problems and hypotheses;
Be able to choose a research approach;
Being able to choose variables;
Able to determine data sources;
Able to determine and arrange research instruments;
Able to collect data, analyze data, and draw conclusions;
Able to compile research reports in a systematic, quality and measurable manner;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution

2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 13	30 minutes
OTHERS REQUIRED:	
REFERENCES	
4. Zainal A. Hasibuan, Research Methodology in the Field of Computer Science and Information Technology Concepts, Techniques, and Applications, Filkom UI, 2007 5. Adrian Wallwork, English for Writing Research Papers, Springer, 2011 6. Rudy Ariyanto et al, Guidelines for Writing Final Reports and Thesis Version 2.3, Department of Information Technology, State Polytechnic of Malang, 2017	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Research methodology				
CODE	RTI187005	**WEIGHT (credits) / hour**	2	**SEMESTER**	7
SUPPORTING LECTURER	Ulla Delfana Rosiani, ST., MT., Dr.				

ASSESSMENT FORMS

UAS

ASSESSMENT TITLE

UAS

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8	Internalize academic values, norms, and ethics.
S9	Demonstrate a responsible attitude towards work in the field of expertise independently.
PP6	Mastering knowledge of oral and written communication techniques using national and international languages.
KU2	Able to demonstrate independent, quality and measurable performance.
KU5	Able to make appropriate decisions based on standard procedures, design specifications, occupational safety and security requirements in supervising and evaluating work.
KU9	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism.

Learning Outcomes Graduates charged to courses (CPL-MK)

Able to understand the concept of introductory research;
Able to choose research topics and preliminary studies;
Able to formulate problems and hypotheses;
Be able to choose a research approach;
Being able to choose variables;
Able to determine data sources;
Able to determine and arrange research instruments;
Able to collect data, analyze data, and draw conclusions;
Able to compile research reports in a systematic, quality and measurable manner;

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution

2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id	
OUTER FORMAT	
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 17	30 minutes
OTHERS REQUIRED:	
REFERENCES	
7. Zainal A. Hasibuan, Research Methodology in the Field of Computer Science and Information Technology Concepts, Techniques, and Applications, Filkom UI, 2007 8. Adrian Wallwork, English for Writing Research Papers, Springer, 2011 9. Rudy Ariyanto et al, Guidelines for Writing Final Reports and Thesis Version 2.3, Department of Information Technology, State Polytechnic of Malang, 2017	

ASSESSMENT AND EVALUATION PLAN

Image Processing and Computer Vision

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students are able **to create** Repositories on Github (C6) • Students are able **to create** Python Notebooks in Google Colaborator (C6) • Students are able **to apply** how to access pixels in images (C3)	• Use of Github and Google Colaboratory Reading and displaying images	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	• Student **implement** how to open image files from personal Google Drive (C3) • Capable student _ **explains** the basics of the OpenCV library in Python (C2) • Capable student _ **explain** the color channel in OpenCV and its conversion (C2)	• Use of Numpy and OpenCV • Introduction Image Processing Applications	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	• Student able to **explain** and **implement** Linear Transformation Brightness uses Google Colab (C2, C3) • Students are able to **explain** and **implement** Image Contrast using Google Colab (C2, C3) • Student is able understand and **implement** Inverse Image (C2, C3) • Students can explain and **implement** Logarithmic Transformation Brightness (C2, C3) • Students can **explain** and implement types of Grayscale operations (C2, C3)	• Operations – Linear Brightness, Contrast, Inverse, Logarithmic Brightness, and Grayscale Image	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	• Students can **make** Gamma Correction applications (C6) • Students can **create** image simulations with the specified image depth (C6) • Students can **implement** denoising by using Averaging (C3)	• Arithmetic and Logic Operations • Gamma Correction • Image Depth, ○ PSNR,	• Oral test • UTS (8 questions) • UAS (2 questions)	

	• Students can **implement** image masking using logical operators (C3)	• Average Denoising, • Image Masking		
6	• Students are able **to explain** about image histograms and **apply them** in Python programs (C2, C3) • Students are able **to explain** about histogram equalization and **implementing it** in a Python program (C2, C3) • Students are able **to explain** image dithering and **apply it** in Python programs (C2, C3)	• histograms , • Histogram Equalization, • Dithering	• Oral test • UTS (8 questions) • UAS (2 questions)	
7	• Students are able to **explain** the concept of Spatial Filter (C2) • Students can **describe** several types of Spatial Filters (C2) • Students can **create** simple filters using available Kernel filters and perform convolution calculations. (C6)	• Filter Low Pass Filter, • High Pass Filter, • Point detection , • Line Detection, Edge Detection	• Oral test • UTS (8 questions) • UAS (2 questions)	
8	**UTS**			
9	• Students are able to **explain** the concept of Morphology (C2) • Students can **describe** several techniques Morphology (C2) • Students can **create** some morphology techniques using Python on Google Colab . (C6)	• Several image morphology techniques (Erosion, Dilation, Opening, Closing, Top-hat and Bottom-hat Transformation, Skeleton, Thickening)	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 7: % Task 8: % Task 9: % Task 10: % Task 11: % Task 12: % Quiz 2: % U A S: %
10	• Students are able to **explain** the concept of thresholding • Students are able **to apply** image thresholding in the program (C3)	• Global Thresholding • Object Optimal Thresholding • Optimum Thresholding (Otsu's Mehod) • Local Thresholding with Moving Averages	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
11	• Student is able **explain** the concept of image compression (C2) • Students are able **to apply** image compression on program (C3)	• Basic Image Compression • Image compression steps	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	

12	• Students are able to **explain** the concept of detection (C2) • Students are able **to apply** or **implement** image face detection on programs (C3)	• Basic Face Detection • Scanning Aspects in face detection (Distance between eyes, nose width, etc.) • Face detection stages • Face Detection Method	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
13	**Quiz 2**			
14	Students are able **to implement** the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)	FinalProject _	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	Students are able **to implement** the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)	FinalProject _	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	Students are able **to implement** the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)	FinalProject _	• Oral test • UTS (6 questions) • UAS (2 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Image Processing And Computer Vision				
CODE	RTI196006	**WEIGHT (credits) / hour**	3	**SEMESTER**	6
SUPPORTING LECTURER	Rosa Andrie Asmara, ST., MT., Dr. Eng.				

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to create Repositories on Github and Python Notebooks on Google Colaborator (C6)
- Students are able to apply how to access pixels in images and how to open image files from personal Google Drive (C3)
- Students are able to explain the basics of the OpenCV library in Python and the color channels in OpenCV and their conversion (C2)
- Students are able to explain and implement Linear Brightness Transformation, Image Contrast, Inverse Image, Logarithmic Brightness, and types of Grayscale operations using Google Colab (C2, C3)
- Students can make Gamma Correction applications (C6)
- Students can create image simulations with the specified image depth (C6)
- Students can implement denoising using Averaging, image masking using logical operators (C3)
- Students are able to explain image histograms, histogram equalization, and dithering, and apply them in Python programs (C2, C3)
- Students are able to explain the concept of Spatial Filters and several types of Spatial Filters (C2)
- Students can create simple filters using available Kernel filters and perform convolution calculations. (C6)
- Students are able to explain the concept of Morphology and several Morphology techniques (C2)
- Students can make several morphology techniques using Python on Google Colab (C6)
- Students are able to explain the concept of thresholding and apply image thresholding in the program (C2, C3)
- Students are able to explain the concept of image compression and apply image compression to programs (C2, C3)
- Students are able to explain the concept of detection and apply or implement image face detection in programs (C2, C3)
- Students are able to implement the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)

Students are able to explain image processing and computer vision projects that have been developed in groups (C2)

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE

Week 4	30 minutes

OTHERS REQUIRED:
REFERENCES

Main :

1. Rafael C. Gonzales, Richard E. Woods," *Digital Image Processing 3rd edition* ", Prentice Hall, 2010.

Supporters:

6. Rosa Andrie Asmara, *" Digital image processing: theory, practice and exercises " ,* ISBN: 978-602-6695-90-1, Polinema Press 2018
7. Wanasanan Thongsongkrit, " *Lecture Notes Digital Image Processing Chapter 1,2,9* ", Department of Computer Engineering , Faculty of Engineering, Chiang Mai University
8. Prof. Dr. Aniati Murni, Dina Chahyati, SKom, " *Image Processing Lecture Notes* ", Fasilkom UI
9. Achmad Basuki, Nana Ramadijanti, Fadilah Fahrul, " *Image Processing Practical Module with C# 2012* ", EEPIS-2013
10. Nana Ramadijanti, Achmad Basuki, Fadilah Fahrul, " *Image Processing Textbook* ", EEPIS-2014

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Image Processing And Computer Vision				
CODE	RTI196006	**WEIGHT (credits) / hour**	3	**SEMESTER**	6
SUPPORTING LECTURER	Rosa Andrie Asmara, ST., MT., Dr. Eng.				

ASSESSMENT FORMS

UTS

ASSESSMENT TITLE

UTS

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to create Repositories on Github and Python Notebooks on Google Colaborator (C6)
- Students are able to apply how to access pixels in images and how to open image files from personal Google Drive (C3)
- Students are able to explain the basics of the OpenCV library in Python and the color channels in OpenCV and their conversion (C2)
- Students are able to explain and implement Linear Brightness Transformation, Image Contrast, Inverse Image, Logarithmic Brightness, and types of Grayscale operations using Google Colab (C2, C3)
- Students can make Gamma Correction applications (C6)
- Students can create image simulations with the specified image depth (C6)
- Students can implement denoising using Averaging, image masking using logical operators (C3)
- Students are able to explain image histograms, histogram equalization, and dithering, and apply them in Python programs (C2, C3)
- Students are able to explain the concept of Spatial Filters and several types of Spatial Filters (C2)
- Students can create simple filters using available Kernel filters and perform convolution calculations. (C6)
- Students are able to explain the concept of Morphology and several Morphology techniques (C2)
- Students can make several morphology techniques using Python on Google Colab (C6)
- Students are able to explain the concept of thresholding and apply image thresholding in the program (C2, C3)
- Students are able to explain the concept of image compression and apply image compression to programs (C2, C3)
- Students are able to explain the concept of detection and apply or implement image face detection in programs (C2, C3)
- Students are able to implement the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)

Students are able to explain image processing and computer vision projects that have been developed in groups (C2)

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE

Week 8	30 minutes

OTHERS REQUIRED:
REFERENCES

Main :

2. Rafael C. Gonzales, Richard E. Woods," *Digital Image Processing 3rd edition* ", Prentice Hall, 2010.

Supporters:

11. Rosa Andrie Asmara, *" Digital image processing: theory, practice and exercises "* , ISBN: 978-602-6695-90-1, Polinema Press 2018
12. Wanasanan Thongsongkrit, " *Lecture Notes Digital Image Processing Chapter 1,2,9* ", Department of Computer Engineering , Faculty of Engineering, Chiang Mai University
13. Prof. Dr. Aniati Murni, Dina Chahyati, SKom, " *Image Processing Lecture Notes* ", Fasilkom UI
14. Achmad Basuki, Nana Ramadijanti, Fadilah Fahrul, " *Image Processing Practical Module with C# 2012* ", EEPIS-2013
15. Nana Ramadijanti, Achmad Basuki, Fadilah Fahrul, " *Image Processing Textbook* ", EEPIS-2014

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Image Processing And Computer Vision				
CODE	RTI196006	**WEIGHT (credits) / hour**	3	**SEMESTER**	6
SUPPORTING LECTURER	Rosa Andrie Asmara, ST., MT., Dr. Eng.				

ASSESSMENT FORMS

Quiz 2

ASSESSMENT TITLE

Quiz 2

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to create Repositories on Github and Python Notebooks on Google Colaborator (C6)
- Students are able to apply how to access pixels in images and how to open image files from personal Google Drive (C3)
- Students are able to explain the basics of the OpenCV library in Python and the color channels in OpenCV and their conversion (C2)
- Students are able to explain and implement Linear Brightness Transformation, Image Contrast, Inverse Image, Logarithmic Brightness, and types of Grayscale operations using Google Colab (C2, C3)
- Students can make Gamma Correction applications (C6)
- Students can create image simulations with the specified image depth (C6)
- Students can implement denoising using Averaging, image masking using logical operators (C3)
- Students are able to explain image histograms, histogram equalization, and dithering, and apply them in Python programs (C2, C3)
- Students are able to explain the concept of Spatial Filters and several types of Spatial Filters (C2)
- Students can create simple filters using available Kernel filters and perform convolution calculations. (C6)
- Students are able to explain the concept of Morphology and several Morphology techniques (C2)
- Students can make several morphology techniques using Python on Google Colab (C6)
- Students are able to explain the concept of thresholding and apply image thresholding in the program (C2, C3)
- Students are able to explain the concept of image compression and apply image compression to programs (C2, C3)
- Students are able to explain the concept of detection and apply or implement image face detection in programs (C2, C3)
- Students are able to implement the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)

Students are able to explain image processing and computer vision projects that have been developed in groups (C2)

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE

Week 13	30 minutes

OTHERS REQUIRED:
REFERENCES

Main :

3. Rafael C. Gonzales, Richard E. Woods," *Digital Image Processing 3rd edition* ", Prentice Hall, 2010.

Supporters:

16. Rosa Andrie Asmara, *" Digital image processing: theory, practice and exercises "* , ISBN: 978-602-6695-90-1, Polinema Press 2018
17. Wanasanan Thongsongkrit, " *Lecture Notes Digital Image Processing Chapter 1,2,9* ", Department of Computer Engineering , Faculty of Engineering, Chiang Mai University
18. Prof. Dr. Aniati Murni, Dina Chahyati, SKom, " *Image Processing Lecture Notes* ", Fasilkom UI
19. Achmad Basuki, Nana Ramadijanti, Fadilah Fahrul, " *Image Processing Practical Module with C# 2012* ", EEPIS-2013
20. Nana Ramadijanti, Achmad Basuki, Fadilah Fahrul, " *Image Processing Textbook* ", EEPIS-2014

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Image Processing And Computer Vision				
CODE	RTI196006	**WEIGHT (credits) / hour**	3	**SEMESTER**	6
SUPPORTING LECTURER	Rosa Andrie Asmara, ST., MT., Dr. Eng.				

ASSESSMENT FORMS

UAS

ASSESSMENT TITLE

UAS

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to create Repositories on Github and Python Notebooks on Google Colaborator (C6)
- Students are able to apply how to access pixels in images and how to open image files from personal Google Drive (C3)
- Students are able to explain the basics of the OpenCV library in Python and the color channels in OpenCV and their conversion (C2)
- Students are able to explain and implement Linear Brightness Transformation, Image Contrast, Inverse Image, Logarithmic Brightness, and types of Grayscale operations using Google Colab (C2, C3)
- Students can make Gamma Correction applications (C6)
- Students can create image simulations with the specified image depth (C6)
- Students can implement denoising using Averaging, image masking using logical operators (C3)
- Students are able to explain image histograms, histogram equalization, and dithering, and apply them in Python programs (C2, C3)
- Students are able to explain the concept of Spatial Filters and several types of Spatial Filters (C2)
- Students can create simple filters using available Kernel filters and perform convolution calculations. (C6)
- Students are able to explain the concept of Morphology and several Morphology techniques (C2)
- Students can make several morphology techniques using Python on Google Colab (C6)
- Students are able to explain the concept of thresholding and apply image thresholding in the program (C2, C3)
- Students are able to explain the concept of image compression and apply image compression to programs (C2, C3)
- Students are able to explain the concept of detection and apply or implement image face detection in programs (C2, C3)
- Students are able to implement the material and practicum that has been given in the form of image processing and computer vision projects in the program (C3)

Students are able to explain image processing and computer vision projects that have been developed in groups (C2)

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Report format structure: 10% Conformity of answers: 50% Solution Accuracy : 40%
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE

Week 17	30 minutes

OTHERS REQUIRED:
REFERENCES

Main :

4. Rafael C. Gonzales, Richard E. Woods," *Digital Image Processing 3rd edition* ", Prentice Hall, 2010.

Supporters:

21. Rosa Andrie Asmara, *" Digital image processing: theory, practice and exercises "* , ISBN: 978-602-6695-90-1, Polinema Press 2018
22. Wanasanan Thongsongkrit, " *Lecture Notes Digital Image Processing Chapter 1,2,9* ", Department of Computer Engineering , Faculty of Engineering, Chiang Mai University
23. Prof. Dr. Aniati Murni, Dina Chahyati, SKom, " *Image Processing Lecture Notes* ", Fasilkom UI
24. Achmad Basuki, Nana Ramadijanti, Fadilah Fahrul, " *Image Processing Practical Module with C# 2012* ", EEPIS-2013
25. Nana Ramadijanti, Achmad Basuki, Fadilah Fahrul, " *Image Processing Textbook* ", EEPIS-2014

ASSESSMENT AND EVALUATION PLAN

Critical Thinking and Problem Solving

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to explain the concept of thinking and reasoning as skills. [C2]	- Thinking as an ability - Critical thinking Solution, not a problem	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	Students are able to **explain** the basic concepts of critical thinking [C1, C2, C4, C5]	- Claims, assertions, and assertions Assess a claim	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	Students are able to **explain** the basic concepts of critical thinking [C1, C2, C4, C5]	- Claims, assertions, and assertions Assess a claim	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]	- What is meant by problem? - How do we solve a problem? - Select and use information - Process data - Methods rather than solutions - Problem solving with search - Pattern recognition - hypotheses, reasons, explanations, and inferences - Spatial reasoning - Need and Sufficiency - Choose and use models Make choices and decisions	• Oral test • UTS (8 questions) • UAS (2 questions)	
6	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]	- What is meant by problem? - How do we solve a problem? - Select and use information - Process data - Methods rather than solutions - Problem solving with search	• Oral test • UTS (8 questions) • UAS (2 questions)	

		- Pattern recognition - hypotheses, reasons, explanations, and inferences - Spatial reasoning - Need and Sufficiency - Choose and use models Make choices and decisions		
7	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]	- What is meant by problem? - How do we solve a problem? - Select and use information - Process data - Methods rather than solutions - Problem solving with search - Pattern recognition - hypotheses, reasons, explanations, and inferences - Spatial reasoning - Need and Sufficiency - Choose and use models Make choices and decisions	• Oral test • UTS (8 questions) • UAS (2 questions)	
8	**UTS**			
9	Students are able to explain and use basic problem solving skills [C2, C3, C6]	- Inference - Explanation - Proof - Credibility - Critical thinking and science - Present long arguments - Apply analytical skills - Critical evaluation Respond with a more in-depth argument	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 7: % Task 8: % Task 9: % Task 10: % Task 11: % Task 12: % Quiz 2: % U A S: %
10	Students are able to explain and use basic problem solving skills [C2, C3, C6]	- Inference - Explanation - Proof - Credibility - Critical thinking and science - Present long arguments - Apply analytical skills - Critical evaluation Respond with a more in-depth argument	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	

11	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]	- Unite abilities - use imagination - Develop models - Carry out investigations Data analysis and inference	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
12	Students are able to explain and use advanced problem solving skills [C2, C3]	- Using a mathematical method - Graphical method Probability, tree diagrams, and decision trees	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
13	**Quiz 2**			
14	Students are able to explain and apply critical reasoning. [C2, C6]	- Terms and Conditions - Common sense and validity - Non-deductive reasoning - Reasoning with statistics - Decision-making - Principle critical writing	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	Students are able to explain and apply critical reasoning. [C2, C6]	- Terms and Conditions - Common sense and validity - Non-deductive reasoning - Reasoning with statistics - Decision-making - Principle critical writing	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	Students are able to explain and apply critical reasoning. [C2, C6]	- Terms and Conditions - Common sense and validity - Non-deductive reasoning - Reasoning with statistics - Decision-making - Principle critical writing	• Oral test • UTS (6 questions) • UAS (2 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Critical Thinking and Problem Solving				
CODE	RTI204001	**WEIGHT (credits) / hour**	2	**SEMESTER**	4
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					
Mastering the concept of thinking and problem solving; independently able to identify problems and needs, perform analysis, gather information, think logically, critically, and innovatively in solving simple problems by considering values, norms, and ethics					
SUB-CPMK 1	Students are able to explain the concept of thinking and reasoning as skills. [C2]				
SUB-CPMK 2	Students are able to explain the basic concepts of critical thinking [C1, C2, C4, C5]				
SUB-CPMK 3	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]				
SUB-CPMK 4	Students are able to explain and use basic problem solving skills [C2, C3, C6]				
SUB-CPMK 5	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]				
SUB-CPMK 6	Students are able to explain and use advanced problem solving skills [C2, C3]				
SUB-CPMK 7	Students are able to explain and apply critical reasoning. [C2, C6]				
DESCRIPTION					
Solve the problems given by the lecturer					
WORKING METHOD					
1. Define the problem 1. Looking for the best solution 2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id					
OUTER FORMAT					
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Report format structure: 10% Conformity of answers: 50%					

Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 4	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Main : 2. Thinking Skills Critical Thinking and Problem Solving Second edition **Supporters:** 3. Critical Thinking Skills For Dummies	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Critical Thinking and Problem Solving				
CODE	RTI204001	**WEIGHT (credits) / hour**	2	**SEMESTER**	4
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Mastering the concept of thinking and problem solving; independently able to identify problems and needs, perform analysis, gather information, think logically, critically, and innovatively in solving simple problems by considering values, norms, and ethics					

SUB-CPMK 1	Students are able to explain the concept of thinking and reasoning as skills. [C2]
SUB-CPMK 2	Students are able to explain the basic concepts of critical thinking [C1, C2, C4, C5]
SUB-CPMK 3	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]
SUB-CPMK 4	Students are able to explain and use basic problem solving skills [C2, C3, C6]
SUB-CPMK 5	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]
SUB-CPMK 6	Students are able to explain and use advanced problem solving skills [C2, C3]
SUB-CPMK 7	Students are able to explain and apply critical reasoning. [C2, C6]

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%

Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 8	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Main : 3. Thinking Skills Critical Thinking and Problem Solving Second edition **Supporters:** 4. Critical Thinking Skills For Dummies	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Critical Thinking and Problem Solving				
CODE	RTI204001	**WEIGHT (credits) / hour**	2	**SEMESTER**	4
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Mastering the concept of thinking and problem solving; independently able to identify problems and needs, perform analysis, gather information, think logically, critically, and innovatively in solving simple problems by considering values, norms, and ethics					
SUB-CPMK 1	Students are able to explain the concept of thinking and reasoning as skills. [C2]				
SUB-CPMK 2	Students are able to explain the basic concepts of critical thinking [C1, C2, C4, C5]				
SUB-CPMK 3	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]				
SUB-CPMK 4	Students are able to explain and use basic problem solving skills [C2, C3, C6]				
SUB-CPMK 5	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]				
SUB-CPMK 6	Students are able to explain and use advanced problem solving skills [C2, C3]				
SUB-CPMK 7	Students are able to explain and apply critical reasoning. [C2, C6]				
DESCRIPTION					
Solve the problems given by the lecturer					
WORKING METHOD					
1. Define the problem 1. Looking for the best solution 2. Describe the solution 3. Write down the solution process (steps). 4. Make a report on the results of the work 5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id					
OUTER FORMAT					
Work Object: problem solving answers Output Form: a report containing the results of problem solving in PDF format					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Report format structure: 10% Conformity of answers: 50%					

Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 13	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Main : 4. Thinking Skills Critical Thinking and Problem Solving Second edition **Supporters:** 5. Critical Thinking Skills For Dummies	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Critical Thinking and Problem Solving				
CODE	RTI204001	**WEIGHT (credits) / hour**	2	**SEMESTER**	4
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Mastering the concept of thinking and problem solving; independently able to identify problems and needs, perform analysis, gather information, think logically, critically, and innovatively in solving simple problems by considering values, norms, and ethics					

SUB-CPMK 1	Students are able to explain the concept of thinking and reasoning as skills. [C2]
SUB-CPMK 2	Students are able to explain the basic concepts of critical thinking [C1, C2, C4, C5]
SUB-CPMK 3	Students are able to explain basic problem-solving skills. [C1, C2, C3, C5]
SUB-CPMK 4	Students are able to explain and use basic problem solving skills [C2, C3, C6]
SUB-CPMK 5	Students are able to explain and develop the concept of Applied Critical Thinking [C2, C4, C5, C6]
SUB-CPMK 6	Students are able to explain and use advanced problem solving skills [C2, C3]
SUB-CPMK 7	Students are able to explain and apply critical reasoning. [C2, C6]

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%

Solution Accuracy : 40%	
The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 17	30 minutes
OTHERS REQUIRED:	
REFERENCES	
Main : 5. Thinking Skills Critical Thinking and Problem Solving Second edition **Supporters:** 6. Critical Thinking Skills For Dummies	

ASSESSMENT AND EVALUATION PLAN

Occupational Health and Safety

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students know the history of OSH development in Indonesia, and are able to explain why K3 needs to be studied by a student.	OSH definition, history of OSH, objectives of OSH, meaning of OSH symbol	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	Task 1: % Task 2: % Task 3: % Task 4: % Task 5: % Task 6: % Quiz 1: % UTS: %
2	Students know the legal basis for employment in Indonesia, and are able to explain the policies that underlie employment in Indonesia from each President, are also able to explain the link between employment policies and occupational health and safety (K3).	K3 Legal Basis During Past and Present Governments	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
3	Students know the legal basis for Health Requirements for the Work Environment, and understand what is meant by the Physical Work Environment.	Physical work environment Which consists of direct and intermediary physical work environment	• Oral test • Quiz 1 (4 questions) • UTS (6 questions) • UAS (2 questions)	
4	**Quiz 1**			
5	Students know the legal basis for the requirements for Occupational Health, and understand what is meant by a Non-Physical Work Environment.	Employee Relations at Work and outside the Workplace	• Oral test • UTS (8 questions) • UAS (2 questions)	
6	Students know the factors that affect work safety, Hazard Sources that Potentially Cause Work Accidents, Prevention of work accidents and know work safety equipment.	Hazard Sources and Work Accident Prevention	• Oral test • UTS (8 questions) • UAS (2 questions)	
7	Students know the factors that affect work safety, Hazard Sources that Potentially Cause Work Accidents, Prevention of work accidents and know work safety equipment.	Factors Affecting K3	• Oral test • UTS (8 questions) • UAS (2 questions)	
8	**UTS**			
9	Students know the legal basis for implementing occupational health for	OSH Setting Basics	• Oral test • Quiz 2 (4 questions)	Task 7: % Task 8: %

	workers, as well as the benefits of pre-employment health checks and post-work health checks		• UTS (6 questions) • UAS (2 questions)	Task 9: % Task 10: % Task 11: % Task 12: % Quiz 2: % U A S: %
10	Students know the legal basis for implementing occupational health for workers, as well as the benefits of pre-employment health checks and post-work health checks	Pre-work Health Examination and After Work Examination	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
11	Students know what safety equipment must be used at work	Work Safety Tools	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
12	Students know what safety equipment must be used at work	OSH Organizational Definition and Objectives	• Oral test • Quiz 2 (4 questions) • UTS (6 questions) • UAS (2 questions)	
13	**Quiz 2**			
14	Students know the intent and purpose of establishing OSH organizations in Indonesia, and are able to explain the organizational structure of OSH and its duties and functions.	OSH Organizational Structures	• Oral test • UTS (6 questions) • UAS (2 questions)	
15	Students know the Legal Basis of Insurance in Indonesia, and are able to explain the function of insurance, types of insurance and know insurance claim procedures	Basic Principles, Types, and Insurance Claims	• Oral test • UTS (6 questions) • UAS (2 questions)	
16	Students know about BPJS	Rights, Obligations, and Benefits for BPJS Participants	• Oral test • UTS (6 questions) • UAS (2 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHOD

SUBJE	Occupational Health and Safety				
CODE	RTI211008	**WEIGHT (credits) / hour**	2	**SEMESTER**	2
SUPPORTING LECTURER	Meyti Eka Apriyani ST., MT.				

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.
PP5 Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates assigned to courses (CPL-MK)

Mastering the knowledge of the principles of occupational safety and health (K3); Able to implement good and quality theories, concepts and principles of occupational safety and health (K3) in order to improve the health status of workers by taking into account values, norms and ethics.

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 4	30 minutes
OTHERS REQUIRED:	
REFERENCES	
6. Budi Harijanto, K3 teaching module, 2012 7. Law no. 1 of 1970 concerning work safety 8. Law no.13 of 2003 concerning employment 9. Law no.3 of 1992 (Social security for workers) 10. PP no. 33 of 1977	

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHOD

SUBJE	Occupational Health and Safety				
CODE	RTI211008	**WEIGHT (credits) / hour**	2	**SEMESTER**	2
SUPPORTING LECTURER	Meyti Eka Apriyani ST., MT.				

ASSESSMENT FORMS

UTS

ASSESSMENT TITLE

UTS

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.
PP5 Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates assigned to courses (CPL-MK)

Mastering the knowledge of the principles of occupational safety and health (K3); Able to implement good and quality theories, concepts and principles of occupational safety and health (K3) in order to improve the health status of workers by taking into account values, norms and ethics.

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 8	30 minutes
OTHERS REQUIRED:	
REFERENCES	
11. Budi Harijanto, K3 teaching module, 2012 12. Law no. 1 of 1970 concerning work safety 13. Law no.13 of 2003 concerning employment 14. Law no.3 of 1992 (Social security for workers) 15. PP no. 33 of 1977	

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHOD

SUBJE	Occupational Health and Safety				
CODE	RTI211008	**WEIGHT (credits) / hour**	2	**SEMESTER**	2
SUPPORTING LECTURER	Meyti Eka Apriyani ST., MT.				

ASSESSMENT FORMS

Quiz 2

ASSESSMENT TITLE

Quiz 2

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.
PP5 Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates assigned to courses (CPL-MK)

Mastering the knowledge of the principles of occupational safety and health (K3); Able to implement good and quality theories, concepts and principles of occupational safety and health (K3) in order to improve the health status of workers by taking into account values, norms and ethics.

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 13	30 minutes
OTHERS REQUIRED:	
REFERENCES	
16. Budi Harijanto, K3 teaching module, 2012 17. Law no. 1 of 1970 concerning work safety 18. Law no.13 of 2003 concerning employment 19. Law no.3 of 1992 (Social security for workers) 20. PP no. 33 of 1977	

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHOD

SUBJE	Occupational Health and Safety				
CODE	RTI211008	**WEIGHT (credits) / hour**	2	**SEMESTER**	2
SUPPORTING LECTURER	Meyti Eka Apriyani ST., MT.				

ASSESSMENT FORMS

UAS

ASSESSMENT TITLE

UAS

SUB COURSE LEARNING ACHIEVEMENTS

Learning Outcomes of Study Program Graduates (CPL-Prodi)

S8 Internalize academic values, norms, and ethics.
PP5 Mastering knowledge about quality assurance and occupational safety and health (K3) principles in ICT product development.
KU2 Able to demonstrate independent, quality and measurable performance.

Learning Outcomes Graduates assigned to courses (CPL-MK)

Mastering the knowledge of the principles of occupational safety and health (K3); Able to implement good and quality theories, concepts and principles of occupational safety and health (K3) in order to improve the health status of workers by taking into account values, norms and ethics.

DESCRIPTION

Solve the problems given by the lecturer

WORKING METHOD

1. Define the problem
1. Looking for the best solution
2. Describe the solution
3. Write down the solution process (steps).
4. Make a report on the results of the work
5. Assignments are done independently and collected in softcopy form via e-learning lms.polinema.ac.id

OUTER FORMAT

Work Object: problem solving answers
Output Form: a report containing the results of problem solving in PDF format

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Report format structure: 10%
Conformity of answers: 50%
Solution Accuracy : 40%

The weight of the Quiz 1 assessment is % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 17	30 minutes
OTHERS REQUIRED:	
REFERENCES	
21. Budi Harijanto, K3 teaching module, 2012 22. Law no. 1 of 1970 concerning work safety 23. Law no.13 of 2003 concerning employment 24. Law no.3 of 1992 (Social security for workers) 25. PP no. 33 of 1977	

ASSESSMENT AND EVALUATION PLAN

Mathematics I

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to understand the concept of types of numbers	Number Type	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	Quiz 1: 7.5 % UTS: 30 % Task 1: 10%
2	Students are able to understand Factors and Prime Numbers	Factors and Prime Numbers	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
3	Students are able to understand the concept of Fractions, Ratios, and Percentages	Fractions, Ratios and Percentages	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
4	**Quiz 1**			
5	Students are able to understand the concept of Decimal Numbers (division, fractions, comma2 numbers)	Decimal Numbers (division, fraction, comma2)	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
6	Students are able to understand the concept of rank	Rank	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
7	Students are able to understand the concept of Number System 1	Number System 1	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
8	**UTS**			
9	Students are able to understand the concept of Number System 2	Number System 2	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	Quiz 2: 7.5 % U A S: 35 % Task 2: 10%
10	Students are able to understand the concept of Introduction to Algebra (linear equations, coefficients, constants etc.), Algebraic Ranks, Algebraic Factoring	Introduction to Algebra (linear equations, coefficients, constants etc.), Algebraic Powers, Algebraic Factoring	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	

11	Students are able to understand and solve the concept of solving linear equations and polynomials	Solving linear and polynomial equations	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
12	Students are able to understand concepts and draw graphs	Chart	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions Task 1: 10 questions	
13	**Quiz 2**			
14	Students are able to understand the concept of combinatorial (factorial, combination, permutation, opportunity)	Combinatorial (factorial, combination, permutation, chance)	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
15	Students are able to understand the concept of Trigonometry (special angles, Pythagorean formula)	Trigonometry (special angles, Pythagorean formula)	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
16	Students are able to understand the concept of Number Series	Number Series	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions Task 2: 10 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Mathematics 1**				
CODE	RTI211004	**WEIGHT (credits) / hour**	**2/6**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
Task 1					
ASSESSMENT TITLE					
Task 1: 10 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the concept of solving systems of linear equations using the Gauss Seidel , Gauss, Gauss Jordan method					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student assignment answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
12th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 1**				
CODE	RTI211004	**WEIGHT (credits) / hour**	**2/6**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
Task 2					
ASSESSMENT TITLE					
Task 2: 10 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the concept of solving non-linear equations					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student assignment answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight for Assignment 1 is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
16th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Mathematics 1**				
CODE	RTI211004	**WEIGHT (credits) / hour**	**2/6**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-3					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight for Assignment 1 is 7.5% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 1**				
CODE	RTI211004	**WEIGHT (credits) / hour**	**2/6**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 8 - 12					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 7.5% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
13th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 1**				
CODE	RTI211004	**WEIGHT (credits) / hour**	**2/6**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Answer the UTS questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 1**				
CODE	RTI211004	**WEIGHT (credits) / hour**	**2/6**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: 40 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from meetings 1-16					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UAS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 35% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

ASSESSMENT AND EVALUATION PLAN

Math 3

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to understand and find solutions from general formula case studies 1	- The general Eclidean formula The general formula for Cityblocks	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	Quiz 1: 7.5 % UTS: 30 % Task 1: 10%
2	Students are able to understand and find solutions from general formula 2 case studies	- Minkowski's general formula Chebyshev's general formula	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
3	Students are able to understand the definitions and formulas for data, mean, median, mode	Introduction to Statistics (data, mean, median, mode)	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
4	**Quiz 1**			
5	Students are able to understand the definition of a graph and are able to perform calculations with a mathematical graph	- Definition - Graph Type Graph Terminology	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
6	Students are able to understand the definition of a tree and are able to perform mathematical tree calculations	- Tree definition - Spaning Tree - Rooted tree - Ordered tree - n-ary tree Binary Tree	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
7	Students are able to know the definition of Scalar and Vector Quantity	Scalar and Vector Quantity	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
8	**UTS**			
9	Students are able to represent Vectors, Components of a Given Vector	Vector and its components	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	Quiz 2: 7.5 % U A S: 35 % Task 2: 10%

10	Students are able to know the definition of Vector Space	Vector Space	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
11	Students are able to know and calculate the Direction of Cosines, the Scalar Product of Two Vectors, the Vector Product of Two Vectors	Directional Cosines, Scalar Product of Two Vectors, Vector Product of Two Vectors	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
12	Students are able to know and calculate the angle between two vectors, the ratio of directions	Angle Between Two Vectors, Ratio Of Directions	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions Task 1: 10 questions	
13	**Quiz 2**			
14	Students are able to know the definition and how to calculate Eigenvalues and Eigenvectors	Eigenvalues and Eigenvectors	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
15	Students are able to understand and find solutions from general formula 3 case studies	- Gower's general formula Soergel's general formula	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
16	Students are able to understand and find solutions from general formula 4 case studies	- The general formula of Canberra	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions Task 2: 10 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Math 3**				
CODE	RTI203006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	1
SUPPORTING LECTURER	Deasy Sandhya Elya Ikawati				
ASSESSMENT FORMS					
Task 1					
ASSESSMENT TITLE					
Task 1: 10 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the concept of solving systems of linear equations using the Gauss Seidel , Gauss, Gauss Jordan method					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student assignment answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight for Assignment 1 is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
12th week			150 minutes		
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
Task 2					
ASSESSMENT TITLE					
Task 2: 10 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the concept of solving non-linear equations					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student assignment answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight for Assignment 1 is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
16th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-3					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight for Assignment 1 is 7.5% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week			150 minutes		
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 8 - 12					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 7.5% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
13th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Answer the UTS questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: 40 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from meetings 1-16					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UAS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 35% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

ASSESSMENT AND EVALUATION PLAN

Programming Basic Practicum

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	able to explain about program concepts, programming languages, compilers, debugging, interpreters, able to install Java programming tools and Java basic structure	Programming language • Programming language concept • Java programming language • Compilers and debugging Java programming tools installation	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	Quiz 1: 10 % UTS: 30 %
2	Students can model case study problems using algorithms (describing input, process, output)	Case study	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
3	Able to apply data types, variables, input-output, sequences, and about Operators (Arithmetic Assignment, Joint Assignment, Increment, Decrement, Relational, Logic, Conditional, Bitwise, Casting) in a program code using Java	Input - output, variable, sequence	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
4	**Quiz 1**			
5	• the if, if-else, else-if and switch-case selection forms into the Java programming language Able to write into the Java program, flowcharts that have been made at the theoretical meeting on basic selection cases	Election 1	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
6	Students are able to write into the Java program, the flowchart that has been made at a theoretical meeting about nested selection cases	Election 2	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
7	able to make the format of writing a looping program part 1 (for, while, do-while) Students are able to write Java programs based on the flowchart that was made at	Loop 1	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	

	the theoretical meeting on the looping case part 1			
8	**UTS**			
9	• Be able to explain the format of writing nested loop programs *(for, while, do-while)* Able to write Java programs based on flowcharts that have been made at a theoretical meeting on nested loop cases	Loop 2	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	Quiz 2: 10 % U A S: 30 %
10	• Able to understand the creation of 1-dimensional Arrays • Able to write implementation of 1 dimensional Array and access its elements in the Java programming language . Able to implement searching and sorting (enrichment)	Arrays 1	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
11	• Students are able to understand the creation of 2-dimensional Arrays • Able to write implementation of 1 dimensional Array and access its elements in the Java programming language. Case study enrichment can be used matrix operations	Arrays 2	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
12	able to implement functions (function data types, function parameters/arguments, returns) and function calls in Java	Function 1	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
13	**Quiz 2**			
14	able to implement recursive functions and enrichment of function cases	Function 2 (Recursive Function)	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
15	Able to create programs to solve problems	Meeting materials 1-14	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	

16	Able to create programs to solve problems	Meeting materials 1-14	UTS: 45 questions UAS: 2 questions Quiz 1: 2 questions Quiz 2: 5 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Programming Basic Practicum				
CODE	RTI211007	**WEIGHT (credits) / hour**	**3/6**	**SEMESTER**	1
SUPPORTING LECTURER	Vivi Nur Wijayaningrum, S. Kom, M. Kom				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1 does 2 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand material 1-3					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Programming Basic Practicum				
CODE	RTI211007	**WEIGHT (credits) / hour**	**3/6**	**SEMESTER**	1
SUPPORTING LECTURER	Vivi Nur Wijayaningrum, S. Kom, M. Kom				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS does 45 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand Jobsheets 1-8					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	Programming Basic Practicum				
CODE	RTI211007	**WEIGHT (credits) / hour**	**3/6**	**SEMESTER**	1
SUPPORTING LECTURER	Vivi Nur Wijayaningrum, S. Kom, M. Kom				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS did 2 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand material 1-16					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.					

ASSESSMENT AND EVALUATION PLAN

Basic Programming

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are familiar with the basic concepts of algorithms and able to analyze simple problems in the form of algorithms [C2, A3]	· Programming Basic Concepts · Logic-based problem analysis	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	Quiz 1: 10 % UTS: 30 %
2	Students are familiar with the basic concepts of algorithms and able to analyze simple problems in the form of algorithms [C2, A3]	· Programming Basic Concepts · Logic-based problem analysis	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
3	Students understand and are able to explain about Data Type, Variable, Input-output, Sequence, Operator (Assignment Arithmetic, Assignments Mergers, Increments, Decrement, Relational, Logic, Conditional, Bitwise, Casting) and able to apply it in writing algorithms [C4, A3]	· Data Type · Variable · Input-Output · Sequences · Operator (Assignment Arithmetic, Assignment combined, Increments, Decrement, relational, Logic, conditional, Bitwise and casting	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
4	**Quiz 1**			
5	Student is able explain about election concept simple and nested, and able to write selection algorithms to solve case studies using flow chart [C4, A3,P2]	Selection 1 (if, if...else, if..else if…, switch..case) Logical expression Election nest	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
6	Student is able explain about	Selection 1 (if, if...else, if..else	Quiz 1: 40 questions UTS: 45 questions	

	election concept simple and nested, and able to write selection algorithms to solve case studies using flow chart [C4, A3,P2]	if…, switch..case) Logical expression Election nest	UAS: 5 questions	
7	Student is able understand the algorithm simple loops and nested loops, and able to describe case study problems using flow chart [C4, A3, P2]	· Draft loop · loop Nesting	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
8	**UTS**			
9	Student is able understand the algorithm simple loops and nested loops, and able to describe case study problems using flow chart [C4, A3, P2]	· Draft loop · loop Nesting	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	Quiz 2: 10 % U A S: 30 %
10	Student is able understand the concept of 1 dimensional and 2 dimensional arrays, as well as capable complete a case study using 1-dimensional and 2-dimensional arrays	· Arrays concept · Arrays 1 Dimensions · Arrays 2 Dimensions	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
11	Student is able understand the concept of 1 dimensional and 2 dimensional arrays, as well as capable complete a case study using 1-dimensional and 2-dimensional arrays	· Arrays concept · Arrays 1 Dimensions · Arrays 2 Dimensions	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
12	Student is able explain the concept of iterative and recursive functions, create/declare function, function call as well as able apply it in develop algorithms	· Function Concept · Iterative Function · Recursive Function	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	

	problem solving [C4,			
13	**Quiz 2**			
14	Student is able explain the concept of iterative and recursive functions, create/declare function, function call as well as able apply it in develop algorithms problem solving [C4,	· Function Concept · Iterative Function · Recursive Function	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
15	Students can understand and make Object Oriented Analysis & Design	- Definition of Object & Class - Defining Classes - Relations in Object inheritance	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
16	- Students can test software with the Whitebox & Blackbox model Students can perform software testing in terms of integration, validation and system testing	- Definition of software testing - White box testing - Blackbox testing - Integration testing validation	Quiz 1: 40 questions UTS: 45 questions UAS: 5 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Basic Programming**				
CODE	RTI171009	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	1
SUPPORTING LECTURER	Vivi Nur Wijayaningrum, S. Kom, M. Kom				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1 does 40 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand material 1-3					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Basic Programming**				
CODE	RTI171009	RTI171009	RTI171009	RTI171009	RTI171009
SUPPORTING LECTURER	Vivi Nur Wijayaningrum, S. Kom, M. Kom				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS does 50 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand Jobsheets 1-8					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Basic Programming**				
CODE	RTI171009	RTI171009	RTI171009	RTI171009	RTI171009
SUPPORTING LECTURER	Vivi Nur Wijayaningrum, S. Kom, M. Kom				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS did 35 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understanding Jobsheets 1-16					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					
1. Sebesta, Robert, 2016. Concept of programming languages global edition, Addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Learning Basic Algorithms and C++ Programming, Deepublish.					

ASSESSMENT AND EVALUATION PLAN

Project 2

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students understand the goals, processes and outputs and outcomes of Project 2 courses • Students understand the duties and functions of the Project implementer • Students understand *collaboration tools* that can be used to manage projects and work collaboratively remotely / online.	Introduction: - Project course description - Lecture Contract - output Project Implementer Review: - Stakeholders - Project Manager - System Analyst - System Designer - Programmer - Tester Review *Collaboration Tools:* - GitHub - Google Docs - LucidChart - Figma	Group discussion on the OT project concept	Quiz 1: 20% UTS: 30%
2	• Students understand the stages of project management • Students can make project plans	- Identify and determine the scope or scope that needs to be carried out in the project development process - Collect information needed in the software development process from stakeholders	Group discussions regarding the stages of project management	
3	• Students understand the stages of project management • Students can make project plans	- Planning the team structure, time frame, budget, security, and various other important factors needed for software development	Group discussions related to making project plans	

4	• Students understand and can analyze the functional requirements of the system.	- Analyze the functional requirements of the system	Group discussion related to software specification documents	
5	**Quiz 1**			
6	Students understand and can make design plans or design specifications.	Design specifications: • Architecture: programming language to be used, overall software design, and others. • UserInterface	Group discussion related to software architecture	
7	• Students understand and can make design plans or design specifications.	Design specifications: • platforms • security	Group discussion related to design	
8	**UTS**			
9	• Students can collaborate in system development	System Implementation: – Programming – System Integration – *debugging* – Documentation	System implementation progress reporting	Quiz 2: 20% UAS: 30%
10	• Students can collaborate in system development	System Implementation: – Programming – System Integration – *debugging* – Documentation	System implementation progress reporting	

11	• Students can collaborate in system development	System Implementation: – Programming – System Integration – *debugging* – Documentation	System implementation progress reporting	
12	• Students can collaborate in system development	System Implementation: – Programming – System Integration – *debugging* – Documentation	System implementation progress reporting	
13	Quiz 2			
14	• Students can evaluate the system that has been built.	Quality Assurance: – testing	Group discussion related to testing	
15	• Students understand and can make process and product documentation. .	Documentation – Process Documentation – Product Documentation	Group discussion related to documentation	
16	• Students can communicate for outreach to system users.	Delivery: – Training for Users	Group discussions related to technical documentation and training for users	

17	**UAS**	
TOTAL WEIGHT		**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project 2				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	5
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Proposal pitching desk					
SUB COURSE LEARNING ACHIEVEMENTS					
• Students understand the objectives, processes, outputs, outcomes of Project 2 courses • Students can make project plans related to scope • Students can make project plans related to organizational structure, time frame, budget, security etc • Students understand and can analyze the functional requirements of the system.					
DESCRIPTION					
Communicating project plans that have been prepared.					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Presenting the drafted project plans					
OUTER FORMAT					
• Job Object: Quiz • Output Form: Presentation of the project proposal					
IMPLEMENTATION SCHEDULE					
5th week	15 minutes				
OTHERS REQUIRED:					

REFERENCES

- Shit, Daniel. 2012. Needs Analysis in Software Engineering. Yogyakarta: Andi.
- Heryanto, Priest., Triwibowo, Totok. 2013. Information Technology-Based Project Management. Bandung: Informatics.
- Tantara, Rudy. 2012. Information System Project Management. Yogyakarta: Andi.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project 2				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	5
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
System implementation progress report					
SUB COURSE LEARNING ACHIEVEMENTS					
• Students can collaborate in system development					
DESCRIPTION					
Communicate the progress of system implementation					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Presenting the progress of system implementation					
OUTER FORMAT					
• Job Object: Quiz • Output Form: Presentation of the project proposal					
IMPLEMENTATION SCHEDULE					
13th week			15 minutes		
OTHERS REQUIRED:					
REFERENCES					

- Shit, Daniel. 2012. Needs Analysis in Software Engineering. Yogyakarta: Andi.
- Heryanto, Priest., Triwibowo, Totok. 2013. Information Technology-Based Project Management. Bandung: Informatics.
- Tantara, Rudy. 2012. Information System Project Management. Yogyakarta: Andi.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**

ASSESSMENT METHOD

SUBJECT	Project 2				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	5

SUPPORTING LECTURER	
ASSESSMENT FORMS	
MIDTERM EXAM	
ASSESSMENT TITLE	
Software planning	
SUB COURSE LEARNING ACHIEVEMENTS	
• Students understand the objectives, processes, outputs, outcomes of Project 2 courses • Students can make project plans related to scope • Students can make project plans related to organizational structure, time frame, budget, security etc • Students understand and can analyze the functional requirements of the system. • Students understand and can make system design plans • Students understand and can make system architecture plans	
DESCRIPTION	
Communicate the plans drawn up	
WORKING METHOD	
• The questions are done through e-learning lms.polinema.ac.id • Presenting plans related to system design and architecture	
OUTER FORMAT	
• Job Object: Quiz • Output Form: Presentation of software requirements specification documentation	
IMPLEMENTATION SCHEDULE	
8th week	15 minutes
OTHERS REQUIRED:	
REFERENCES	
• Shit, Daniel. 2012. Needs Analysis in Software Engineering. Yogyakarta: Andi. • Heryanto, Priest., Triwibowo, Totok. 2013. Information Technology-Based Project Management. Bandung: Informatics. • Tantara, Rudy. 2012. Information System Project Management. Yogyakarta: Andi.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project 2				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	5
SUPPORTING LECTURER					
ASSESSMENT FORMS					
FINAL EXAMS					
ASSESSMENT TITLE					
Project Evaluation					
SUB COURSE LEARNING ACHIEVEMENTS					
• Students understand the objectives, processes, outputs, outcomes of Project 2 courses • Students can make project plans related to scope • Students can make project plans related to organizational structure, time frame, budget, security etc • Students understand and can analyze the functional requirements of the system. • Students understand and can make system design plans • Students understand and can make system architecture plans • Students can collaborate in system development • Students can evaluate the system that has been built • Students understand making process and product documentation • Students can communicate for outreach to system users					
DESCRIPTION					
Communicate overall project evaluation					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Presenting overall project results and evaluation					
OUTER FORMAT					

• Job Object: Quiz • Output Form: Presentation of project results and reports	
IMPLEMENTATION SCHEDULE	
17th week	15 minutes
OTHERS REQUIRED:	
REFERENCES	
• Shit, Daniel. 2012. Needs Analysis in Software Engineering. Yogyakarta: Andi. • Heryanto, Priest., Triwibowo, Totok. 2013. Information Technology-Based Project Management. Bandung: Informatics. • Tantara, Rudy. 2012. Information System Project Management. Yogyakarta: Andi.	

ASSESSMENT AND EVALUATION PLAN

IT Project Management

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students can understand the concept of project management in general and can understand the life cycle of a project	1. Project management 2. IS project life cycle 3. Project relationship with the organization 4. Profession in project management	• Results of group discussions • Case analysis in software projects • Quiz 1 (5 questions) • UTS (2 questions) • UAS (2 questions)	Task 1: 5% Task 2: 5% Group discussion : 8% Quiz 1: 12% UTS: 20%
2	• Students can understand the roles and functions of each personnel associated with the PL Project	1. Understanding the organizational structure of the project 2. Project implementers 3. The roles and functions of personnel in the project	• Discuss the roles and functions of personnel in an PL project and form a small organization in a group according to the PL project activities • Quiz 1 (5 questions) • UTS (3 questions) • UAS (3 questions)	
3	Students can prepare software project proposals (SCRUM)	• Definition of business cases • Project proposal templates • Terms of reference	• Task 1 : Design a software project proposal that defines what will be done, business needs, TOR, expected results etc. (proposal template will be provided) • Quiz 1 (5 questions) • UTS (3 questions) • UAS (3 questions)	
4	**Quiz 1**			
5	• Students are able to plan a project management	• Basic project management plan • Develop an integrated project management plan • Create a project management plan template	• Discussion: Develop a project management plan, the contents of the project management plan • UTS (2 questions) • UAS (2 questions)	

6	• Students are able to plan PL project scope management	• Project scope basics • Process of Gathering Requirements • The process of defining scope n • The process of compiling a work breakdown structure and dictionary • Using Microsoft Project to create a Work Breakdown Structure	• Arranging project scope by using microsoft project to define process scope • UTS (3 questions) • UAS (3 questions)	
7	• Students are able to plan PL project time management	• Project time management plan • The process defines project activities • Process sequencing activities • The process of estimating project resource requirements • The process determines the duration of the activity The process of compiling a project activity schedule with Ms. Project	• Task 2: Arrange time management in PL/duration projects using Microsoft Project • UTS (3 questions) • UAS (3 questions)	
8	**UTS**			
9	Students are able to plan cost management in PL projects	• Project cost management plan • The process of estimating activity costs • The process of preparing a project budget • Compile a project budget with Ms.Excel (template) Develop project budget with Ms. software . Project	• Discussion: Arranging budget management in PL/duration projects using Microsoft Project • Quiz 2 (3 questions) • UAS (3 questions)	Task 1: 5% Task 2: 5% Discussion : 10% Quiz 2: 10% UAS: 20%
10	• Students are able to plan HR management in PL projects	• Project HR management • Project HR management plan • The process of planning project HR Develop a project HR management plan using the template provided	• Discussion: Arranging HR management in PL/duration projects using microsoft project (1x50') • Quiz 2 (3 questions) • UAS (4 questions)	
11	• **Quiz 2**			

12	• Students are able to plan cost management in PL projects	• Project cost management plan • The process of estimating activity costs • The process of preparing a project budget • Develop project budget with Ms. software . Project t	• Task 3: Arrange communication management in the PL/duration project using the prepared template • UAS (3 questions)	
13	• Students are able to plan HR management in PL projects	• Project HR management • Project HR management plan • The process of planning project HR Develop a project HR management plan using the template provided	• Discussion: Setting up risk management in PL/duration projects using the prepared templates • UAS (3 questions)	
14	• Students are able to plan communication management in PL projects	• Project communication management planning Workshop on making a project communication management plan	• Discussion: Make a report on the results of monitoring time and costs in PL projects • UAS (3 questions)	
15	• Students are able to plan risk management in PL projects	• Risk management plan • The process of identifying risks • The process of conducting a qualitative risk analysis • The process of conducting a quantitative risk analysis • The process of determining responses to risk • Compile project register Workshop on preparing a project risk management plan	• Discussion: Making reports on the results of HR monitoring and communication in PL projects • UAS (3 questions)	
16	• Students are able to monitor and control time and costs in PL projects	1. The concept of supervising the implementation of the project schedule and budget of the PL project 2. Techniques for controlling schedules and costs (PV curves, EV, schedule performance index, crashing) Using MS project to control schedule and cost in PL project	• Task 4: Prepare the final PL project report along with the attachments to the PL project report • UAS (3 questions)	
17	**UAS**			

TOTAL WEIGHT	**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of project management Students can understand the roles and functions of personnel Students can compile software proposals					
DESCRIPTION					
Students can understand the concept of project management Students can understand the roles and functions of personnel Students can compile software proposals					
DESCRIPTION					
1. Answer Quiz questions related to project management concepts, personnel functions and PL proposals / case study presentations					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 35 minutes					
OUTER FORMAT					
• Job Object: Quiz • Output Form: Student Quiz answers / Case study presentation					
IMPLEMENTATION SCHEDULE					

4th week	35 minutes
OTHERS REQUIRED:	
REFERENCES	
• Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices . • Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz material 9-10					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand and plan cost management in PL projects Students can understand and plan HR management in PL projects					
DESCRIPTION					
Answering Quiz questions related to project management concepts in the form of costs and HR/ Presentation					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 35 minutes • If the presentation is held for 15 minutes					
OUTER FORMAT					
A. Job Object: Quiz B. Output Form: student Quiz answers/ presentations					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 12% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					

11th week	35 minutes
OTHERS REQUIRED:	
REFERENCES	
• Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices . • Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Midterm exam					
ASSESSMENT TITLE					
UTS material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of project management Students can understand the roles and functions of personnel Students can compile software proposals Students are able to plan a project management Students are able to plan PL project scope management Students are able to plan PL project time management					
DESCRIPTION					
Answer UTS questions related to the concept of project management					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes					
OUTER FORMAT					
• Work Object: UTS • Outcome Form: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UTS assessment weight is 20% of 100% of the assessment for this course					

IMPLEMENTATION SCHEDULE	
8th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
• Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices . • Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Final exams					
ASSESSMENT TITLE					
UAS material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to plan cost management in PL projects Students are able to plan HR management in PL projects Students are able to plan cost management in PL projects Students are able to plan HR management in PL projects Students are able to plan communication management in PL projects Students are able to plan risk management in PL projects Students are able to monitor and control time and costs in PL projects					
DESCRIPTION					
Answer UAS questions related to the concept of project management					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 35 minutes					
OUTER FORMAT					
• Work Object: UAS • Outcome Form: student UAS answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					

Conformity of answers : 100% The UTS assessment weight is 20% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
8th week	35 minutes
OTHERS REQUIRED:	
REFERENCES	

- Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices .
- Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology

ASSESSMENT AND EVALUATION PLAN

Career development

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Get to know the goals, processes and outputs and outcomes of the course ● Able to explain the importance of Personal Branding and how to apply it to themselves according to their potential and needs	● Definition of Personal Branding ● How to apply to themselves as needed	● Task 1: Written assignment	Task 1: 3% Task 2: 2% Task 3: 3% Task 4: 2% Task 5: 2% Task 6: 3% Task 7: 3% UTS: 30%
2	Able to explain the various professions in the field of informatics and able to choose the most suitable for himself	● Variety of informatics professions ● IT Profession Standardization ● IT professional level	● Task 2: written assignment	
3	● Understand the rules of career development in organizations ● Able to find problems and formulate solutions of career development for himself in accordance with organizational rules	● Career development rules in organizations ● Various choices of informatics professions that are appropriate and in line with organizational rules	● Task 3: written assignment ● UTS (1 question)	
4	Able to find problems and formulate solutions for career development for himself as a freelancer according to his potential and competence	● Variety of freelance professions ● Terms and provisions to become a freelancer	● Task 4: written assignment	
5	Understand the basic concepts of career management (career exploration, career goals, career strategies, career assessment)	● Career exploration ● Career goal ● Career Strategy ● Career Assessment	● Task 5: written assignment ● UTS (1 question)	
6	● Understand career paths/patterns ● Understand the elements of career management ● Understand the benefits of career management ● Understand the phases of career management ● Understand career anchors according to personality	● Career path/pattern ● Elements of career management ● Career management benefits ● Career management phase ● Personal career anchor	● Task 6: written assignment ● UTS (1 question)	

7	• Understand career paths/patterns • Understand the elements of career management • Understand the benefits of career management • Understand the phases of career management • Understand career anchors according to personality	• Public speaking method • The basics of public speaking • The benefits of public speaking	• Task 7: written assignment	
8	**UTS**			
9	• Understand the basic concept of performance appraisal • Understand the purpose and benefits of performance appraisal • Understand the elements of performance appraisal • Understand performance appraisal standards • Understand performance appraisal methods and guidelines	• The basic concept of performance appraisal • Purpose and benefits of performance appraisal • Elements of performance appraisal • Performance appraisal standards • Performance appraisal methods and guidelines	• Task 8: written assignment • UAS (1 question)	Task 8: 2% Duty 9: 3% Task 10: 2% Task 11: 2% Task 12: 2% Task 13: 2% Task 14: 2% Task 15: 2% UAS: 35%
10	• Understand the basic concept of compensation • Understand the compensation process • Understand compensation theory • Understand compensation goals • Understand the compensation system • Understand the principle of fairness in compensation	• The basic concept of compensation • Compensation process • Compensation theory • Compensation goals • Compensation system • The principle of fairness in compensation	• Assignment 9: written assignment	
11	• Understand the basic theory of Holland's concept • Understanding the characteristics of Holland's theory • Understand the strengths and weaknesses of Holland's theory.	• John Holland's career selection theory (RIASEC) • The characteristics of Holland's theory • The strengths and weaknesses of John Holland's theory • Research research on John Holland's theory	• Assignment 10: written assignment • UAS (1 question)	

		• The application of John Holland's theory to the application of career counseling guidance		
12	• Understand the meaning of Career Maturity • Understanding indicators in Career Maturity • Understand efforts to increase Career Maturity • Understand the factors that influence Career Maturity.	• Definition of Career Maturity • indicators in Career Maturity • Efforts to increase career maturity • Factors that influence Career Maturity	• Assignment 11: written assignment • UAS (1 question)	
13	• Understand the basic concept of protean career • Knowing the characteristics of protean careers • Know the concept of career planning • Knowing how to build a career development system	• Protean career basic concept • Characteristics of protean careers • Career planning concept • How to build a career development system	• Assignment 12: written assignment	
14	• Understand the history of the industrial revolution • Knowing the changes in the industrial era 4.0 • Knowing career prospects in the industrial era 4.0 • Knowing the non-technical skills that must be possessed in the industrial era 4.0	• History of the industrial revolution • Changes in the industrial era 4.0 • Career prospects in the industrial era 4.0 • Non-technical skills that must be possessed in the industrial era 4.0	• Assignment 13: written assignment	
15	• Understand the internationalization of business • Understand international business HR challenges • Understand the differences in HRM between countries • Understand staffing of global organizations • Understand international assignment factors	• Internationalization of business • International Business HR Challenges • Differences in HRM between countries • Global Organization Staffing • International assignment factor	• Assignment 14: written assignment • UAS (1 question)	

16	Understand differences and similarities in HR practices between countries and influencing factors including culture, economic systems, law, and international relations	• Differences and similarities in HR practices between countries • cultural factors • Economic system factor • Legal factors and industrial relations	• Assignment 15: written assignment	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJ	Career development				
CODE	RTI198003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	8
SUPPORTING LECTURER	Atiqah Nurul Asri, S.Pd., M.Pd. Deddy Kusbianto PA, Ir., M.Mkom. Qonitatul Hasanah, S.ST, M.Tr.T Rizdania ST., MKom. Vit Zuraida, S.Kom., M.Kom. Adevian Fairuz Pratama, S.ST, M.Eng Diana Mayangsari Ramadhani, S.ST, M.Tr.T				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Get to know the goals, processes and outputs and outcomes of the course Able to explain the importance of Personal Branding and how to apply it to themselves according to their potential and needs Able to explain the various professions in the field of informatics and able to choose the most suitable for himself Understand the rules of career development in organizations Able to find problems and formulate solutions of career development for himself in accordance with organizational rules Able to find problems and formulate solutions for career development for himself as a freelancer according to his potential and competence Understand the basic concepts of career management (career exploration, career goals, career strategies, career assessment) Understand career paths/patterns Understand the elements of career management Understand the benefits of career management Understand the phases of career management Understand career anchors according to personality Understand the method of public speaking Know the basics of public speaking Understand the benefits of public speaking in a career					
DESCRIPTION					
Answer questions from week 1-7 material					
WORKING METHOD					

The questions are done through e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Work Object: UTS Outer Form: student answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % The UTS assessment weight is 30% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
8th week	120 minutes
OTHERS REQUIRED:	
REFERENCES	
Widyanti, R. (2021). Career Management (Theory, Concept and Practice). Indonesian Science Media. Sinambela, LP (2021). Human Resource Management: Building a solid work team to improve performance. Script Earth.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUB	Career development				
CODE	RTI198003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	8
SUPPORTING LECTURER	Atiqah Nurul Asri, S.Pd., M.Pd. Deddy Kusbianto PA, Ir., M.Mkom. Qonitatul Hasanah, S.ST, M.Tr.T Rizdania ST., MKom. Vit Zuraida, S.Kom., M.Kom. Adevian Fairuz Pratama, S.ST, M.Eng Diana Mayangsari Ramadhani, S.ST, M.Tr.T				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand the basic concept of performance appraisal Understand the purpose and benefits of performance appraisal Understand the elements of performance appraisal Understand performance appraisal standards Understand performance appraisal methods and guidelines Understand the basic concept of compensation Understand the compensation process Understand compensation theory Understand compensation goals Understand the compensation system Understand the principle of fairness in compensation Understand the basic theory of Holland's concept Understanding the characteristics of Holland's theory Understand the strengths and weaknesses of Holland's theory. Understand the meaning of Career Maturity Understanding indicators in Career Maturity Understand efforts to increase Career Maturity					

Understand the factors that influence Career Maturity. Understand the basic concept of protean career Knowing the characteristics of protean careers Know the concept of career planning Knowing how to build a career development system Understand the history of the industrial revolution Knowing the changes in the industrial era 4.0 Knowing career prospects in the industrial era 4.0 Knowing the non-technical skills that must be possessed in the industrial era 4.0 Understand the internationalization of business Understand international business HR challenges Understand the differences in HRM between countries Understand staffing of global organizations Understand international assignment factors Understand differences and similarities in HR practices between countries and influencing factors including culture, economic systems, law, and international relations
DESCRIPTION
Answer questions from week 1-16 material
WORKING METHOD
The questions are done through e-learning lmsslc .polinema.ac.id
OUTER FORMAT
Work Object: UAS Outer Form: student answers
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Conformity of answers: 10 0 % The UAS assessment weight is 35% of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE
17th week | 120 minutes
OTHERS REQUIRED:
REFERENCES
Widyanti, R. (2021). Career Management (Theory, Concept and Practice). Indonesian Science Media. Sinambela, LP (2021). Human Resource Management: Building a solid work team to improve performance. Script Earth.

ASSESSMENT AND EVALUATION PLAN

Entrepreneurship

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Understand and be able to explain the basic concepts and scope of Digital Entrepreneurship (DE)	1. Introduction to Digital Entrepreneurship (DE) 2. Types of Digital Startups Book 1, chapter 1 Book 2, chapter 1		Quiz 1: 20 % Quiz 2: 20 % UTS: 30 % UAS: 30 %
2	Know the process of identifying opportunities and being able to generate technology-based business ideas.	Identify technology-based business opportunities and ideas 1. Identify opportunities 2. Idea generating techniques 3. Techniques increase creativity Book 1, chapter 2 Book 2, chapter 3		
3	Understand the concept of feasibility analysis of DE ideas	Feasibility analysis of the idea of Digital Entrepreneurship 1. Product/service feasibility analysis 2. Industry/target market feasibility analysis 3. Financial feasibility analysis Book1, chapter3 Book 2, chapter 4		
4	Understand the concept of feasibility analysis of DE ideas	Feasibility analysis of the idea of Digital Entrepreneurship 1. Organizational feasibility analysis 2. Industry and competitor analysis Book1, chapter3 chapter5 Book 2, chapter 4		
5-6	Know various kinds of marketing and sales techniques in DE	Marketing and sales in DE 1. Segmentation, Targeting, Positioning 2. 7P of entrepreneurship Book1, chapter11 Book 2, chapter 8		
7-8	Know the principles of financial management in DE	Financial management in DE 1. Capital/funding strategy for DE 2. Financial statements Book1, chapter10		

		Book 2, chapter 8		
9	**Able to answer the questions tested**	**UTS**		
10	Business planning presentation	Create a Business Plan		
11	Know the principles of managing finances in DE. Knowing business models in DE	Business models in DE 1. Business models in DE 2. Peer to peer business models, subscriptions, licensing 3. Business model switching costs, continuity Book1, chapter4 Book 2, chapter 4 Book3		
12	Able to apply the main principles in preparing an DE business plan	Making a DE business plan 1. DE business plan structure 2. Competitive advantage concept 3. Organizational strategic plan 4. Business pitching techniques Books chapter 12		
13	Able to apply DE business model validity testing techniques	DE business model validation 1. Business model validation 2. Lean startup methods 3. Customer development focus Book3		
14	Able to apply DE business model validity testing techniques	DE business model innovation 1. Trigger questions 2. Napkin sketches 3. Applying constraints 4. Business model prototyping Book 2, chapter 16		
15	Be able to choose the type of legal legal entity to create a DE company	Legal aspects and intellectual property in DE 1. Ethics in DE 2. Legal entities in DE 3. Intellectual property protection Book1, chapter7, chapter12 Book 2, chapter 2, chapter 3		

16	Able to evaluate the growth potential of a DE business	Growth strategy in DE 1. The concept of economies of scale, economies of scope, market leadership 2. Internal growth strategy 3. External growth strategy 4. Business expansion Book 1, chapter 13, chapter 14		
17	**Able to answer the questions tested**	**UAS**		
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**ENTREPRENEURSHIP**				
CODE	**RTI195001**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Evaluation of chapters 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from chapters 1 to 3					
DESCRIPTION					

Develop proposals

individual assignments to prepare **Proposals** About plans to open a small business (**Business Plan)** and take advantage of marketing in the Digital era with the division of group tasks as follows:

no	Division of tasks	Types of products
1.	Group I	Various food/drinks
2.	Group II	Various fruits/vegetables/ornamental plants
3.	Group III	Various transportation / travel / Delivery of package goods
4.	Group IV	Various Clothing / sports / t-shirts / office
5.	Group V	Various electronic / household equipment
6.	Group VI	Various cosmetics / mini market

Writing Details:

1) Cover (sample attached)
2) Topic/title
3) Spacing 1.50
4) LetterT. New Roman font size 12

Collected in each group leader and handed over to class leader on …….week 5 of 2021 and sent to lecturer via WA or LMS.

WORKING METHOD
Individual Report
OUTER FORMAT
A. Student Report on *Business Plan*

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
(indicator) : 100 % The weight for Quiz 1 is 20% of 100% for this course
IMPLEMENTATION SCHEDULE
Collected at week 5
OTHERS REQUIRED:
REFERENCES
1. Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition. 2. Scarborough, NM, & Cornwall, JR (2011). *Essentials of entrepreneurship and small business management* . London: Pearson. Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers* . John Wiley & Sons.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**ENTREPRENEURSHIP**				
CODE	**RTI195001**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Evaluation of chapters 10-12					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material from chapters 10 to 12					
DESCRIPTION					
1. Name, explain, and give examples of marketing and sales strategy forms for a company that offers products or services. What marketing mix implementation does the company do to achieve the company's goals? 2. Do the steps in point 1 above and apply it to the company you are going to start. 3. Explain the definition of a marketing plan, goals , benefits , and how to prepare a complete marketing plan 4. Explain the Definition of Strategy Marketing , Purpose , Functions And Types Strategy Marketing Most complete 5. Explain the Definition of Management Marketing , Tasks , Objectives , Functions , Concepts And Elements Management Marketing Complete					
WORKING METHOD					
Individual					
OUTER FORMAT					
Student Answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100 % The weight for Quiz 2 is 20% of 100% for this course					
IMPLEMENTATION SCHEDULE					
Collected at week 12					
OTHERS REQUIRED:					
REFERENCES					
1. Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition. 2. Scarborough, NM, & Cornwall, JR (2011). *Essentials of entrepreneurship and small business management* . London: Pearson.					

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers* . John Wiley & Sons.
Supporters:
1. Following (internet etc.)

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**ENTREPRENEURSHIP**				
CODE	**RTI195001**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
Evaluation of chapters 1-8					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from chapters 1 to 8					
DESCRIPTION					
DOING QUESTIONS					

1. What is the Title of Independent/Individual Assignment Proposal Digital Entrepreneurship Business Plan
    a. Why did you choose that title? Describe
    b. What are the goals and benefits for students/relatives and POLYMA
    c. Have you practiced/tried the program product that you planned/proposed? Describe the production process
    d. What marketing plan and market coverage will you achieve?
    e. Describe the SWOT Analysis related to your product
    f. How much does it cost to manufacture and sell these products (details)
2. Explain the objectives of learning Digital Entrepreneurship, especially the final results for students (is it useful or not)?
3. What is meant by Marketing and sales? And what is the difference between marketing and sales explain?
4. What do you think about the impact of the existence of COVID-19, especially on the world economy, explain. (see on the internet)

WORKING METHOD	
Individual	
OUTER FORMAT	
Student Answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
(indicator) : 100 % The UTS assessment weight is 30% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 9	200 minutes
OTHERS REQUIRED:	
REFERENCES	
1. Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition. 2. Scarborough, NM, & Cornwall, JR (2011). *Essentials of entrepreneurship and small business management* . London: Pearson. 3. Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers* . John Wiley & Sons.	
Supporters:	
1. Following (internet etc.)	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**ENTREPRENEURSHIP**				
CODE	**RTI195001**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1

SUPPORTING LECTURER	Agung Nugroho Pramudhita, ST, MT
ASSESSMENT FORMS	
UAS	
ASSESSMENT TITLE	
Evaluation of chapters 1-16	
SUB COURSE LEARNING ACHIEVEMENTS	
Students are able to understand material from chapters 1 to 16	
DESCRIPTION	
Business Proposals that have been made	
WORKING METHOD	
Individual	
OUTER FORMAT	
The outer target is to be able to take part in competitions and those who qualify for funding get an A	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
(indicator) : 100 % The UAS assessment weight is 30% of 100% of the assessment of this course	
IMPLEMENTATION SCHEDULE	
Week 17	
OTHERS REQUIRED:	
REFERENCES	
1. Barringer, BR, & Ireland, RD (2016). Entrepreneurship Successfully Launching New Ventures, Fifth Global Edition. 2. Scarborough, NM, & Cornwall, JR (2011). *Essentials of entrepreneurship and small business management* . London: Pearson. 3. Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers* . John Wiley & Sons.	
Supporters:	
1. Following (internet etc.)	

ASSESSMENT AND EVALUATION PLAN

Mobile Programming

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Students are able to explain the flutter SDK installation process on the operating system used (C2) ● Students are able **to make** hello world projects and run applications to the emulator / device they have. (C6) ● Students are able **to create** a Git repository for the created hello world project (C6)	● Install Flutter SDK on Windows Operating System ● Install Visual Studio Code ● Install Git ● Emulator Configuration ● Android Device Configuration ● Create and publish the git project hello world repository to github.		Duty: 30% Quiz 1: 10% Quiz 2: 10% UTS: 25% UAS: 25%
2	● Students are able to **explain** the basics of Flutter Programming (C2) ● Students are able to **make** tree widgets and compile flutter applications (C6)	● Get to know widgets ● Create widget trees ● Compile the flutter application		
3	● Students are able to **explain** the basics of Flutter Programming (C2) ● Students are able to **make** flutter applications based on dart programming (C6) ● Students are able **to distinguish** statefulWidget and statelessWidget (C2)	● Create a flutter application based on dart programming ● Understand the basic state ● Understand and the difference between statefulWidget and statelessWidget ● Create a flutter application using statefulWidget and statelessWidget		
4	● Students are able to **explain** and **map** data to widgets (C2, C3) ● Students are able to **explain** and **create** custom list items (C2, C3) ● Students are able to **explain** and **create** container, text, time, and theming styling (C2, C3)	● Understanding and mapping data to widgets ● Understand and create custom list items ● Understand and create container, text, time styling ● Understanding and creating Theming		
5	Quiz 1			
6	● Students are able **to create** applications that connect to other pages using the navigator (C6) ● Students are able to **create** functions that can pass data from one page to another (C6)	● Create applications that connect with other pages using the navigator ● Create a function that can pass data from one page to another		

7	• Students are able **to create** applications that can receive input from the user (C6) • Students are able **to create** applications that can process data according to the action chosen by the user (C6)	State Management and User Input		
8	**UTS**			
9	• Students are able **to create** applications that can retrieve data from the server (C6) • Students are able to **explain** about JSON (C2)	Http Request, User Auth and Animation		
10	Students are able **to create** applications that can create, update and delete data from the server (C6)	Http Request, User Auth and Animation		
11	• Students are able to **explain** No SQL (C2) • Students can **create** applications that can get and create data on the server (C6)	Firestore		
12	**Quiz 2**			
13	Students are able **to create** applications that can update and delete data on the server (C3)	Firestore		
14	Students are able **to create** flutter applications consisting of user auth and storage in the cloud (C3)	Project Tasks		
15	Students are able **to create** flutter applications consisting of user auth and storage in the cloud (C3)	Project Tasks		

16	Students are able **to create** flutter applications consisting of user auth and storage in the cloud (C3)	Project Tasks		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**MOBILE PROGRAMMING**				
CODE	**RTI195003**	**WEIGHT (credits) / hour**	**3 credits/ 6 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Habibie Ed Dien, S. Kom., MT				
ASSESSMENT FORMS					
Quiz 1 + UTS					
ASSESSMENT TITLE					
Evaluation of material chapters 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand and apply material 1-7					
DESCRIPTION					
Create Mini Projects 1. EBT (New, Renewable Energy) Power Plant Monitoring System 2. Agriculture and Livestock Monitoring System (screen similar to no.1) 3. Sempro Schedule Information System and D4-TI Thesis Session					
WORKING METHOD					
Group					
OUTER FORMAT					
Student-produced Mini Projects					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : % The score for Quiz 1+UTS is 35% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
Weeks 7-8	(2 weeks)				
OTHERS REQUIRED:					
REFERENCES					
Main :					
1. Flutter & Dart - The Complete Guide [2021 Edition] (https://www.udemy.com/course/learn-flutter-dart-to-build-ios-android-apps/)					
Supporters:					
1. Alessandria, S. (2020). *Flutter Projects: A practical, project-based guide to building real-world cross-platform mobile applications and games* . Packt Publishing Ltd.					

2. Biessek, A. (2019). *Flutter For Beginners An Introductory Guide to Building cross-platform Mobile Applications with Flutter and Dart 2* . Packt Publishing Ltd.
3. Napoli, ML (2019). *Beginning Flutter A Hands On Guide To App Development* . https://doi.org/10.1002/9781119550860

ASSESSMENT AND EVALUATION PLAN

Indonesian

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to use Indonesian according to the context of official and unofficial use.	1. The function and position of the Indonesian language (UU 24 of 2009). 2. Language attitude (Prioritize Indonesian, preserve regional languages, and master foreign languages.) 3. Use of official and unofficial language. 4. Use of good and correct language.		Task 1: 5% Task 2: 5% Task 3: 5% Task 4: 5% Task 5:30% UTS: 30% UAS: 20%
2	Students are able to write effective sentences with the correct spelling and choice of words.	1. Use of Indonesian spelling (PUEBI). 2. Word selection. 3. Effective use of sentences.		
3	Students are able to write short messages and formal electronic letters.	1. Ethics of writing and sending short messages and e-mails. 2. Discourse structure in short messages and official forms of e-mail. 3. The choice of words and sentences is effective in writing formal short messages and electronic letters.		
4	Students are able to make formal phone calls and conduct job interviews.	1. Material review 1-3 2. Telephone etiquette and job interviews. 3. Discourse structure in telephone and job interviews. 4. The choice of words and sentences is effective in writing formal short messages and electronic letters.		
5	Students are able to write job applications and curriculum vitae.	1. Concept of job application and curriculum vitae in digital era. 2. Job application structure. 3. The choice of words and sentences is effective in writing job applications and curriculum vitae.		
6	Students are able to make presentation views of scientific research articles.	1. Map ideas from readings. 2. Arrange slides for scientific presentations.		

7	Students make presentations on scientific topics.	1. Presentation structure. 2. The choice of words and sentences is effective in presentations. 3. Interesting and effective presentation.		
8	**UTS**			
9	Students are able to identify the structure and characteristics of scientific writing (research proposals, theses, & scientific articles)	1. Structure and characteristics of research proposals. 2. Thesis structure and characteristics. 3. Structure and characteristics of scientific articles.		
10	Students are able to understand popular scientific news/readings and write theoretical quotes on reading cards.	*1.* Reading technique: *scanning* and *skimming.* *2.* Write a quote along with the source. (Introduction Section)		
11	Students are able to understand scientific reading (books & scientific articles) and write theoretical quotations onto reading cards.	1. Reading technique: *scanning* and *skimming.* 2. Write a quote along with the source. (Theory Study Section)		
12	Students are able to compile the introductory part of a mini research proposal.	1. Search for data and facts related to the issues raised as research topics. 2. Arrangement of ideas in the introductory section. 3. Citation techniques with paraphrasing.		
13	Students are able to write logically and effectively the basic theory/literature review using the proper Indonesian language in a research proposal.	1. Proper and clear preparation of the theoretical basis/literature review section. 2. Citation techniques with paraphrasing.		
14	Students are able to explain research methods using proper Indonesian in mini research proposals.	The way of writing the research method section is precise and straightforward.		
15	Students are able to write a list of references correctly in a research proposal.	Compile a valid and appropriate list of references.		
16	Students are able to independently edit their mini research proposals.	Independent editing of content and language.		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**INDONESIAN**				
CODE	**RTI195006**	**CODE**	**RTI195006**	**CODE**	**RTI195006**
SUPPORTING LECTURER	**Rizki Putri Ramadhani, SS, M.Pd.**				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: **Presentation of Results of Reading Scientific Articles**					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Student Presentation					
WORKING METHOD					
Individual					
OUTER FORMAT					
Presentation Results					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 100% : % The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	100 minutes				
OTHERS REQUIRED:					
REFERENCES					
Ramadhani, Rizki Putri. 2019. Indonesian for Business and Industry. Malang: Polinema Press. Ministry of Education and Culture of the Republic of Indonesia. 2001. *Big Indonesian Dictionary* . Jakarta: Balai Pustaka. HP Achmad and Alek. 2016. *Indonesian for Higher Education: Substance of Study and Its Application* . Jakarta: Erlangga Publisher. Kasali, Rhenald. 2006. *Making Successful Presentations* . Jakarta: PT Gramedia Pustaka Utama. Ministry of Education and Culture. 2016. *General Guidelines for Indonesian Spelling* . Jakarta: Language Development and Development Agency. Trim, Bambang. 2017. *200+ Script Editing and Publishing Solutions* . Jakarta: Earth Script.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**INDONESIAN**				
CODE	**RTI195006**	**CODE**	**RTI195006**	**CODE**	**RTI195006**
SUPPORTING LECTURER	**Rizki Putri Ramadhani, SS, M.Pd.**				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: multiple choice					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-16					
DESCRIPTION					
Students work on the multiple choice questions that have been provided					
WORKING METHOD					
Individual					
OUTER FORMAT					
Student Answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 100% : % The UAS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	100 minutes				
OTHERS REQUIRED:					
REFERENCES					
Ramadhani, Rizki Putri. 2019. Indonesian for Business and Industry. Malang: Polinema Press. Ministry of Education and Culture of the Republic of Indonesia. 2001. *Big Indonesian Dictionary* . Jakarta: Balai Pustaka. HP Achmad and Alek. 2016. *Indonesian for Higher Education: Substance of Study and Its Application* . Jakarta: Erlangga Publisher. Kasali, Rhenald. 2006. *Making Successful Presentations* . Jakarta: PT Gramedia Pustaka Utama. Ministry of Education and Culture. 2016. *General Guidelines for Indonesian Spelling* . Jakarta: Language Development and Development Agency. Trim, Bambang. 2017. *200+ Script Editing and Publishing Solutions* . Jakarta: Earth Script.					

ASSESSMENT AND EVALUATION PLAN

Interface Design

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Knowing and explaining what is human and computer interaction (C2) • Explain the field of study related to IMK (C2) • Explain system development aids (C2)	Human and computer interface, basic concepts of human and computer relations, fields of study related to human and computer interaction, system development tools	• Task 1: Oral test • Quiz 1 (5 questions) • UTS (5 questions) • UAS (2 questions)	Task 1: 2.3% Task 2: 2.3% Task 3: 2.3% Task 4: 2.3% Task 5: 2.3% Task 6: 2.3% Task 7: 2.3% Quiz 1: 5% UTS: 30%
2	Students are able to explain the basic concepts of human factors, computer factors and are able to explain the relationship between human capabilities and limitations with the interaction design process of a software or hardware system (C2).	human factor : • Five senses • Limitations • human factor • Mental influence • and psychology • against design • interaction • Individual differences Computer factor: • Development • interaction technology • Design link • interaction with • technology • inputs/outputs • Hardware technology • or software for users with special needs	• Task 2: group discussion • Quiz 1 (5 questions) • UTS (5 questions) • UAS (2 questions)	
3	Able to group information based on the appropriate category and represent it with a symbol (icon) (C3)	• Categorize information into categories. • The use of symbols/images/icons that can represent information in a mind map.	• Task 3: written assignment • Quiz 1 (5 questions) • UTS (6 questions) • UAS (3 questions)	

4	Students are able to explain and apply the basic concepts of dialogue design and dialogue styles/variety of dialogues (C2) (C3)	• CommandLanguage • WIMPs • Direct Manipulation (DM) • PDA & Pen • Speech and natural language • Software User Interfaces	• Task 4: written assignment • Quiz 1 (5 questions) • UTS (6 questions) • UAS (3 questions)	
5	**Quiz 1**			
6	Students can explain the basic concepts of devices used in human and computer interaction (C2).	• Overview, utilities • Types of task analysis • Source and use of information • Data I/O • Represents data	• Task 5: written assignment • UTS (6 questions) • UAS (5 questions)	
7	Students explain the development of interactive tools from time to time. (C2)	• The latest development of interactive tools used by humans from time to time • Textual input tool • Pointing and picking device • Touch sensitive panel (touch-screen) • Display screen • Display processor • Effect of interactive devices	• Task 6: presentation • UTS (6 questions) • UAS (5 questions)	
8	• Students are able to explain the principles of computer system interface design on various platforms and contexts of need. (C2) • Students are able to create a display design using Views Worksheets and Views Semantic Nets (C3)	• Understand the principles and guidelines of display design • Understand and be able to make simple tools for display design • understand and be able to create a display semantic net	• Task 7: written assignment • UTS (6 questions) • UAS (5 questions)	
9	**UTS**			
10	Students are able to know and be able to explain and follow the stages of interface design using storyboards and prototypes (C2) (C3)	• Understand the principles and instructions for display design with storyboards and prototypes • Understand and be able to create storyboards and prototype user interfaces	• Task 8: written assignment • Quiz 2 (7 questions) • UAS (5 questions)	Task 8: 2.3% Task 9: 2.3% Task 10: 2.3% Task 11: 2.3% Task 12: 2.3%

11	Knowing and being able to explain the influence of ergonomic aspects on the design of human interfaces with computers. (C2)	• Know and be able to explain measurements and anthropometrics • Know and be able to explain the ergonomic aspects of the work station • Know and be able to explain lighting effects, display screens, temperature and sound quality, sound disturbances, occupational health and safety, work habits	• Task 9: oral test • Quiz 2 (7 questions) • UAS (5 questions)	Task 13: 2.3% Quiz 2: 5% UAS: 30%
12	Know and be able to explain the evaluation techniques for the design of human interfaces with computers. (C2).	Evaluation technique • Understanding • Method • Evaluation tools and devices • Evaluation flow • Implementation example	• Task 10: oral test • Quiz 2 (6 questions) • UAS (5 questions)	
13	**Quiz 2**			
14	Students are able to explain and apply previously taught material in the form of case studies and make application UI designs (large course assignments) (C2) (C3)	User Interface Prototyping	• Task 11: prototype + presentation	
15	Students are able to explain and apply previously taught material in the form of case studies and make application UI designs (large course assignments) (C2) (C3)	User Interface Prototyping	• Task 12: prototype + presentation	
16	Students are able to explain and apply previously taught material in the form of case studies and make application UI designs (large course assignments) (C2) (C3)	User Interface Prototyping	• Task 13: prototype + presentation	
17	**UAS**			
TOTAL WEIGHT				**100%**

SUBJECT	Interface Design				
CODE	RTI203001	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Anugrah Nur Rahmanto, S.Sn., M.Ds. 2. Retno Damayanti, S.Pd., MT 3. Muhammad Unggul Pamenang, S.St., MT 4. Ariadi Retno Ririd, S. Kom., M. Kom. 5. Aulia Zahra Musthafawi SST., M. Kom.				

ASSESSMENT FORMS

Online test

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

Knowing and explaining what is human and computer interaction (C2)
Explain the field of study related to IMK (C2)
Explain system development aids (C2)
Students are able to explain the basic concepts of human factors, computer factors and are able to explain the relationship between human capabilities and limitations with the interaction design process of a software or hardware system (C2).
Able to group information based on the appropriate category and represent it with a symbol (icon) (C3)
Students are able to explain and apply the basic concepts of dialogue design and dialogue styles/variety of dialogues (C2) (C3)

DESCRIPTION

Answer quiz questions from meeting material 1-4

WORKING METHOD

The questions are done through e-learning lmsslc .polinema.ac.id

OUTER FORMAT

Job Object: quiz
Outer Form: student quiz answers

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Conformity of answers: 10 0 %
The score for Quiz 1 is 5% of 100% for this course

IMPLEMENTATION SCHEDULE

4th week	60 minutes

OTHERS REQUIRED:

REFERENCES

Galitz, WO (2007). The essential guide to user interface design: an introduction to GUI design principles and techniques. John Wiley & Sons.
Teaching Module of Human and Computer Interaction Malang State Polytechnic
Santosa I. (2004), Human and computer interaction, theory and practice, Andi Offset, Yogyakarta

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Interface Design				
CODE	RTI203001	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Anugrah Nur Rahmanto, S.Sn., M.Ds. 2. Retno Damayanti, S.Pd., MT 3. Muhammad Unggul Pamenang, S.St., MT 4. Ariadi Retno Ririd, S. Kom., M. Kom. 5. Aulia Zahra Musthafawi SST., M. Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to know and be able to explain and follow the stages of interface design using storyboards and prototypes (C2) (C3) Knowing and being able to explain the influence of ergonomic aspects on the design of human interfaces with computers. (C2) Know and be able to explain the evaluation techniques for the design of human interfaces with computers. (C2).					
DESCRIPTION					
Answer quiz questions from meeting material 10-12					
WORKING METHOD					
The questions are done through e-learning lmsslc .polinema.ac.id					
OUTER FORMAT					
Job Object: quiz Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The weight for Quiz 2 is 5% of 100% for this course					
IMPLEMENTATION SCHEDULE					
Week 13			60 minutes		
OTHERS REQUIRED:					
REFERENCES					
Galitz, WO (2007). The essential guide to user interface design: an introduction to GUI design principles and techniques. John Wiley & Sons. Teaching Module of Human and Computer Interaction Malang State Polytechnic Santosa I. (2004), Human and computer interaction, theory and practice, Andi Offset, Yogyakarta					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Interface Design				
CODE	RTI203001	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Anugrah Nur Rahmanto, S.Sn., M.Ds. 2. Retno Damayanti, S.Pd., MT 3. Muhammad Unggul Pamenang, S.St., MT 4. Ariadi Retno Ririd, S. Kom., M. Kom. 5. Aulia Zahra Musthafawi SST., M. Kom.				

ASSESSMENT FORMS
Online test
ASSESSMENT TITLE
UTS
SUB COURSE LEARNING ACHIEVEMENTS
Knowing and explaining what is human and computer interaction (C2) Explain the field of study related to IMK (C2) Explain system development aids (C2) Students are able to explain the basic concepts of human factors, computer factors and are able to explain the relationship between human capabilities and limitations with the interaction design process of a software or hardware system (C2). Able to group information based on the appropriate category and represent it with a symbol (icon) (C3) Students are able to explain and apply the basic concepts of dialogue design and dialogue styles/variety of dialogues (C2) (C3) Students can explain the basic concepts of devices used in human and computer interaction (C2). Students explain the development of interactive tools from time to time. (C2) Students are able to explain the principles of computer system interface design on various platforms and contexts of need. (C2) Students are able to create a display design using Views Worksheets and Views Semantic Nets (C3)
DESCRIPTION
Answer questions from meeting material 1-8
WORKING METHOD
The questions are done through e-learning lmsslc .polinema.ac.id
OUTER FORMAT
Job Object: quiz Outer Form: student quiz answers
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Conformity of answers: 10 0 % UTS assessment weight is 30 % of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE

9th week	60 minutes

OTHERS REQUIRED:
REFERENCES
Galitz, WO (2007). The essential guide to user interface design: an introduction to GUI design principles and techniques. John Wiley & Sons. Teaching Module of Human and Computer Interaction Malang State Polytechnic Santosa I. (2004), Human and computer interaction, theory and practice, Andi Offset, Yogyakarta

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Interface Design				
CODE	RTI203001	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Anugrah Nur Rahmanto, S.Sn., M.Ds. 2. Retno Damayanti, S.Pd., MT 3. Muhammad Unggul Pamenang, S.St., MT 4. Ariadi Retno Ririd, S. Kom., M. Kom. 5. Aulia Zahra Musthafawi SST., M. Kom.				

ASSESSMENT FORMS

Online test

ASSESSMENT TITLE

UAS

SUB COURSE LEARNING ACHIEVEMENTS

Knowing and explaining what is human and computer interaction (C2)
Explain the field of study related to IMK (C2)
Explain system development aids (C2)
Students are able to explain the basic concepts of human factors, computer factors and are able to explain the relationship between human capabilities and limitations with the interaction design process of a software or hardware system (C2).
Able to group information based on the appropriate category and represent it with a symbol (icon) (C3)
Students are able to explain and apply the basic concepts of dialogue design and dialogue styles/variety of dialogues (C2) (C3)
Students can explain the basic concepts of devices used in human and computer interaction (C2).
Students explain the development of interactive tools from time to time. (C2)
Students are able to explain the principles of computer system interface design on various platforms and contexts of need. (C2)
Students are able to create a display design using Views Worksheets and Views Semantic Nets (C3)
Students are able to know and be able to explain and follow the stages of interface design using storyboards and prototypes (C2) (C3)
Knowing and being able to explain the influence of ergonomic aspects on the design of human interfaces with computers. (C2)
Know and be able to explain the evaluation techniques for the design of human interfaces with computers. (C2).
Students are able to explain and apply previously taught material in the form of case studies and make application UI designs (large course assignments) (C2) (C3)

DESCRIPTION

Answer questions from meeting material 1-16

WORKING METHOD

The questions are done through e-learning lmsslc .polinema.ac.id

OUTER FORMAT

Job Object: quiz
Outer Form: student quiz answers

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Conformity of answers: 10 0 % UAS assessment weight is 30 % of 100% of the assessment of this course
IMPLEMENTATION SCHEDULE
Week 17 | 60 minutes
OTHERS REQUIRED:
REFERENCES
Galitz, WO (2007). The essential guide to user interface design: an introduction to GUI design principles and techniques. John Wiley & Sons. Teaching Module of Human and Computer Interaction Malang State Polytechnic Santosa I. (2004), Human and computer interaction, theory and practice, Andi Offset, Yogyakarta

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	ADBO				
CODE	RTI203002	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Able to create Class diagrams according to specified business needs					
DESCRIPTION					
Able to create Class diagrams according to specified business needs					
DESCRIPTION					
2. Answer Quiz questions related to material 1-3					
WORKING METHOD					

• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 35 minutes	
OUTER FORMAT	
• Job Object: Quiz • Outcome Form: multiple choice student Quiz answers	
IMPLEMENTATION SCHEDULE	
4th week	35 minutes
OTHERS REQUIRED:	
REFERENCES	
Hunt, J. (2000). The Unified Process for Practitioners: Object-oriented Design, the UML and Java (Vol. 12). Springer Science & Business Media. Lee, M., Kim, H., Kim, J., Lee, J., & Gum, D. (2005). StarUML 5.0 user guide. 2009-03-11]. http://staruml, sourceforge, net/docs/user-guide (en)/toc. html.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	ADBO				
CODE	RTI203002	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz material 10-13					
SUB COURSE LEARNING ACHIEVEMENTS					
1. Understand and remember the System Architecture 2. Understand the use of System Architecture 3. Understand the material from meetings 10 to 13					
DESCRIPTION					
Able to create System Architecture in accordance with specified business needs					
DESCRIPTION					
Answer Quiz questions related to material 10-13					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes					
OUTER FORMAT					
• Job Object: Quiz • Outcome Form: multiple choice student Quiz answers					
IMPLEMENTATION SCHEDULE					
14th week	60 minutes				
OTHERS REQUIRED:					
REFERENCES					

Hunt, J. (2000). The Unified Process for Practitioners: Object-oriented Design, the UML and Java (Vol. 12). Springer Science & Business Media.
Lee, M., Kim, H., Kim, J., Lee, J., & Gum, D. (2005). StarUML 5.0 user guide. 2009-03-11]. http://staruml, sourceforge, net/docs/user-guide (en)/toc. html.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	ADBO				
CODE	RTI203002	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Midterm exam					
ASSESSMENT TITLE					

UTS material 1-7
SUB COURSE LEARNING ACHIEVEMENTS
Students are able to apply use cases, activities, class diagrams, object diagrams, sequences, assignment patterns in a business project.
DESCRIPTION
Answer UTS questions related to use cases, activities, class diagrams, object diagrams, sequences, assignment patterns in a business project.
WORKING METHOD
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes
OUTER FORMAT
• Work Object: UTS • Outcome Form: UTS student answers
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Conformity of answers : 100% The UTS assessment weight is 20% of 100% of the assessment for this course
IMPLEMENTATION SCHEDULE

8th week	60 minutes

OTHERS REQUIRED:
REFERENCES
Hunt, J. (2000). The Unified Process for Practitioners: Object-oriented Design, the UML and Java (Vol. 12). Springer Science & Business Media. Lee, M., Kim, H., Kim, J., Lee, J., & Gum, D. (2005). StarUML 5.0 user guide. 2009-03-11]. http://staruml, sourceforge, net/docs/user-guide (en)/toc. html.

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHOD

SUBJECT	ADBO				
CODE	RTI203002	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER					

ASSESSMENT FORMS

Final exams

ASSESSMENT TITLE

UAS material 11-16

SUB COURSE LEARNING ACHIEVEMENTS

- Able to create timing diagrams according to specified business requirements
- Able to create interaction summary diagrams according to specified business needs
- Able to make compositional structure diagrams according to specified business requirements
- Able to create component diagrams according to specified business requirements
- Able to create packages according to specified business needs
- Able to make machine step diagrams according to specified business needs
- Able to create deployment diagrams according to specified business requirements

DESCRIPTION

Answer UAS questions related to the concept

WORKING METHOD

- The questions are done through e-learning lms.polinema.ac.id
- UTS is done in 60 minutes

OUTER FORMAT

- Work Object: UAS
- Outcome Form: student UAS answers

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Conformity of answers : 100% The UAS assessment weight is 20% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
17th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
Hunt, J. (2000). The Unified Process for Practitioners: Object-oriented Design, the UML and Java (Vol. 12). Springer Science & Business Media. Lee, M., Kim, H., Kim, J., Lee, J., & Gum, D. (2005). StarUML 5.0 user guide. 2009-03-11]. http://staruml, sourceforge, net/docs/user-guide (en)/toc. html.	

ASSESSMENT AND EVALUATION PLAN

Web Design and Programming

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students can explain the concept of a working website and the concept of HTML (C2) • Students distinguish static web and dynamic web (C2) • Students can distinguish dynamic web on the server side and on the client side (C2) • Students can apply HTML Concepts on Static Web (C3)	• Web basic concept • Great Web Design • Web architecture • HTTP • Client side programming • Server side programming • Web server software • Introduction to HTML • Creating Images • Create Links • Heading / Title • Make a List / List • Understanding DIV Tags • Forms • Table • Web Programming • Case study	• Practicum 1 • UAS (5 questions)	Practicum 1: 2% Practicum 2: 2% Practicum 3: 2% Practicum 4: 2% Practicum 5: 2% Practicum 6: 2% Practicum 7: 2% Practicum 8: 2% UTS: 2 0%
2	• Students can explain the concept of CSS • Students can (C2) apply CSS Concepts to Static Web (C3)	• Definition of CSS • Box Models • Grids • FlexBox • Case study	• Practice 2 • UAS (4 questions)	
3	• Students can explain the concept of CSS (C2) • Students can apply CSS Concepts to Static Web (C3)	• Fonts • Background Color • Responsive Web • Case study	• Practice 3 • UAS (3 questions)	
4	• Students can explain the concept of Java Script (C2) • Students can apply Java Script Concepts on Static Web (C3)	• Introduction to Java Script • Event Handling • Strings object • Window object • Date and Time • Variables	• Practice 4 • UAS (3 questions)	

		• Data Type • table		
5	• Students can explain the concept of Java Script (C2) • Students can apply Java Script Concepts on Static Web (C3)	• Arrays • Looping • Condition • Form validation • maps	• Practice 5 • UAS (3 questions)	
6	• Students can explain the concept of JQuery (C2) • Students can apply JQuery Concepts on Static Web (C3)	• Jquery Usage and Development • Jquery Basics • Event Handling in Jquery • Creating Slide Shows with Jquery	• Practicum 6 • UAS (4 questions)	
7	• Students can explain the concept of web-based programming (C2) • Students can explain various types of Web server software (C2) • Students can explain the concept of PHP (C2) • Students can apply PHP Concepts on Dynamic Web (C3)	• Introduction to Web Servers • PHP Introduction • PHP installation • PHP variables • PHP Data Types • PHP strings	• Practicum 7 • UAS (4 questions)	
8	• Students can explain the concept of web-based programming (C2) • Students can give examples of various Web server software (C2) • Students can explain the concept of PHP (C2) • Students can apply PHP Concepts on Dynamic Web (C3)	• Looping and Branching Structures	• Practicum 8 • UAS (3 questions)	
9	**UTS**			
10	• Students can explain the concept of web-based programming (C2) • Students can give examples of various Web server software (C2) • Students can explain the concept of PHP (C2) • Students can apply PHP Concepts on Dynamic Web (C3)	• Arrays in PHP • Functions in PHP • Strings • date and time	• Practicum 9 • UAS (5 questions)	Practicum 9: 2% Practicum 10: 2% Practicum 11: 2% Practicum 12: 2% Practicum 13: 2% Practicum 13: 2% Final Projects: 22%

				UAS: 30%
11	• Students can explain the concepts of Form Processing and Form Upload (C2) • Students can apply the Concept of Form Processing and Form Upload on Dynamic Web (C3)	• Basic Form Handling • Form Input type text and Password • Form Validation with isset() function and header redirect • Form Input type Radio • Form Input Checkbox • Form Input ComboBox • Form Validation using Regular Expression • Form Input type Text Area Move upload file • Validation for Uploaded files that have the same name • Limit Upload File Size • Limit Upload File Types	• Practicum 10 • UAS (4 questions)	
12	• Students can explain the concept of Login, Multiuser Login and reports (C2) • Students can apply the Concept of Login, Multiuser Login and reports on Dynamic Web (C3) • Students can explain the concept of Cookies, Session and Mysql (C2) • Students can apply the Concept of Cookies, sessions and Mysql on Dynamic Web (C3)	• create • Updates • Delete • Database Connection	• Practicum 11 • UAS (4 questions)	
13	• Students can explain the concept of Login, Multiuser Login and reports (C2) • Students can apply the Concept of Login, Multiuser Login and reports on Dynamic Web (C3) • Students can explain the concept of Cookies, Session and Mysql (C2)	• Login • Multiuser Login • Report • Sessions • Cookies • mysql	• Practicum 12 • UAS (3 questions)	

	• Students can apply the Concept of Cookies, sessions and Mysql on Dynamic Web (C3)			
14	• Students can explain the concept of Bootstrap (C2) • Students can apply the Bootstrap Concept to Dynamic Web (C3)	Bootstrap	• Practicum 13 • UAS (3 questions)	
15	• Students can explain the concept of Web Hosting (C2) • Students can apply Web Hosting Concepts to Dynamic Web (C3)	Web Hosting	• Practicum 14 • UAS (2 questions)	
16	• Students can explain the concept of Web design and Programming (C2) • Students can apply Web Design and Programming Concepts to Dynamic Web (C3)	FinalProject	• FinalProject	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Web Design and Programming				
CODE	RTI203004	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	Elok Nurhamdana, ST, MT Annisa Taufika Firdausi, ST., MT. Milyun Ni'ma Shoumi, S.Kom., M.Kom Farid Angga Pribadi, S.Kom., M.Kom Rizky Ardiansyah, S. Kom., MT. Wilda Imama Sabilla, S.Kom., M.Kom				

ASSESSMENT FORMS
Practice
ASSESSMENT TITLE
UTS
SUB COURSE LEARNING ACHIEVEMENTS
Students can explain the concept of a working website and the concept of HTML (C2) Students distinguish static web and dynamic web (C2) Students can distinguish dynamic web on the server side and on the client side (C2) Students can apply HTML Concepts on Static Web (C3) Students can explain the concept of CSS Students can (C2) apply CSS Concepts to Static Web (C3) Students can explain the concept of CSS (C2) Students can apply CSS Concepts to Static Web (C3) Students can explain the concept of Java Script (C2) Students can apply Java Script Concepts on Static Web (C3) Students can explain the concept of Java Script (C2) Students can apply Java Script Concepts on Static Web (C3) Students can explain the concept of JQuery (C2) Students can apply JQuery Concepts on Static Web (C3) Students can explain the concept of web-based programming (C2) Students can explain various types of Web server software (C2) Students can explain the concept of PHP (C2) Students can apply PHP Concepts on Dynamic Web (C3) Students can explain the concept of web-based programming (C2) Students can give examples of various Web server software (C2) Students can explain the concept of PHP (C2) Students can apply PHP Concepts on Dynamic Web (C3)

DESCRIPTION

A company asks its employees to create a web page consisting of several pages or hyperlinks, start page: home, second page: your uniquely designed bio, third page: restaurant profile, fourth page: Price rules for purchasing members and non members customers.

Input on page 4 of the website
Customize the creation of the name of your place to eat (admin/cashier page)
Buyer ID: (in a combination of numbers and letters)
buyer name: (string)
Buyer status: member or non-member (radio button is displayed, must be filled in)
the name of the type of food: (shown as a dropdown form) and there is a loop if you buy more than 1 type of food, for example 1. pizza and 2. burgers and so on
order quantity: (in numbers)

Rules on page 4 of the website

- If the status of the buyer is a member, then the food he ordered is the price normally 1 portion or more is given a 5% discount. If you order 2 to 3 servings given a 7% discount per portion. Furthermore, if you order more than 3 portions, a 10 percent discount is given for each portion
- If the buyer's status is non-member, then if he orders 1 to 3 portions the normal price is no discount, and if he orders from 3 to 5 portions then the total price normally given a discount of 5% of the total price. Furthermore, if you order more than 5 portions, a 5% discount is given from the normal price per portion.

WORKING METHOD

Implement case studies by utilizing HTML, CSS, Javascript, JQuery, and PHP . Questions can be downloaded and answers can be uploaded at lmsslc.polinema.ac.id E-learning

OUTER FORMAT

Work Object: UTS
Outer Shape:
Page 1: Home (attractive design with slide show)
Page 2: biodata (attractive design)
Page 3:Profile of places to eat complete with google maps
Page 4. order and print name, order name and total payment.

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

No	Sub-CP-MK	Assessment criteria	Maxscore	Score 0-Max
1	- Students understand the concept of a working website - Students know the difference between static web and dynamic web - Students can distinguish dynamic web on the server side and on the client side - Students understand the concept of HTML	**Page 1:Home (attractive design)**		
		Displays a choice of links 4 full menu accessible all with a slide show of images	20	20
		Displays a choice of links 4 menus that can be accessed 3 menus with a slide show of images	15	
		Displays a choice of links 4 menus that can be accessed 2 menus with a slide show of images	10	

	- Students know how to apply HTML Concepts to Static Web	Displays link options 4 menus that can be accessed 1 menu without a slide show	5	
		Unable to display menu and no slide show or custom design.	0	
2	- Students are able to understand CSS for web layout design - Understand the core concepts of CSS on the web	**Page 2: biodata (attractive design)**		
		Displays a design with image component tones, text, color, background, border and uses css styles	15	15
		Displays a design with image component tones, text, color, background, border and does not use css styles	10	
		Unable to display biodata and no css styles	0	
3	- Students understand advanced concepts of CSS on the web - Students are able to apply CSS Concepts to Static Web - Students can understand the concept of Javascript - Understand data types, operators and functions in javascript - Students are able to run javascript in HTML files - Understand the DOM concept in Javascript - Students are able to display maps in Google Map	**Page 3:Complete restaurant profiles**		
		Displays a complete profile and there is a google maps location where to eat	25	25
		Displays an incomplete profile and there is a google maps location where to eat	20	
		Displaying a very incomplete profile and there are google maps for the location of where to eat	15	
		Displaying a very incomplete profile and there is no Google Maps location where to eat	10	
		No profile showing and no location with google maps.	0	
4	- Students are able to understand the basic concepts of jQuery - Understand the basic concepts of AJAX - Implements jQuery and jQuery AJAX - Students understand the basic concept of a web server - understand the concept of php (variables, data types, operators) - Students understand the concept of php (branching and looping) - Implementing php concepts into dynamic web	**Page 4. order and print name, order name and total payment.**		
		Displays the website according to the rules on page 4 of the website and there is output according to data processing with branching and looping	40	40
		Displaying the website does not comply with the rules on page 4 of the website and there is output that does not match data processing with branching and looping	20	
		Does not display according to the rules and is not in accordance with branching and looping processing	10	
		Cannot display anything.	0	
Total			**100**	

The weight for Quiz 1 is 20 % of 100% for this course

IMPLEMENTATION SCHEDULE	
9th week	315 minutes
OTHERS REQUIRED:	

REFERENCES

1. Jason Beaird, The principles of Beautiful Web Design
2. Rian Ariona, Learn HTML and CSS (Fundamental Tutorial on learning HTML and CSS)
3. Adi Hadisaputra, HTML and CSS Fundamentals from Roots to Leaves
4. John Duckett, HTML and CSS design and build websites
5. Glenn Johnson, Programming in HTML 5 with Javascript and CSS 3
6. Desrizal, Javascript Guide
7. Tutorials Point Simply Easy Learning, Java Script Language
8. Jonathan Caffer and Karl Swedberg, Learning Jquery 1.3 (Better Interaction Design and Web development with simple Jawa Script Techniques)
9. Andre Pratama, PHP Uncover – PHP Learning Guide for beginners
10. Endy Muhardin, PHP Programming Fundamentals and MySql Fundamentals
11. Bootstrap Tutorial (Simply Easy Learning by Tutorials.com) Desrizal, Complete guide to PHP AJAX JQuery
1. Ciebal, Basic Internet Tutorial for beginners
2. ABD Hama, Indonesian Language Bootstrap Framework Tutorial

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Web Design and Programming				
CODE	RTI203004	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	Elok Nurhamdana, ST, MT Annisa Taufika Firdausi, ST., MT. Milyun Ni'ma Shoumi, S.Kom., M.Kom Farid Angga Pribadi, S.Kom., M.Kom Rizky Ardiansyah, S. Kom., MT. Wilda Imama Sabilla, S.Kom., M.Kom				

ASSESSMENT FORMS
Online test
ASSESSMENT TITLE
UAS

SUB COURSE LEARNING ACHIEVEMENTS
Students can explain the concept of a working website and the concept of HTML (C2)
Students distinguish static web and dynamic web (C2)
Students can distinguish dynamic web on the server side and on the client side (C2)
Students can apply HTML Concepts on Static Web (C3)
Students can explain the concept of CSS
Students can (C2) apply CSS Concepts to Static Web (C3)
Students can explain the concept of CSS (C2)
Students can apply CSS Concepts to Static Web (C3)
Students can explain the concept of Java Script (C2)
Students can apply Java Script Concepts on Static Web (C3)
Students can explain the concept of Java Script (C2)
Students can apply Java Script Concepts on Static Web (C3)
Students can explain the concept of JQuery (C2)
Students can apply JQuery Concepts on Static Web (C3)
Students can explain the concept of web-based programming (C2)
Students can explain various types of Web server software (C2)
Students can explain the concept of PHP (C2)
Students can apply PHP Concepts on Dynamic Web (C3)
Students can explain the concept of web-based programming (C2)
Students can give examples of various Web server software (C2)
Students can explain the concept of PHP (C2)
Students can apply PHP Concepts on Dynamic Web (C3)
Students can explain the concept of web-based programming (C2)
Students can give examples of various Web server software (C2)
Students can explain the concept of PHP (C2)
Students can apply PHP Concepts on Dynamic Web (C3)
Students can explain the concepts of Form Processing and Form Upload (C2)
Students can apply the Concept of Form Processing and Form Upload on Dynamic Web (C3)
Students can explain the concept of Web Database Programming using PHP and MySql (C2)
Students can apply Web Database Programming Concepts using PHP and MySql on Dynamic Web (C3)
Students can explain the concept of Login, Multiuser Login and reports (C2)
Students can apply the Concept of Login, Multiuser Login and reports on Dynamic Web (C3)
Students can explain the concept of Cookies, Session and Mysql (C2)
Students can apply the Concept of Cookies, sessions and Mysql on Dynamic Web (C3)
Students can explain the concept of Bootstrap (C2)
Students can apply the Bootstrap Concept to Dynamic Web (C3)
Students can explain the concept of Web Hosting (C2)
Students can apply Web Hosting Concepts to Dynamic Web (C3)

DESCRIPTION	
Answer U AS questions from meeting materials 1-16	
WORKING METHOD	
The questions are done through e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Job Object: U US Outcome: U AS student's answer	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % UAS assessment weight is 30 % of 100% of the assessment of this course	
IMPLEMENTATION SCHEDULE	
Week 17	315 minutes
OTHERS REQUIRED:	
REFERENCES	

1. Jason Beaird, The principles of Beautiful Web Design
2. Rian Ariona, Learn HTML and CSS (Fundamental Tutorial on learning HTML and CSS)
3. Adi Hadisaputra, HTML and CSS Fundamentals from Roots to Leaves
4. John Duckett, HTML and CSS design and build websites
5. Glenn Johnson, Programming in HTML 5 with Javascript and CSS 3
6. Desrizal, Javascript Guide
7. Tutorials Point Simply Easy Learning, Java Script Language
8. Jonathan Caffer and Karl Swedberg, Learning Jquery 1.3 (Better Interaction Design and Web development with simple Jawa Script Techniques)
9. Andre Pratama, PHP Uncover – PHP Learning Guide for beginners
10. Endy Muhardin, PHP Programming Fundamentals and MySql Fundamentals
11. Bootstrap Tutorial (Simply Easy Learning by Tutorials.com) Desrizal, Complete guide to PHP AJAX JQuery
3. Ciebal, Basic Internet Tutorial for beginners
4. ABD Hama, Indonesian Language Bootstrap Framework Tutorial

ASSESSMENT AND EVALUATION PLAN

Business Intelligence

Week	Sub-CP-MK	Subject	Assessment form	Weight

1	Understand the basic concept of data warehouse and the underlying business needs and analysis.	• Data warehouse concept. • The difference between a data warehouse and a database in general. • Business requirements and data sources in the data warehouse. • Examples of data warehouse implementation in various fields.	• Group discussion on business needs analysis and data sources in a journal/proceeding article related to data warehouse • Quiz 1 (5 questions) • UTS (2 questions) • UAS (2 questions)	Group discussion 1: 2.5% Group discussion 2: 2.5% Group discussion 3: 2.5% Task 1: 2.5% Task 2: 2.5% Task 3: 2.5% Quiz 1: 10% UTS: 25%
2	Understand each component used to build a data warehouse architecture.	• Data store in data warehouse (Stage, DDS, NDS, ODS). • Data flow in data warehouse architecture (Single DDS, NDS+DDS, ODS+DDS). • The topology of the data warehouse architecture. • The difference between OLTP and OLAP.	• The group discussion identified the architecture and data flow of the data warehouse built on the selected journal/proceeding articles • Quiz 1 (5 questions) • UTS (3 questions) • UAS (3 questions)	
3	Understand the functional and non-functional requirements of the data warehouse and the concept of data warehouse development.	• Functional and non-functional requirements related to data warehouse development. • Data warehouse development methodology (iterative and waterfall).	• The group discussion identified the non-functional requirements of the data warehouse built on the selected journal/proceeding articles • Quiz 1 (5 questions) • UTS (3 questions) • UAS (3 questions)	
4	**Quiz 1**			
5	Understand the concept of data modeling on Dimensional Data Store (DDS).	• Introduction to the concepts of dimensions, facts and schemas in data stores. • Identification of grains based on analysis needs from the data warehouse. • Identification of dimension tables and facts based on the analysis needs of the data warehouse. • Dimensional model design.	• Build a dimensional model based on the ERD of a relational database • Build a dimensional model based on data obtained from several business processes • UTS (2 questions) • UAS (2 questions)	

6	Understand the concept of data modeling in Normalized Data Store (NDS) and Operational Data Store (ODS).	• Normalization of data from multiple data sources. • The process of updating data in data stores with historical and transactional data types.	• Normalize data from various data sources • UTS (3 questions) • UAS (3 questions)	
7	Implement the logical concepts from each data store to a physical database on SQL Server.	• Introduction of the platform to be used (SQL Server). • Database configuration. • Implementation of DDS, NDS and ODS on SQL Server. • View, Summary Table, Partition and Index.	• Implement the data model from each data store to the physical database. • Create views, partitions and indexes of a table • UTS (3 questions) • UAS (3 questions)	
8	**UTS**			
9	Understand and implement the concept of data extraction from data sources in the form of file systems.	• The concept of ETL in SQL Server uses the SSIS package. • File systems supported by SQL Server. • Extraction process from several file systems at once.	• Implementing the extraction process from several data sources in the form of a file system. • Quiz 2 (3 questions) • UAS (3 questions)	Task 4: 2.5% Task 5: 2.5% Task 6: 2.5% Task 7: 2.5% Task 8: 2.5% Task 9: 2.5% Task 10: 3.5% Quiz 2: 10% UAS: 25%
10	Understand and implement the concept of data extraction from data sources in the form of relational databases.	• The process of extracting data from a relational database. • The process of extracting data from one or more relational databases. • The process of extracting data from several relational databases and file systems.	• Implementing the extraction process from several data sources in the form of a relational database • Quiz 2 (3 questions) • UAS (4 questions)	
11	Understand and implement the concept of transformation (normalization) and load data on stage, NDS and ODS.	• The concept of using stages. • Using the SSIS package in the process of loading data to NDS/ODS. • Normalization. • Use of lookup tables.	• Implementing data staging process to load data into NDS/ODS in stages. • UAS (3 questions)	

12	Understand and implement the concept of loading data on DDS.	• Using the SSIS package in the process of loading data to DDS. • The concept of batches, mini batches.	• Implement the process of loading data into DDS. • UAS (3 questions)	
13	Understand and implement data quality assurance concepts.	• Process in data quality assurance. • Data cleansing and matching. • Data quality rules, notifications and reporting.	• Implement data cleansing and matching processes • Send notifications and generate reports from the results of data quality assurance • UAS (3 questions)	
14	Quiz 2			
15	Understand and implement control concepts, audit reporting concepts for each process in the data warehouse	• The concept of metadata in the data warehouse. • Data definitions and mappings. • Metadata for structure, ETL processes, quality assurance, auditing and use of the Reporting concept in SQL Server uses the SSRS package. • Grouping, Sorting and Filtering.	• Create a control and audit system to oversee the ETL process • UAS (3 questions)	
16	Understand and implement the concept of multidimensional database.	• Multidimensional database concept. • OLAP. • Queries on multidimensional databases.	• Create simple reporting using the SSRS package • UAS (3 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

ASSESSMENT METHOD					
SUBJECT	Business Intelligence				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand the basic concept of data warehouse and the underlying business needs and analysis. Understand each component used to build a data warehouse architecture. Students can understand the functional and non-functional requirements of a data warehouse, as well as the concept of developing a data warehouse					
DESCRIPTION					
3. Answer Quiz questions related to material 1 to 3					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes					
OUTER FORMAT					
• Job Object: Quiz • Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 10% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
4th week	60 minutes				
OTHERS REQUIRED:					
REFERENCES					

- Rainardi, Vincent. 2007. Building a Data Warehouse with Examples in SQL Server. Berkeley: Apress. E-books.
- Sarka, Dejan, et al. 2012. Implementing a Data Warehouse with Microsoft SQL Server 2012: Training Kit (Exam 70-463). MicrosoftPress.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Business Intelligence				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6

SUPPORTING LECTURER	
ASSESSMENT FORMS	
Quiz 2	
ASSESSMENT TITLE	
Quiz material 9-13	
SUB COURSE LEARNING ACHIEVEMENTS	
Students can understand and implement the concept of data extraction from file system data sources Students can understand and implement the concept of data extraction from relational database data sources Students can understand and implement the concept of transformation and load data on stage, NDS, and ODS Students can understand and implement the concept of loading data on DDS Students can understand and implement the concept of data quality assurance	
DESCRIPTION	
Answer Quiz questions related to material 9-10	
WORKING METHOD	
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes	
OUTER FORMAT	
C. Job Object: Quiz D. Outcome Form: student Quiz answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers : 100% Quiz 2 assessment weight is 10% of 100% assessment of this course	
IMPLEMENTATION SCHEDULE	
14th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
1. Rainardi, Vincent. 2007. Building a Data Warehouse with Examples in SQL Server. Berkeley: Apress. E-books. 2. Sarka, Dejan, et al. 2012. Implementing a Data Warehouse with Microsoft SQL Server 2012: Training Kit (Exam 70-463). MicrosoftPress.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Business Intelligence				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Midterm exam					
ASSESSMENT TITLE					
UTS material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand each component used to build a data warehouse architecture, and describe the ETL process Understand each component used to build a data warehouse architecture Students can understand the functional and non-functional requirements of a data warehouse, as well as the concept of developing a data warehouse Students can understand the concept of data modeling on dimensional data stores (DDS) Students can understand the concept of data modeling on normalized data stores (NDS) and operational data stores (ODS) Students can implement logical concepts from each data store to a physical database on SQL Server					
DESCRIPTION					
Answer UTS questions related to material 1-7					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes					
OUTER FORMAT					
• Work Object: UTS • Outcome Form: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UTS assessment weight is 25% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
8th week	60 minutes				
OTHERS REQUIRED:					

REFERENCES

- Rainardi, Vincent. 2007. Building a Data Warehouse with Examples in SQL Server. Berkeley: Apress. E-books.
- Sarka, Dejan, et al. 2012. Implementing a Data Warehouse with Microsoft SQL Server 2012: Training Kit (Exam 70-463). MicrosoftPress.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJEC	Business Intelligence				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Final exams					
ASSESSMENT TITLE					
UAS material 1-17					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand each component used to build a data warehouse architecture, and describe the ETL process Understand each component used to build a data warehouse architecture Students can understand the functional and non-functional requirements of a data warehouse, as well as the concept of developing a data warehouse Students can understand the concept of data modeling on dimensional data stores (DDS) Students can understand the concept of data modeling on normalized data stores (NDS) and operational data stores (ODS) Students can implement logical concepts from each data store to a physical database on SQL Server Students can understand and implement the concept of data extraction from file system data sources Students can understand and implement the concept of data extraction from relational database data sources Students can understand and implement the concept of transformation and load data on stage, NDS, and ODS Students can understand and implement the concept of loading data on DDS Students can understand and implement the concept of data quality assurance Students can understand and implement control and audit concepts for each data warehouse process Students can understand and implement the concept of reporting					
DESCRIPTION					
Students build a data warehouse architecture, practice ETL concepts and control, audit, and report each process in the data warehouse					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UAS was done within 1 week					
OUTER FORMAT					
• Work Object: UAS • Outcome Form: 15 minute student report presentation					

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers : 100% The UAS assessment weight is 20% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
17th week	15 minutes
OTHERS REQUIRED:	
REFERENCES	

1. Rainardi, Vincent. 2007. Building a Data Warehouse with Examples in SQL Server. Berkeley: Apress. E-books.
2. Sarka, Dejan, et al. 2012. Implementing a Data Warehouse with Microsoft SQL Server 2012: Training Kit (Exam 70-463). MicrosoftPress.

ASSESSMENT AND EVALUATION PLAN

Advanced Database

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students are able to install Microsoft SQL Server, • Management Studio (SSMS) and connect it with SQL Server (C1) • Students explain the intent and purpose of SQL Server services on Windows. (C2) • Students explain the concept of database objects in SQL Server through the SSMS window. (C2) • Students explain the difference between database servers and database tools (GUI). (C2) • Students are able to execute Transact-SQL (T-SQL) scripts via SSMS. (C3)	• Install Microsoft SQL Server. • Install Microsoft SQL Server Management Studio. • Exploring SQL Server services and enabling/disabling them through SQL Server Configuration Manager. • Connect to the database server via SSMS. • Exploring database objects through the SSMS window. • Execute SQL scripts via the SSMS query window.	• Job sheet 1 • UTS (1 question) • UAS (2 questions)	Jobsheet 1: 2.86% Jobsheet 2: 2.86% Jobsheet 3: 2.86% Jobsheet 4: 2.86% Jobsheet 5: 2.86% Jobsheet 6: 2.86% Jobsheet 7: 2.86% UTS: 25%
2	• Students are able to explain the basic differences between Transact-SQL (T-SQL) and ANSI SQL. (C2) • Students are able to explain how to create a database from an existing SQL file (C2) • Students can execute part or all of the SQL script from an existing file. (C3) • Students are able to explain and apply the concept of 'database context' and how to adjust it. (C2) (C3) • Students are able to apply the concept of using 'comments' in T-SQL. (C3) • Students are able to apply the concept of using a SELECT statement to analyze existing tables in the database. (C3) • Students are able to apply how to display data uniquely/distinctly. (C3) • Students are able to apply how to use aliases for table names and column names. (C3)	• Executes SQL scripts that have been previously stored in a file • Observe and change the database context. • Make comments (comments) on T-SQL • Analyze a table with the help of a SELECT statement. • Display data uniquely with DISTINCT. • Create aliases for table names and column names • Create a branch with CASE.	• Job sheets 2 • UTS (1 question) • UAS (2 questions)	

	• Students are able to apply the concept of CASE expressions and how to use them. (C3)			
3	• Students are able to explain and apply how to query multi-tables in the SELECT clause using JOIN (C2)(C3) • Students are able to apply how to write INNER JOIN queries (C3) • Students are able to apply how to write OUTER JOIN queries (C3) • Students are able to apply how to write SELF-JOIN and CROSS JOIN queries (C3) • Students are able to apply how to do Data Sorting (C3) • Students are able to apply how to do Data Filtering with a predicate (C3) • Students are able to explain and apply how to do Data Filtering with TOP and OFFSET-FETCH (C2)(C3) • Students are able to explain how to handle missing and unknown values in real data. (C3)	• Multi-table query with JOIN • INNER JOIN • OUTER JOINS • SELF JOIN and CROSS JOIN • Sorting (sorting) data • Filter data with WHERE • Partial data retrieval with TOP and OFFSET-FETCH • NULL and its handling	• Job sheets 3 • UTS (1 question) • UAS (3 questions)	
4	• Students can explain data types in SQL Server (C2) • Students can explain queries against data types Date & Time (C2) • Students can explain built-in functions related to Date & Time (C2) • Students can explain character data types Concatenation of character data types with non-characters (C2) • Students can explain built-in functions related to character data types (C5)	• Convert data types with CAST and CONVERT • Replace NULL with ISNULL and COALESCE • Convert date-time data type with CONVERT & TRYPARSE • IF logic function • Row grouping with CHOOSE. • The LEN function on strings	• Job sheets 4 • UTS (1 question) • UAS (3 questions)	
5	• Students can explain how to write queries that summarize data using the built-in aggregation function (C2)	• Convert data types with CAST and CONVERT • Replace NULL with ISNULL and COALESCE	• Job sheets 5 • UTS (1 question) • UAS (3 questions)	

	• Students can explain and apply how to use the GROUP BY clause to arrange rows into several groups (C2)(C3) • Students can explain and apply how to use the HAVING clause to filter data according to search conditions (C2) (C3) • Students are able to implement the intent and use of nested queries in other queries (C3) • Students explain how to write a self-contained sub-query that returns scalar or multi-valued results (C2) • Students are able to apply how to write correlated sub-queries and return scalar or multi-valued results (C3) • Students are able to apply how to use the EXISTS predicate to efficiently check the existence of a row in a sub-query (C3)	• Convert date-time data type with CONVERT & TRYPARSE • IF logic function • Row grouping with CHOOSE. • The LEN function on strings		
6	• Students are able to explain the purpose of Set Operations (C2) • Students are able to apply and explain the differences between UNION & UNION ALL (C2)(C3) • Students are able to apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2) • Students are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3) • Students explain the meaning of TRIGGER (C2) • Students explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2) • Students are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3)	• Convert data types with CAST and CONVERT • Replace NULL with ISNULL and COALESCE • Convert date-time data type with CONVERT & TRYPARSE • IF logic function • Row grouping with CHOOSE. • The LEN function on strings	• Job sheets 6 • UTS (1 question) • UAS (3 questions)	

	• Students are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3)			
7	• Students are able to explain the purpose of Set Operations (C2) • Students are able to apply and explain the differences between UNION & UNION ALL (C2)(C3) • Students are able to apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2) • Students are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3) • Students explain the meaning of TRIGGER (C2) • Students explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2) • Students are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3) • Students are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3)	• Types of Set Operations • Merge data with UNION & UNION ALL • Apply a function to each member of the set with CROSS APPLY & OUTER APPLY • Data slices with EXCEPT & INTERSECT • TRIGGER and its types • Create and Execute TRIGGER • TRIGGER AFTER • TRIGGER INSTEAD OF	• Job sheets 7 • UTS (1 question) • UAS (3 questions)	
8	**UTS**			
9	• Students are able to explain the purpose and benefits of SQL Windowing (C2) • Students are able to create windows with OVER clauses (C3) • Students are able to partition windows (C3) • Students are able to place orders on the window (C3) • Students are able to do framing on windows (C3) • Students are able to explain the concept of window function. (C2)	• Understanding SQL Windowing • Create a window with OVER • Window partition with PARTITION BY • Ordering window with ORDER BY • Framing windows with ROWS BETWEEN • Aggregation function on window • Window ranking function • Offset function on windows	• Job sheet 8 • UAS (3 questions)	Jobsheet 8: 2.86% Jobsheet 9: 2.86% Jobsheet 10: 2.86% Jobsheet 11: 2.86% Jobsheet 12: 2.86% Jobsheet 13: 2.86% Jobsheet 14: 2.86% Jobsheet 15: 2.86% UAS: 35%

	• Students are able to explain and be able to use the aggregation function in window (C2)(C3) • Students are able to explain and be able to use the ranking function in window (C2)(C3) • Students are able to explain and be able to use the offset function in window (C2)(C3) • Students are able to define the meaning of the distribution function on the window. (C2)	• Introduction to distribution functions in windows		
10	• Students are able to present data in pivot form using the PIVOT operator (C3) • Students are able to change the data format from pivot to normal form with UNPIVOT. (C3) • Students are able to combine 2 or more GROUP BY results with different columns and GROUPING SETS. (C3) • Students are able to combine 2 or more groups consisting of a combination of all the columns involved with CUBE. (C34) • • Students are able to combine 2 or more groups consisting of a hierarchy of all columns involved with CUBE. (C3) • Students are able to determine the original NULL and placeholder NULL in grouping sets with GROUPING_ID. (C3)	• Pivoting typing • Create pivots with the PIVOT operator • Normalize the pivot shape with the UNPIVOT operator • Combine 2 or more different column groups with GROUPING SETS • Shows combining combinations of all columns in grouping sets with CUBE • Displays the merged hierarchy of all columns in grouping sets with ROLLUP • Differentiate the NULL type in the GROUPING SETS result with GROUPING_ID	• Job sheet 9 • UAS (3 questions)	
11	• Students are able to explain the meaning of Metadata (C2) • Students are able to display information about the currently active database, along with the tables and columns. (C3) • Students are able to display session information that is currently active as	• Definition of metadata and its types. • Displays database information • Displays table information • Display column information • Displays session information	• Job sheets 10 • UAS (3 questions)	

	well as information about the CPU and RAM on the server (C3) ● Students are able to display definitions of artificial objects such as Views, Stored Procedures, tables, functions, and other objects. (C3) ● Students are able to explain concepts and various data types in SQL Server (C2) ● Students are able to explain how to query the data type date & time (C2) ● Students are able to explain and apply how to use functions related to date & time data types (C2)(C3) ● Students are able to explain and apply how to combine 2 or more variables with character and non-character data types (C2)(C3) ● Students are able to explain how to use functions related to character data types (C2)	● Displays CPU & RAM information ● Displays information about user-made objects. ● Data types in SQL Server ● Query against data type Date & Time ● Built-in functions related to Date & Time ● Character data type ● Character data type concatenation with non-characters ● Built-in functions related to character data types		
12	● Students are able to explain the concept of stored procedures in SQL Server. (C2) ● Students are able to create a stored procedure which in its definition contains a SELECT statement. (C3) ● Students are able to execute a stored procedure. (C3) ● Students are able to explain how to pass parameters to a stored procedure. (C2) ● Students are able to create stored procedures that return results with OUTPUT. (C3) ● Students explain the concept of dynamic SQL (C2) ● Students are able to build and run dynamic SQL with EXEC and SP_EXECUTESQL. (C3)	● Definition of Stored Procedures ● Create stored procedures ● Executes stored procedures ● Parameters in stored procedures ● Stored procedure that returns a value ● Understanding dynamic SQL ● Executes dynamic SQL	● Job sheet 11 ● UAS (3 questions)	

13	• Students are able to explain how to use elements of the T-SQL language in basic programming. (C2) • Students are able to explain about BATCH and how to use it in SQL Server. (C2) • Students are able to explain how to declare & assign variable values and SYNONYM. (C2) • Students are able to explain how to use IF and WHILE blocks in the T-SQL program flow. (C3) • Students are able to apply how SQL Server handles errors that appear in T-SQL code. (C3) • Students understand how to implement structured exception handling in T-SQL. (C3) • Students are able to explain how to get information about errors from system objects. (C2)	• Concept of programming in T-SQL. • BATCH • SYNONYM • Branching with IF and WHILE • SQL Server error handling • Exceptions • T-SQL error information	• Job sheet 12 • UAS (3 questions)	
14	• Students are able to describe NoSQL databases and their varieties (C2) • Students describe NoSQL in the startup industry	• Understanding NoSQL • Its application to the startup industry	• Job sheet 13 • UAS (3 questions)	
15	• Students are able to understand the components of queries with good performance (C1) • Students are able to display and interpret basic queries (C3) • Students are able to display and interpret basic queries for data performance (C3).	Students are able to apply NoSQL to one case study example	• Job sheet 14 • UAS (3 questions)	
16	Students are able to explain and apply all of the previous topics in certain cases (C2)	Case Study of T-SQL Querying	• Job sheet 15 • UAS (3 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJEC	Advanced Database				
CODE	RTI203005	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	5
SUPPORTING LECTURER	Yoppy Yunhasnawa, S.ST., M.Sc. Rokhimatul Wakhidah, S.Pd, MT Dwi Puspitasari, S.Kom., M.Kom. Annisa Puspa K, S.Kom., M.Kom. Dika Rizky Yunianto, S.Kom., M.Kom Irsyad Arif Mashudi, S.Kom., M.Kom.				
ASSESSMENT FORMS					
Practice					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to install Microsoft SQL Server, Management Studio (SSMS) and connect it with SQL Server (C1) Students explain the intent and purpose of SQL Server services on Windows. (C2) Students explain the concept of database objects in SQL Server through the SSMS window. (C2) Students explain the difference between database servers and database tools (GUI). (C2) Students are able to execute Transact-SQL (T-SQL) scripts via SSMS. (C3) Students are able to explain the basic differences between Transact-SQL (T-SQL) and ANSI SQL. (C2) Students are able to explain how to create a database from an existing SQL file (C2) Students can execute part or all of the SQL script from an existing file. (C3) Students are able to explain and apply the concept of 'database context' and how to adjust it. (C2) (C3) Students are able to apply the concept of using 'comments' in T-SQL. (C3) Students are able to apply the concept of using a SELECT statement to analyze existing tables in the database. (C3) Students are able to apply how to display data uniquely/distinctly. (C3) Students are able to apply how to use aliases for table names and column names. (C3) Students are able to apply the concept of CASE expressions and how to use them. (C3) Students are able to explain and apply how to query multi-tables in the SELECT clause using JOIN (C2)(C3) Students are able to apply how to write INNER JOIN queries (C3) Students are able to apply how to write OUTER JOIN queries (C3) Students are able to apply how to write SELF-JOIN and CROSS JOIN queries (C3)					

Students are able to apply how to do Data Sorting (C3) Students are able to apply how to do Data Filtering with a predicate (C3) Students are able to explain and apply how to do Data Filtering with TOP and OFFSET-FETCH (C2)(C3) Students are able to explain how to handle missing and unknown values in real data. (C3) Students can explain data types in SQL Server (C2) Students can explain queries against data types Date & Time (C2) Students can explain built-in functions related to Date & Time (C2) Students can explain character data types Concatenation of character data types with non-characters (C2) Students can explain built-in functions related to character data types (C5) Students can explain how to write queries that summarize data using the built-in aggregation function (C2) Students can explain and apply how to use the GROUP BY clause to arrange rows into several groups (C2)(C3) Students can explain and apply how to use the HAVING clause to filter data according to search conditions (C2) (C3) Students are able to implement the intent and use of nested queries in other queries (C3) Students explain how to write a self-contained sub-query that returns scalar or multi-valued results (C2) Students are able to apply how to write correlated sub-queries and return scalar or multi-valued results (C3) Students are able to apply how to use the EXISTS predicate to efficiently check the existence of a row in a sub-query (C3) Students are able to explain the purpose of Set Operations (C2) Students are able to apply and explain the differences between UNION & UNION ALL (C2)(C3) Students are able to apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2) Students are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3) Students explain the meaning of TRIGGER (C2) Students explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2) Students are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3) Students are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3) Students are able to explain the purpose of Set Operations (C2) Students are able to apply and explain the differences between UNION & UNION ALL (C2)(C3) Students are able to apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2) Students are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3) Students explain the meaning of TRIGGER (C2) Students explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2) Students are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3) Students are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3)
DESCRIPTION
Practicum on a case study
WORKING METHOD
Practicum on case studies. The questions are accessed through e-learning lmsslc .polinema.ac.id, done in a take home and open book manner
OUTER FORMAT
Work Object: UTS Outcome Form: practical report from the case study on the problem

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers and practical steps: 10 0 % The UTS assessment weight is 25% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
8th week	1 week
OTHERS REQUIRED:	
REFERENCES	
Microsoft Press, Querying Microsoft® SQL *Server* ® 2012, 2012 Microsoft Press, Administering Microsoft® SQL *Server* ® 2012, 2012	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Advanced Database				
CODE	RTI203005	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	5
SUPPORTING LECTURER	Yoppy Yunhasnawa, S.ST., M.Sc. Rokhimatul Wakhidah, S.Pd, MT Dwi Puspitasari, S.Kom., M.Kom. Annisa Puspa K, S.Kom., M.Kom. Dika Rizky Yunianto, S.Kom., M.Kom Irsyad Arif Mashudi, S.Kom., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to install Microsoft SQL Server, Management Studio (SSMS) and connect it with SQL Server (C1) Students explain the intent and purpose of SQL Server services on Windows. (C2) Students explain the concept of database objects in SQL Server through the SSMS window. (C2) Students explain the difference between database servers and database tools (GUI). (C2) Students are able to execute Transact-SQL (T-SQL) scripts via SSMS. (C3) Students are able to explain the basic differences between Transact-SQL (T-SQL) and ANSI SQL. (C2) Students are able to explain how to create a database from an existing SQL file (C2) Students can execute part or all of the SQL script from an existing file. (C3) Students are able to explain and apply the concept of 'database context' and how to adjust it. (C2) (C3) Students are able to apply the concept of using 'comments' in T-SQL. (C3) Students are able to apply the concept of using a SELECT statement to analyze existing tables in the database. (C3) Students are able to apply how to display data uniquely/distinctly. (C3) Students are able to apply how to use aliases for table names and column names. (C3) Students are able to apply the concept of CASE expressions and how to use them. (C3) Students are able to explain and apply how to query multi-tables in the SELECT clause using JOIN (C2)(C3) Students are able to apply how to write INNER JOIN queries (C3) Students are able to apply how to write OUTER JOIN queries (C3) Students are able to apply how to write SELF-JOIN and CROSS JOIN queries (C3) Students are able to apply how to do Data Sorting (C3)					

Students are able to apply how to do Data Filtering with a predicate (C3)
Students are able to explain and apply how to do Data Filtering with TOP and OFFSET-FETCH (C2)(C3)
Students are able to explain how to handle missing and unknown values in real data. (C3)
Students can explain data types in SQL Server (C2)
Students can explain queries against data types Date & Time (C2)
Students can explain built-in functions related to Date & Time (C2)
Students can explain character data types Concatenation of character data types with non-characters (C2)
Students can explain built-in functions related to character data types (C5)
Students can explain how to write queries that summarize data using the built-in aggregation function (C2)
Students can explain and apply how to use the GROUP BY clause to arrange rows into several groups (C2)(C3)
Students can explain and apply how to use the HAVING clause to filter data according to search conditions (C2) (C3)
Students are able to implement the intent and use of nested queries in other queries (C3)
Students explain how to write a self-contained sub-query that returns scalar or multi-valued results (C2)
Students are able to apply how to write correlated sub-queries and return scalar or multi-valued results (C3)
Students are able to apply how to use the EXISTS predicate to efficiently check the existence of a row in a sub-query (C3)
Students are able to explain the purpose of Set Operations (C2)
Students are able to apply and explain the differences between UNION & UNION ALL (C2)(C3)
Students are able to apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2)
Students are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3)
Students explain the meaning of TRIGGER (C2)
Students explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2)
Students are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3)
Students are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3)
Students are able to explain the purpose of Set Operations (C2)
Students are able to apply and explain the differences between UNION & UNION ALL (C2)(C3)
Students are able to apply and explain the differences between CROSS APPLY & OUTER APPLY (C3)(C2)
Students are able to apply, and explain the differences EXCEPT & INTERSECT (C2)(C3)
Students explain the meaning of TRIGGER (C2)
Students explain the difference between TRIGGER AFTER & TRIGGER INSTEAD OF (C2)
Students are able to apply and activate TRIGGER AFTER (INSERT, UPDATE, & DELETE) (C3)
Students are able to apply and activate the TRIGGER INSTEAD OF (INSERT, UPDATE, & DELETE) (C3)
Students are able to explain the purpose and benefits of SQL Windowing (C2)
Students are able to create windows with OVER clauses (C3)
Students are able to partition windows (C3)
Students are able to place orders on the window (C3)
Students are able to do framing on windows (C3)
Students are able to explain the concept of window function. (C2)
Students are able to explain and be able to use the aggregation function in window (C2)(C3)
Students are able to explain and be able to use the ranking function in window (C2)(C3)

Students are able to explain and be able to use the offset function in window (C2)(C3) Students are able to define the meaning of the distribution function on the window. (C2) Students are able to present data in pivot form using the PIVOT operator (C3) Students are able to change the data format from pivot to normal form with UNPIVOT. (C3) Students are able to combine 2 or more GROUP BY results with different columns and GROUPING SETS. (C3) Students are able to combine 2 or more groups consisting of a combination of all the columns involved with CUBE. (C34) Students are able to combine 2 or more groups consisting of a hierarchy of all columns involved with CUBE. (C3) Students are able to determine the original NULL and placeholder NULL in grouping sets with GROUPING_ID. (C3) Students are able to explain the meaning of Metadata (C2) Students are able to display information about the currently active database, along with the tables and columns. (C3) Students are able to display session information that is currently active as well as information about the CPU and RAM on the server (C3) Students are able to display definitions of artificial objects such as Views, Stored Procedures, tables, functions, and other objects. (C3) Students are able to explain concepts and various data types in SQL Server (C2) Students are able to explain how to query the data type date & time (C2) Students are able to explain and apply how to use functions related to date & time data types (C2)(C3) Students are able to explain and apply how to combine 2 or more variables with character and non-character data types (C2)(C3) Students are able to explain how to use functions related to character data types (C2) Students are able to explain the concept of stored procedures in SQL Server. (C2) Students are able to create a stored procedure which in its definition contains a SELECT statement. (C3) Students are able to execute a stored procedure. (C3) Students are able to explain how to pass parameters to a stored procedure. (C2) Students are able to create stored procedures that return results with OUTPUT. (C3) Students explain the concept of dynamic SQL (C2) Students are able to build and run dynamic SQL with EXEC and SP_EXECUTESQL. (C3) Students are able to explain how to use elements of the T-SQL language in basic programming. (C2) Students are able to explain about BATCH and how to use it in SQL Server. (C2) Students are able to explain how to declare & assign variable values and SYNONYM. (C2) Students are able to explain how to use IF and WHILE blocks in the T-SQL program flow. (C3) Students are able to apply how SQL Server handles errors that appear in T-SQL code. (C3) Students understand how to implement structured exception handling in T-SQL. (C3) Students are able to explain how to get information about errors from system objects. (C2) Students are able to describe NoSQL databases and their varieties (C2) Students describe NoSQL in the startup industry Students are able to understand the components of queries with good performance (C1) Students are able to display and interpret basic queries (C3) Students are able to display and interpret basic queries for data performance (C3). Students are able to explain and apply all of the previous topics in certain cases (C2)
DESCRIPTION
Answer questions from meeting material 1-16

WORKING METHOD	
The questions are done through e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Work Object: UAS Outer Form: student answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % The UTS assessment weight is 35% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
17th week	1 week
OTHERS REQUIRED:	
REFERENCES	
Microsoft Press, Querying Microsoft® SQL *Server* ® 2012, 2012 Microsoft Press, Administering Microsoft® SQL *Server* ® 2012, 2012	

ASSESSMENT AND EVALUATION PLAN

Object Oriented Programming

Week	Sub-CP-MK	Subject	Assessment form	Weight

1	• Students are able to understand the contents of the syllabus and lecture contracts;
	• Students are able to understand the basic concept of PBO;
	• Students are able to distinguish object-oriented paradigms from structural paradigms.
		• The difference between the object-oriented paradigm and the structural paradigm
		• The basic concept of PBO
		  ○ class
		  ○ object
		  ○ Encapsulation
		  ○ inheritance
		  ○ Polymorphism
		• Introduction to UML Class Diagram modeling
			• Task 1: Oral test
			• Quiz 1 (5 questions)
			• UTS (8 questions)
			• UAS (2 questions)
				Task 1: 0.8%
				Task 2: 0.8%
				Task 3: 0.8%
				Task 4: 0.8%
				Task 5: 0.8%
				Quiz 1: 12.5%
				UTS: 30%

2	• Students are able to understand the basic concept of PBO; • Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism; • Students are able to create UML models based on PBO case studies.	• PBO introduction • The difference between the object-oriented paradigm and the structural paradigm • The basic concept of PBO: • class • object • Encapsulation • inheritance • Polymorphism • Introduction to UML modeling	• Task 2: written assignment • Quiz 1 (5 questions) • UTS (8 questions) • UAS (2 questions)	
3	• Students are able to understand the basic concept of encapsulation; • Students are able to make UML notation in the form of access modifier notation and static notation.	• constructor • Access modifiers • Attribute/Method Class • Instantiation Attributes/Methods • Setters and Getters • UML: Access modifier notation and static notation	• Task 3: oral test • Quiz 1 (5 questions) • UTS (8 questions) • UAS (4 questions)	
4	• Students are able to understand the concept of class relations; • Students are able to design class diagrams from certain case studies.	• Has-A relation (Case study 1 class has a has-a relationship with 1 object from another class) • Depiction of class relationships with class diagrams	• Task 4: written assignment • Quiz 1 (5 questions) • UTS (8 questions) • UAS (4 questions)	

		• Has-A relationship (Case study 1 class has a has-a relationship with more than 1 object from another class)		
5	**Quiz 1**			
6,7	Students are able to understand the concept of inheritance.	• Definition of Inheritance • Single and Multilevel Inheritance • Super keywords • UML:inheritance relations	• Task 5: written assignment • UTS (8 questions) • UAS (4 questions)	
8	**UTS**			
9	Students are able to understand the concepts of Overriding and Overloading.	• Overriding • Overloading	• Task 6: oral test • Quiz (5 questions) • UAS (4 questions)	Task 6: 0.8% Task 7: 0.8% Task 8: 0.8% Task 9: 0.8% Task 10: 0.8% Task 11: 0.8% Final Projects: 10% Quiz 1: 12.5% UTS: 30%
10	Students are able to understand the concept of Abstract Class	• Abstract Class concept • Abstract methods • UML: abstract notation	• Task 7: oral test • Quiz (5 questions) • UAS (4 questions)	
11	Students are able to understand the concept of Interface.	• Interfaces concept • Different Interface and Abstract Class • Creating interfaces that implements to interfaces • UML: implements interface and relation notation	• Task 8: written assignment • Quiz (5 questions) • UAS (4 questions)	
12	Students are able to understand the concept of Polymorphism.	• Polymorphism concept • heterogeneous collections • polymorphic arguments • virtual method invocations • cast objects	• Task 9: oral test • Quiz (5 questions) • UAS (4 questions)	
13	**Quiz 2**			
14	Students are able to understand the concept of GUI.	• Frames, Menus, Textfields, Buttons, Labels, Comboboxes, Radiobuttons, Checkboxes • Event Handling (action performed)	• Task 10: group discussion and presentation • UAS (4 questions)	
15	• Students are able to understand the concept of GUI and Database and Java API	GUI, Database and Java API: • MySQL JDBC • CRUD with GUI	• Task 11: oral test • UAS (4 questions)	

	• Students are able to understand the concept of Java API.	• Java Docs		
16	Students are able to apply the theory they have learned into a comprehensive application.	Designing a class diagram of a given case.	FinalProject	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJEC	Object Oriented Programming				
CODE	RTI203007	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the basic concept of PBO; Students are able to distinguish object-oriented paradigms from structural paradigms. Students are able to understand the basic concept of PBO; Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism; Students are able to create UML models based on PBO case studies. Students are able to understand the basic concept of encapsulation; Students are able to make UML notation in the form of access modifier notation and static notation. Students are able to understand the concept of class relations; Students are able to design class diagrams from certain case studies.					
DESCRIPTION					
Answer quiz questions from meeting material 1-4					
WORKING METHOD					
The questions are done through e-learning lmsslc .polinema.ac.id					
OUTER FORMAT					
Job Object: quiz Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The score for Quiz 1 is 12.5% of 100% for this course					
IMPLEMENTATION SCHEDULE					
4th week			60 minutes		

OTHERS REQUIRED:
REFERENCES
Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming				
CODE	RTI203007	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the concepts of Overriding and Overloading Students are able to understand the concept of Abstract Class Students are able to understand the concept of Interface Students are able to understand the concept of Polymorphism					
DESCRIPTION					
Answering quiz questions from meeting materials 10-13					
WORKING METHOD					
The questions are done through e-learning lmsslc .polinema.ac.id					
OUTER FORMAT					
Job Object: quiz Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The score for Quiz 2 is 12.5% of 100% for this course					
IMPLEMENTATION SCHEDULE					
14th week			60 minutes		
OTHERS REQUIRED:					
REFERENCES					

1. Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall.
2. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall.
3. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming				
CODE	RTI203007	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the basic concept of PBO; Students are able to distinguish object-oriented paradigms from structural paradigms. Students are able to understand the basic concept of PBO; Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism; Students are able to create UML models based on PBO case studies. Students are able to understand the basic concept of encapsulation; Students are able to make UML notation in the form of access modifier notation and static notation. Students are able to understand the concept of class relations; Students are able to design class diagrams from certain case studies Students are able to understand the concept of inheritance					
DESCRIPTION					
Answer UTS questions from meeting material 1-7					
WORKING METHOD					
The questions are done through e-learning lmsslc .polinema.ac.id					
OUTER FORMAT					
Work Object: UTS Outcome Form: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The UTS assessment weight is 25 % of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					

8th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming				
CODE	RTI203007	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the basic concept of PBO; Students are able to distinguish object-oriented paradigms from structural paradigms. Students are able to understand the basic concept of PBO; Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism; Students are able to create UML models based on PBO case studies. Students are able to understand the basic concept of encapsulation; Students are able to make UML notation in the form of access modifier notation and static notation. Students are able to understand the concept of class relations; Students are able to design class diagrams from certain case studies Students are able to understand the concept of inheritance Students are able to understand the concepts of Overriding and Overloading Students are able to understand the concept of Abstract Class Students are able to understand the concept of Interface Students are able to understand the concept of Polymorphism Students are able to understand the concept of GUI. Students are able to understand the concept of GUI and Database and Java API Students are able to understand the concept of Java API. Students are able to apply the theory they have learned into a comprehensive application.					
DESCRIPTION					
Answer questions from meeting material 1-16					

WORKING METHOD	
The questions are done through e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Work Object: UTS Outcome Form: UTS student answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % The UAS assessment weight is 30% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
17th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.	

ASSESSMENT AND EVALUATION PLAN

PBO practicum

Week	Sub-CP-MK	Subject	Assessment form	Weight

1	• Students are able to **explain** the basic concepts of PBO (C2)
	• Students are able to **analyze** the differences between structural programming and object-oriented programming (C4)
	• Students are able to **identify** the form of Class diagram modeling (C1)
	•
		• The difference between the object-oriented paradigm and the structural paradigm
		• The basic concept of PBO
		  ○ class
		  ○ object
		  ○ Encapsulation
		  ○ inheritance
		  ○ Polymorphism
		• Introduction to UML Class Diagram modeling
			• Job sheet 1	Jobsheet 3: 2.5%
				Jobsheet 4: 2.5%
				Quiz 1: 15%
				UTS: 30%

2	• Students are able to **apply** the concept of class and object in the form of programming (C3) • Students are able to **apply** the steps for accessing attributes and methods in programming languages (C3) • Students are able to **apply** the exception concept using try-catch in programming (C3) • Students are able to **apply** class diagrams in certain cases (C3)	• class • object • Attribute • method • Instantiation • Accessing Attributes and Methods • Try-Catch • UML:Class Diagrams	• Job sheets 2	
3	Students are able to **apply** encapsulation in a programming language (C3)	• constructor • Access modifiers • Attribute/Method Class • Instantiation Attributes/Methods • Setters and getters • UML: Access modifier notation and static notation	• Job sheets 3	
4	• Students are able to **analyze** class relations based on certain case studies (C4) • Students are able to **apply** class relations in the form of diagrams (C3)	• Has-A relation (Case study 1 class has a has-a relationship with 1 object from another class) • Depiction of class relationships with class diagrams	• Job sheets 4	

		• Has-A relationship (Case study 1 class has a has-a relationship with more than 1 object from another class)		
5	**Quiz 1**			
6,7	• Students are able to define the notion of inheritance (C2) • Students are able to apply the concept of single and multiple inheritance (C3) • Students are able to apply inheritance relations in the form of diagrams (C3)	• Definition of Inheritance • Single and Multilevel Inheritance • Super keywords • UML:inheritance relations	• Job sheets 5	
8	**UTS**			
9	Students are able to **apply** the concepts of overriding and overloading in programming languages (C3)	• Overriding • Overloading	• Job sheets 6	Jobsheet 6: 2.5% Jobsheet 7: 2.5% Quiz 2: 15% UAS: 30%
10	Students are able to **apply** abstract concepts to classes and methods (C3)	• Abstract Class concept • Abstract methods • UML: abstract notation	• Job sheets 7	
11	Students are able to **apply** the interface and implement a class in the interface (C3)	• Interfaces concept • Different Interface and Abstract Class • Interface creation • How to create a class that implements to an interface • UML: implements interface and relation notation	• Job sheet 8	
12	• Students are able to **apply** the concept of polymorphism in programming languages (C3) • Students are able to **apply** virtual methods and casting objects (C3)	• Polymorphism concept • heterogeneous collections • polymorphic arguments • virtual method invocations • cast objects	• Job sheet 9	
13	**Quiz 2**			
14	• Students are able to apply GUI components to the development of a program (C3)	• Frames, Menus, Textfields, Buttons, Labels, Comboboxes, Radiobuttons, Checkboxes	• Job sheets 10	

	• Students are able to implement event handling in accordance with the GUI components used (C3)	• Event Handling (action performed)		
15	• Students are able to **create** APIs from the Java programming language (C6) • Students are able **to implement** a database connection with the Java programming language (C3) • Students are able to **apply** GUI to Java programs using a database (C3)	• Java Docs • collection • MySQL (JDBC) Database with GUI • CRUD with GUI • Model classes, DAO classes	• Job sheet 11	
16	Students are able **to explain** the progress of the big task being done (C2)	Designing a class diagram of a given case.		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming Practicum				
CODE	RTI203008	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz 1

SUB COURSE LEARNING ACHIEVEMENTS

Students are able to understand the basic concept of PBO;
Students are able to distinguish object-oriented paradigms from structural paradigms.
Students are able to understand the basic concept of PBO;
Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism;
Students are able to create UML models based on PBO case studies.
Students are able to understand the basic concept of encapsulation;
Students are able to make UML notation in the form of access modifier notation and static notation.
Students are able to understand the concept of class relations;
Students are able to design class diagrams from certain case studies.

DESCRIPTION

Do the questions in practical form

WORKING METHOD

Analyze case studies on questions and apply object-oriented programming to programs and explain the results of programs that have been made.
Questions are accessed via e-learning lmsslc.polinema.ac.id

OUTER FORMAT

Job Object: quiz
Outcome Form: student programs and presentations

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Suitability of the program made : 5 0 %
Program presentation: 50%
The weight for Quiz 1 is 1.5 % of 100% for this course

IMPLEMENTATION SCHEDULE	
5th week	200 minutes
OTHERS REQUIRED:	
REFERENCES	
Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming Practicum				
CODE	RTI203008	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the concepts of Overriding and Overloading Students are able to understand the concept of Abstract Class Students are able to understand the concept of Interface Students are able to understand the concept of Polymorphism					
DESCRIPTION					
Do the questions in practical form					
WORKING METHOD					
Analyze case studies on questions and apply object-oriented programming to programs and explain the results of programs that have been made. Questions are accessed via e-learning lmsslc.polinema.ac.id					
OUTER FORMAT					
Job Object: quiz Outcome Form: student programs and presentations					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Suitability of the program made : 5 0 % Program presentation: 50% The weight for Quiz 1 is 1.5 % of 100% for this course					
IMPLEMENTATION SCHEDULE					
Week 14			200 minutes		
OTHERS REQUIRED:					
REFERENCES					

Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall.
Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall.
Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming Practicum				
CODE	RTI203008	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				

ASSESSMENT FORMS
UTS
ASSESSMENT TITLE
UTS
SUB COURSE LEARNING ACHIEVEMENTS
Students are able to understand the basic concept of PBO; Students are able to distinguish object-oriented paradigms from structural paradigms. Students are able to understand the basic concept of PBO; Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism; Students are able to create UML models based on PBO case studies. Students are able to understand the basic concept of encapsulation; Students are able to make UML notation in the form of access modifier notation and static notation. Students are able to understand the concept of class relations; Students are able to design class diagrams from certain case studies Students are able to understand the concept of inheritance
DESCRIPTION
Do the questions in practical form
WORKING METHOD
Analyze case studies on questions and apply object-oriented programming to programs and explain the results of programs that have been made. Questions are accessed via e-learning lmsslc.polinema.ac.id
OUTER FORMAT
Work Object: UTS Outcome Form: student programs and presentations
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
Suitability of the program made : 5 0 % Program presentation: 50%

The weight for Quiz 1 is 30 % of 100% for this course	
IMPLEMENTATION SCHEDULE	
8th week	200 minutes
OTHERS REQUIRED:	
REFERENCES	
Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Object Oriented Programming Practicum				
CODE	RTI203008	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT. Muhammad Shulhan Khairy, S.Kom, M.Kom Priska Choirina, SST, M.Tr.T Frihandhika Permana SPd., MKom. Septian Enggar Sukmana, S.Pd., MT Banni Satria Andoko, S. Kom., M.MSI				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the basic concept of PBO; Students are able to distinguish object-oriented paradigms from structural paradigms. Students are able to understand the basic concept of PBO; Students are able to understand the concepts of class, object, encapsulation, inheritance, and polymorphism; Students are able to create UML models based on PBO case studies. Students are able to understand the basic concept of encapsulation; Students are able to make UML notation in the form of access modifier notation and static notation. Students are able to understand the concept of class relations; Students are able to design class diagrams from certain case studies Students are able to understand the concept of inheritance Students are able to understand the concepts of Overriding and Overloading Students are able to understand the concept of Abstract Class Students are able to understand the concept of Interface Students are able to understand the concept of Polymorphism Students are able to understand the concept of GUI. Students are able to understand the concept of GUI and Database and Java API Students are able to understand the concept of Java API. Students are able to apply the theory they have learned into a comprehensive application.					
DESCRIPTION					
Practicum and presentation of major assignments					
WORKING METHOD					

Implementing a case study into the program as a major task then presenting the results of the program that has been made	
OUTER FORMAT	
Work Object: UAS Outcome Form: student programs and presentations	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Suitability of the program made : 5 0 % Program presentation: 50% The weight for Quiz 1 is 30 % of 100% for this course	
IMPLEMENTATION SCHEDULE	
Week 16-17	2 weeks
OTHERS REQUIRED:	
REFERENCES	
Horstmann, CS, & Cornell, G. (2007). Core Java Volume I–Fundamentals, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Horstmann, CS, & Cornell, G. (2008). Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. Rickyanto, I. (2005). Object-Oriented Programming Basics with Java 2. Yogyakarta: Andi Offset.	

ASSESSMENT AND EVALUATION PLAN
PANCASILA

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	**1) Recognize the final objective of the course** 2) Be able to explain the definition of Pancasila historically and culturally. 3) Able to understand the concept of Pancasila historically and culturally	1) The ultimate goal of lectures 2) Historical and cultural definition of Pancasila		Quiz: 20% Duty: 40% UTS: 20% UAS: 20%
2	Able to explain the definition of Pancasila juridically and philosophically	Juridical and philosophical definition of Pancasila		
3	Able to explain Pancasila in the context of the history of the struggle of the Indonesian nation	Able to explain Pancasila in the context of the history of the struggle of the Indonesian nation		
4	**Quiz 1**			
5	Be able to explain the definition of Pancasila as a philosophical system	- The definition of Pancasila as a system of philosophy		
6	Able to explain and decipher the 1945 Constitution of the Republic of Indonesia and the amendments to the 1945 Constitution of the Republic of Indonesia	Able to explain and decipher the 1945 Constitution of the Republic of Indonesia and the amendments to the 1945 Constitution of the Republic of Indonesia		
7	Able to explain and describe the Trias Politica in the Republic of Indonesia	Definition of Trias Politica in the Republic of Indonesia		
8	Able to explain and describe State Institutions according to the 1945 Constitution of the Republic of Indonesia	Definition of State Institutions according to the 1945 Constitution of the Republic of Indonesia		
9	**UTS**			
10	Pancasila as National Ideology	1)The definition of Pancasila as the national ideology 2)The function of Pancasila as a national ideology		

		The process of forming Pancasila as a national ideology		
11	Another ideology that is developing in the world	Another definition of ideology that developed in the world		
12	Pancasila and Human Rights	Definition of Pancasila and Human Rights		
13	**Quiz 2**			
14	Implementation of human rights in the 1945 Constitution of the Republic of Indonesia	1)Definition of the implementation of human rights in the 1945 Constitution of the Republic of Indonesia 2)Characteristics of the Implementation of Human Rights in the 1945 Constitution of the Republic of Indonesia		
15	Corruption Crime	Definition of Corruption Crime -Characteristics of Corruption		
16	Pancasila as the Development Paradigm	Definition of Pancasila as a Development Paradigm		
17	**UAS**			
TOTAL WEIGHT				**100%**

MALANG STATE POLYTECHNIC
INFORMATION TECHNOLOGY DEPARTMENT
INFORMATICS ENGINEERING D4 PROGRAM

STUDENT ASSIGNMENT PLAN

COURSE NAME	Pancasila				
CODE		**credits**	2	**SEMESTER**	1
SUPPORTING LECTURER	**Widaningsih, S.Psi, SH, MH** Dr. Shohib Muslim, SH, MH				
FORMS OF TASKS	Weekly Tasks				

Sub-CP-MK

Mastering concepts and able to apply Pancasila understanding and material in theory and practical needs

TASK DESCRIPTION

In this assignment, students will answer the questions that have been given, then identify and implement the application of Pancasila in theory and adapt it to everyday life

ASSIGNMENT METHOD

TASKS Description: discuss with the group

1. What are the benefits of studying and understanding Pancasila?
2. Describe Pancasila in the review

a. Historical
b. Cultural
c. Juridical
d. philosophical

3. What is meant by Pancasila as a system of philosophy!
4. Explain the amendments to the 1945 Constitution and the stages of the amendments!
5. Explain Trias Politica in the Republic of Indonesia associated with Pancasila!
6. Explain the history of human rights in Indonesia along with its legal arrangements!

ANSWER:
each group sends the results of the discussion which summarizes the opinions of group members

FORM AND FORMAT OF THE OUTER

The results of the assignment, in the form of answers accompanied by a description of the opinion of each student and their fields, are stored in PDF format and collected via LMS in weekly assignment sessions with the file name **assignment1-nim-nama mhs.pdf**
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT
a) Entity description and description (50%) • Able to speak and express opinions correctly : 100 • Able to speak and argue correctly : 80 • Able to speak and express opinions correctly : 70 • Able to speak and express opinions correctly : 50 • Don't speak and don't think : 40 b) Attribute description and description (50%) • Able to describe 20 – 25 attributes correctly : 100 • Able to describe 13-19 attributes correctly : 80 • Able to describe 7 -12 attributes correctly : 70 • Able to describe 1-6 attributes correctly : 50 • No correct attribute : 40
SCHEDULE AND TIME OF IMPLEMENTATION
The first week with a duration of processing time of 1x50'
ETC
-
REFERENCES
...

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Communication and Organizational Science				
CODE	**RTI211001**	**WEIGHT (credits) / hour**	**2 credits/ 2 hours**	**SEMESTER**	1
SUPPORTING LECTURER	**Widaningsih, S.Psi, SH, MH**				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
Evaluation of material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material in chapters 1-7					
DESCRIPTION					
Answer the UTS questions provided					
WORKING METHOD					
On line					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100% The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	2 hours				
OTHERS REQUIRED:					
REFERENCES					
Pancasila Teaching Module					
Supporters:					
1) Sri Hudiarini, et al, Pancasila Education in the Historical and State Administration Perspective of the Republic of Indonesia Revised Edition, Aditya Media Publishing, 2016, Yogyakarta 2) Muhammad Noor Syam, Translation of Pancasila Philosophy in Legal Philosophy (As the Foundation for Development of the National Legal System), Pancasila Laboratory, State University of Malang, 2000, Malang					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Communication and Organizational Science				
CODE	**RTI211001**	**WEIGHT (credits) / hour**	**2 credits/ 2 hours**	**SEMESTER**	1
SUPPORTING LECTURER	**Widaningsih, S.Psi, SH, MH**				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
Evaluation of material 1-16					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material in chapters 1-16					
DESCRIPTION					
Answer the UAS questions provided					
WORKING METHOD					
On line					
OUTER FORMAT					
UAS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100% The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	2 hours				
OTHERS REQUIRED:					
REFERENCES					
Pancasila Teaching Module					
Supporters:					
1) Sri Hudiarini, et al, Pancasila Education in the Historical and State Administration Perspective of the Republic of Indonesia Revised Edition, Aditya Media Publishing, 2016, Yogyakarta 2) Muhammad Noor Syam, Translation of Pancasila Philosophy in Legal Philosophy (As the Foundation for Development of the National Legal System), Pancasila Laboratory, State University of Malang, 2000, Malang					

ASSESSMENT AND EVALUATION PLAN

IT concept

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students understand the concept of Information Technology • Students can know the function and utilization of information technology • Students can know the grouping of information technology • Students can find out the building components of IT • Students can know the basic role of IT	• Information Technology Concept • Functions and utilization of Information Technology • Information technology grouping • IT building components • The basic role of IT • Information Technology Trends	• Task 1: summarize information technology review • Quiz 1 (6 questions) • UTS (6 questions) • UAS (8 questions)	Task 1: 2% Task 2: 2% Task 3: 2% Group discussion : 8% Quiz 1: 1 2 % UTS: 2 0 %
2	• Students understand about Technological Innovation • Students know the difference between information system innovation and Modern Information Technology • Students can understand examples of information system innovation and Modern Information Technology	• Technology Innovation • Differences between information system innovation and modern information technology • Examples of information system innovation and modern information technology	• Group discussion related to 2020 modern era IT innovation • Quiz 1 (4 questions) • UTS (7 questions) • UAS (8 questions)	
3	• Students can know the meaning of science and technology • Students can find out the development of science and technology • Students can find out the development of science and technology in the field of education • Students can find out the impact caused by the influence of science and technology and find solutions	• Definition of science and technology • Development of science and technology • The development of science and technology in the field of education • The influence of science and technology and its solutions	• Group discussions related to the topic of the world of IT in science and technology • Quiz 1 (5 questions) • UTS (7 questions) • UAS (8 questions)	

4	• Students can know the meaning of Ethics in the use of IT Technology • Students can understand and explain the types of IT ethical issues • Students can know the role of ethics in the IT field	• Definition of Ethics • Use of Ethics in IT technology • Types of IT ethical issues • The Role of Ethics in IT • Professional Ethics and responsibilities of the IT profession	• Group discussion on the topic of international standards of ethics for the IT profession • Quiz 1 (4 questions) • UTS (8 questions) • UAS	
5	**Quiz 1**			
6	• Students know the development of ICT • Students know about the benefits of ICT and its application in various sectors • Students can know the difference between ICT and ICT • Students can find out the influence of ICT in organizations	• Definition of ICT • ICT development • The benefits of ICT and its application • The difference between ICT and ICT	• Task 2: summarize the review of ICT developments • UTS (7 questions) • UAS (7 questions)	
7	• Students understand the concept of computer systems and their components	• Computer System Concept • Computer Structure • I/O devices • Interconnection between components • Register • Memory • Processor (CPU) • CU/ Control Unit • PESTLE • BUS	• Task 3: summarize the concept of a computer system and review computer components on each PC/laptop you have • UTS (7 questions) • UAS (7 questions)	
8	• Students understand the concept of computer systems • Students can find out about computer system architecture	• Computer system elements • Computer system architecture • Computer system components	• Group discussions related to the topic of computer architecture on computers that are owned • UTS (7 questions) • UAS (7 questions)	
9	**UTS**			

10	• Students understand the concept of Data Representation	• Definition of Data representation • Number System • Arithmetic • Type data type • Number Theory • Number Conversion • Data Presentation	• Task 4: Work on sample data representation questions • Quiz 2 (10 questions) • UAS (7 questions)	Task 4: 2% Task 5: 2% Task 6: 2% Group Discussion : 6% Quiz 2: 1 2 % U A S: 30 %
1 1	• Students understand the concept of Boolean Algebra	• Basic Logic Operations • Logic Operations and Logic Gates • Boolean expression • Laws of Boolean Algebra • Boolean Functions • Boolean Algebra Application	• Task 5: work on boolean algebra examples • Quiz 2 (10 questions) • UAS (7 questions)	
12	• Students understand the concept of Flowchart	• Flowchart concept • Types of Flowcharts • Flowchart Symbols • Case studies in the application of flowcharts	• Task 6: work on flowchart sample questions • UAS (7 questions	
13	**Quiz 2**			
1 4	• Students understand the concept of Computer Networks and the Internet	• Computer Network Concept • Internet concept and understanding • Types of computer networks • Internet and Intranets • Network topology • Network device	• Group discussion related to the topic of computer network devices • UAS (7 questions)	
1 5	• Students understand the concept of IT applications	• IT Application Concept • Types of IT applications • The function and role of IT in everyday life and the company	• Group discussions cover the topic of IT applications • UAS (7 questions)	
1 6	• Students get to know Certification in the IT Field	• Definition of certification • Types of IT field certification	• Group discussion related to the topic of certifications in the IT field • UAS (7 questions)	

17	**UAS**	
TOTAL WEIGHT		**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Information Technology Concept				
CODE	RTI	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	1
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-4					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of information technology Students can understand technological innovation and information systems Students can understand the development of science and technology and its impact Students can understand ethics in the use of information technology					
DESCRIPTION					
4. Answering Quiz questions related to the concept of information technology, technological innovation and information systems, science and technology development and its impacts, and ethics in the use of information technology					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes					
OUTER FORMAT					
• Job Object: Quiz • Outcome Form: student Quiz answers					
IMPLEMENTATION SCHEDULE					
5th week	60 minutes				
OTHERS REQUIRED:					

REFERENCES

- Glen J. Coulthard, 2012, Computing Now, McGraw-Hill Book.
- Brian Williams and Stacey Sawyer, 2009, Using Information Technology: A Practical Introduction to Computer & Communications, 6th Edition, McGraw-Hill.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Information Technology Concept				
CODE	RTI	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	1
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz material 10-12					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of data representation Students can understand the concept of Boolean algebra Students can understand the concept of flowcharts					
DESCRIPTION					
Answer Quiz questions related to the concept of data representation, Boolean algebra, and flowcharts					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes					
OUTER FORMAT					
E. Job Object: Quiz F. Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 12% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
13th week	60 minutes				
OTHERS REQUIRED:					

REFERENCES
1. Glen J. Coulthard, 2012, Computing Now, McGraw-Hill Book. 2. Brian Williams and Stacey Sawyer, 2009, Using Information Technology: A Practical Introduction to Computer & Communications, 6th Edition, McGraw-Hill.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**
ASSESSMENT METHOD	
SUBJECT	Information Technology Concept

CODE	RTI	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	1
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Midterm exam					
ASSESSMENT TITLE					
UTS material 1-8					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of information technology Students can understand technological innovation and information systems Students can understand the development of science and technology and its impact Students can understand ethics in the use of information technology Students can find out the development of ICT Students understand the concept of computer systems and their components Students understand the architecture of computer systems					
DESCRIPTION					
Answer UTS questions related to the concept of information technology					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes					
OUTER FORMAT					
• Work Object: UTS • Outcome Form: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week		60 minutes			
OTHERS REQUIRED:					
REFERENCES					

- Glen J. Coulthard, 2012, Computing Now, McGraw-Hill Book.
- Brian Williams and Stacey Sawyer, 2009, Using Information Technology: A Practical Introduction to Computer & Communications, 6th Edition, McGraw-Hill.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Information Technology Concept				
CODE	RTI	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	1
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Final exams					
ASSESSMENT TITLE					
UAS material 1-16					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of information technology Students can understand technological innovation and information systems Students can understand the development of science and technology and its impact Students can understand ethics in the use of information technology Students can find out the development of ICT Students understand the concept of computer systems and their components Students understand the architecture of computer systems Students can understand the concept of data representation Students can understand the concept of Boolean algebra Students can understand the concept of flowcharts Students understand the concept of computer networks and the internet Students understand the concept of IT applications Students get to know certification in the field of information technology					
DESCRIPTION					
Answer UAS questions related to the concept of information technology					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes					
OUTER FORMAT					

- Work Object: UAS
- Outcome Form: student UAS answers

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Conformity of answers : 100%

The UAS assessment weight is 30% of 100% of the assessment for this course

IMPLEMENTATION SCHEDULE

17th week	60 minutes

OTHERS REQUIRED:

REFERENCES

1. Glen J. Coulthard, 2012, Computing Now, McGraw-Hill Book.
2. Brian Williams and Stacey Sawyer, 2009, Using Information Technology: A Practical Introduction to Computer & Communications, 6th Edition, McGraw-Hill.

ASSESSMENT AND EVALUATION PLAN

Algorithms and Data Structures

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students understand and recall the basic concepts of programming	• Election • loop • Arrays Function	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	Quiz 1: 10 % UTS: 30 %
2	• Students are able to understand the concept of object • students are able to declare classes, attributes and methods • Students are able to create objects (instantiation) • students are able to access the attributes and methods of an object • student is able to call the constructor	• object concept • class, attribute and method declarations • instantiation • access the attributes and methods of an object • constructor class diagrams	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	

	students understand the concept of objects and write them in the form of class diagrams			
3	● Students are able to make logic about arrays in Java Students are able to apply the creation of an array of objects	● Declaring and instantiating Arrays in Java ● Declare and instantiate the Java language Array of object variables ● Make an assignment Array of objects ● Displays an Array of objects	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
4	**Quiz 1**			
5	● Students are able to understand the concepts of brute force and divide-conquer algorithms Students are able to make flowcharts of brute force and divide-conquer algorithms	● Understanding the Brute force Algorithm ● Divide-conquer algorithm ● Big(O) Complexity Algorithm ● Big(O) notation calculation	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
6	● Students understand the concepts of sorting ● Students understand the difference between bubble sort, selection sort, and insertion sort Students are able to make flowcharts of sorting algorithms	● Definition of Sorting ● Bubble Sort Algorithm ● Selection Sort Algorithm Insertion Sort Algorithm	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
7	● Students understand the concept of searching ● Students understand the concept of sequential and binary search Students can simulate manual searching using sequential and binary search algorithms	● Sequential and Binary Search ● Enrichment : Merge Sort	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
8	**UTS**			
9	● Students understand the basic concepts of the basic structure of Stack ● Students understand the operations on Stack ● Students understand implementing Stack for Postfix Expressions	● Stack Data Structure Concept ● Operations on the Stack Postfix Expressions	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	Quiz 2: 10 % U A S: 30 %

10	● Students understand the basic concept of the basic structure of the Queue ● Students understand the operations on the Queue	● Queue Data Structure Concept Queue operations	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
11	Students understand the Linked List method for data distribution between two links	Linked list	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
12	Students understand the Double Linked List method for data distribution between two links	Double linked list		
13	**Quiz 2**			
14	● Students understand the concept of a tree in general ● Understand understanding the application of binary trees ● Students understand the concept of Binary Search Tree Students understand the stages of implementing the Binary Search Tree	● tree BinarySearch	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
15	● Students are able to make Graph algorithms in General Students are able to apply the Graph algorithm to the program	Graph	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
16	Students understand the collection classes and the functions that have been provided in completing the case study	Best practices collection	Quiz 1: 24 questions Quiz 2: 23 questions UTS: 35 questions UAS: 41 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Algorithms And Data Structures**				
CODE	**RTI212008**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Vivin Ayu Lestari, S.Pd., M.Kom				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1: 24 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understanding meeting material 1-3					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 4 hours of lessons					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	4 hours of lessons				
OTHERS REQUIRED:					
REFERENCES					
1. Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education 2. Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher 3. Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher 4. Hariyanto, B. 2007. Data Structure. Bandung: Informatics					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Algorithms And Data Structures**				
CODE	**RTI212008**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Vivin Ayu Lestari, S.Pd., M.Kom				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 1: 23 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand meeting material 9-12					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 4 hours of lessons					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
13th week	4 hours of lessons				
OTHERS REQUIRED:					
REFERENCES					
1. Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education 2. Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher 3. Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher 4. Hariyanto, B. 2007. Data Structure. Bandung: Informatics					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Algorithms And Data Structures**				
CODE	**RTI212008**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Vivin Ayu Lestari, S.Pd., M.Kom				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 35 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understanding meeting material 1-8					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 4 hours of lessons					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	4 hours of lessons				
OTHERS REQUIRED:					
REFERENCES					
1. Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education 2. Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher 3. Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher 4. Hariyanto, B. 2007. Data Structure. Bandung: Informatics					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Algorithms And Data Structures**				
CODE	**RTI212008**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Vivin Ayu Lestari, S.Pd., M.Kom				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: 41 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand meeting material 1-16					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 4 hours of lessons					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	4 hours of lessons				
OTHERS REQUIRED:					
REFERENCES					
1. Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education 2. Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher 3. Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher 4. Hariyanto, B. 2007. Data Structure. Bandung: Informatics					

ASSESSMENT AND EVALUATION PLAN

Database Practicum

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students **are able to explain** the concept of presenting data based on certain needs/problems **(C2)** Students **are able to explain** and **apply** data presentation functions on *spreadsheet -based data sets* **(C3)**	- Prepare sample data *spreadsheets* Selecting data by utilizing the available functions	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	Quiz 1: 20 % UTS: 30 % UAS: 30%
2	• Students are able to **design** databases through the design stages **(C3)** Students are able **to apply** the results of database design into ER diagrams manually **(C3)**	- Designing the database according to the design stages Create ER Diagrams	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
3	Students are able to **explain** and further **apply ERD and its relationship to data modeling, ERD variations, and tools that can be used to make ERD**	Making ER Diagrams with CASE Tools	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
4	**Quiz 1**			
5	Students are able **to explain** the relational model database described by CDM and PDM **(C2)**	Create CDM and PDM with Sybase power designer tools	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
6	• Students are able to **design** databases through the design stages **(C3)** Students are able to apply the results of database design into ER diagrams manually **(C3)**	- Designing the database according to the design stages Create ER Diagrams	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
7	Students are able **to explain** further about ERD and its relationship to data modeling, ERD variations, and tools that can be used to make ERD **(C2)**	Making ER Diagrams with CASE Tools	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
8	**UTS**			
9	• Students are able **to explain** the concept of normalizing relational schemas into the desired form **(C2)** Students are able to **explain** the characteristics of the stages of normalization 1NF to 3NF **(C2)**	- Prepare sample data *spreadsheets* Perform normalization according to the stages of normalization	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	Quiz 1: 20 % UTS: 30 % UAS: 30%

10	• Students are able **to explain** the characteristics of the stages of normalization 4NF, 5NF and BCNF **(C2)**	Perform normalization according to the stages of normalization	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
11	• Students are able to **explain** the basics of MySQL **(C2)** • Students are able **to create** databases and tables by applying DDL **(C3)** Students are able to **explain** and **apply** the use of commands to define database attributes, tables, fields, as well as limitations on an attribute and relationships between tables **(C2) (C3)**	- Install mysql - Create a database Performs Data Definition Language (DDL) Create, Alter, Drop commands	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
12	Students are able to **explain** and **apply** the use of DML commands in MySQL **(C2) (C3)**	Make use of the INSERT, UPDATE, DELETE SQL statement commands	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
13	**Quiz 2**			
14	Students are able to **explain** and **apply** the use of SQL SELECT statements with various clauses **(C2) (C3)**	Make use of the SQL Select command	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
15	• Students are able **to explain** the connectedness of entities in the database • Students **explain** the types of data retrieval operations in several entities **(C2)** Students are able **to complete *retrieval* cases** involving more than one entity **(C3)**	- Create a database with more than 1 table Make use of the Inner Join and Outer Join commands	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
16	• Students are able to **explain and implement** entity connectedness in the database • Students are able to **explain and implement** types of data retrieval operations across multiple entities **(C2) (C3)** *retrieval* cases involving more than one entity	- Create a database with more than 1 table Make use of the Inner Join and Outer Join commands	Quiz 1: 11 questions UTS: 1 question UAS: 40 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	DATABASE PRACTICUM				
CODE	RTI212006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Muhammad Shulhan Khairy, S.Kom, M.Kom				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 2: 11 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1 - 3					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 4 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	DATABASE PRACTICUM				
CODE	RTI212006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Muhammad Shulhan Khairy, S.Kom, M.Kom				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 1 question					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Answer the UTS questions provided.					
WORKING METHOD					
The questions were done in 120 minutes					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	120 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	DATABASE PRACTICUM				
CODE	RTI212006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Muhammad Shulhan Khairy, S.Kom, M.Kom				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: 40 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from meetings 1-16					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UAS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 35% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics.					

ASSESSMENT AND EVALUATION PLAN

Database

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Able to give examples of ICT products that use relational databases with clear and reliable reference sources [C2, A3]	- RPS and LECTURE CONTRACTS **Basic Concept** [1] p. 1-14 - Definition of Data and Database - Use of data and databases - Database characteristics - Database Type - Example of implementing the database **Relational Database** [1] p. 15-28 - Definition of Relational Database Components in relational databases	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	Quiz 1: 20 % UTS: 30 % UAS: 35%
2	Able to design databases using ER Diagrams based on the requirements given [C4,A3,P2]	**Data modeling** [1] p. 29-36 - Data modeling concept - Types and data modeling architecture **Database design using ER Diagram** [1] p. 58-92 - ER Versions and Components Diagram - Data requirements - Database design steps using ER Diagram - Determination of Entity, attribute and relationship - Determination of relationship cardinality Determination of participant relationship	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
3	Able to design databases using ER Diagrams based on the requirements given [C4,A3,P2]	**Data modeling** [1] p. 29-36 - Data modeling concept - Types and data modeling architecture **Database design using ER Diagram** [1] p. 58-92 - ER Versions and Components Diagram - Data requirements - Database design steps using ER Diagram - Determination of Entity, attribute and relationship - Determination of relationship cardinality Determination of participant relationship	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
4	**Quiz 1**			

5	Be able to design a relational model using the ER Diagram mapping algorithm to the relational model [C4,A3,P2]	**ER Diagram Mapping Algorithm to the relational model [1] p. 93-105** - Mapping Entities - Attribute Mapping - Mapping Relationships **Assessment of the suitability of the relational model with the data requirements**	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
6	Be able to design a relational model using the ER Diagram mapping algorithm to the relational model [C4,A3,P2]	**ER Diagram Mapping Algorithm to the relational model [1] p. 93-105** - Mapping Entities - Attribute Mapping - Mapping Relationships **Assessment of the suitability of the relational model with the data requirements**	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
7	Able to design a relational model using the database normalization method based on the tables and data provided [C4,A3,P2]	**Database Normalization [1] p. 37-57** - Definition of normalization - Purpose and benefits of normalization - Database normalization stages **Database normalization process [1] p. 37-57** - Formation of normal form 1 (1 NF) - Formation of normal form 2 (2 NF) - Formation of normal form 3 (3 NF) or BCNF - Formation of normal form 4 (4 NF) Formation of normal form 5 (5 NF)	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
8	**UTS**			
9	Able to design a relational model using the database normalization method based on the tables and data provided [C4,A3,P2]	**Database Normalization [1] p. 37-57** - Definition of normalization - Purpose and benefits of normalization - Database normalization stages **Database normalization process [1] p. 37-57** - Formation of normal form 1 (1 NF) - Formation of normal form 2 (2 NF) - Formation of normal form 3 (3 NF) or BCNF - Formation of normal form 4 (4 NF)	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	Quiz 1: 20 % UTS: 30 % UAS: 35%

		Formation of normal form 5 (5 NF)		
10	Able to write SQL-DDL commands to implement database design results and manage databases [C3,A3,P2]	**Stages of Implementing Database** - Create a database - Create tables, attributes, primary keys, and foreign keys **SQL language** - Definition, purpose, benefits, and types of SQL language **SQL-DDL language** - Usage and commands in SQL-DDL - CREATE command - ALTER command DROP command	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
11	Able to write SQL-DML commands to manage data stored in the database [C3,A3,P2]	**Data Management in Database** - Data addition - Data deletion - Data change **SQL-DML language** - Usage and commands in SQL-DML - INSERT command - DELETE command - UPDATE command WHERE clause	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
12	Able to write SQL-DQL commands to display data stored in database (query data) [C4,A3,P2]	**Data Queries** - Data query process **SQL-DQL language** - Usage and commands in SQL-DQL - SELECT command - WHERE clause - ORDER BY clause - GROUP BY clause - Aggregation Functions (SUM, MIN, MAX, AVG) - HAVING calluses	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	

13	**Quiz 2**			
14	Able to write SQL-DQL commands to display data stored in database (query data) [C4,A3,P2]	**Data Queries** - Data query process **SQL-DQL language** - Usage and commands in SQL-DQL - SELECT command - WHERE clause - ORDER BY clause - GROUP BY clause - Aggregation Functions (SUM, MIN, MAX, AVG) - HAVING calluses	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
15	Able to write SELECT commands to display data stored in multiple tables in database [C4,A3,P2]	**SELECT command for multiple tables** - The JOIN command and its types - INNER JOIN - OUTER JOINS CROSS JOIN	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
16	Able to write SELECT commands to display data stored in multiple tables in database [C4,A3,P2]	**SELECT command for multiple tables** - The JOIN command and its types - INNER JOIN - OUTER JOINS CROSS JOIN	Quiz 1: 11 questions UTS: 20 questions UAS: 40 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	DATABASE				
CODE	RTI212006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Muhammad Shulhan Khairy, S.Kom, M.Kom				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 2: 11 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1 - 3					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 4 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	DATABASE				
CODE	RTI212006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Muhammad Shulhan Khairy, S.Kom, M.Kom				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Answer the UTS questions provided.					
WORKING METHOD					
The questions are done within 30 minutes					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	30 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	DATABASE				
CODE	RTI212006	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Muhammad Shulhan Khairy, S.Kom, M.Kom				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: 40 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from meetings 1-16					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UAS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 35% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Puspitasari, D. and Hani'ah, M., 2019, Easy Ways to Design a Relational Database, Press Polyema. 2. Fathansyah, 2015, Basic Data Base, Bandung Informatics.					

ASSESSMENT AND EVALUATION PLAN

Mathematics 2

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to understand the concept of the type of set	Definition of Sets, Presentation of Sets, Types of Sets	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	Quiz 1: 7.5 % UTS: 30 % Task 1: 10%
2	Students are able to understand the concept of the type of set	Set Operations (Incision, Union, Difference, Complement, Symmetrical Difference and Composition)	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
3	Students are able to understand the concept of Relations	The definition of a relation, the relation symbol, defines the result area of the relation	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
4	**Quiz 1**			
5	Students are able to understand the concept of function	Function definition, function symbol, define function result area, relation and function differences	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
6	Students are able to understand the concept of the Matrix	Definition of Matrix, Matrix Notation, Same Matrix	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
7	Students are able to understand the concept of the Matrix	Matrix Addition and Subtraction, Matrix Multiplication, Matrix Transpose	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
8	**UTS**			
9	Students are able to understand the concept of the Matrix	determinant property, 2x2 matrix determinant, 2x2 matrix inverse	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	Quiz 2: 7.5 % U A S: 35 % Task 2: 10%
10	Students are able to understand the concept of the Matrix	Determinant with cofactors for a 3x3 Matrix	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	

11	Students are able to understand the concept of the Matrix	inverse matrix 3x3	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
12	Students are able to understand the concept of solving systems of linear equations using the Gauss Seidel method	Gauss Seidel Method Algorithm	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions Task 1: 10 questions	
13	**Quiz 2**			
14	Students are able to understand the concept of solving systems of linear equations using the Gaussian method	Gaussian Method Algorithm	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
15	Students are able to understand the concept of solving systems of linear equations using the Gauss-Jordan method	Gauss- Jordan Method Algorithm	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions	
16	Students are able to understand the concept of solving non-linear equations	Table and Bisection Methods	Quiz 1: 20 questions Quiz 2: 20 questions UTS: 20 questions UAS: 40 questions Task 2: 10 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-3					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight for Assignment 1 is 7.5% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week			150 minutes		
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 8 - 12					
DESCRIPTION					
Answer the quiz questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 7.5% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
13th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 20 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Answer the UTS questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 2. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**Mathematics 2**				
CODE	RTI212002	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	(Name of Assignment Lecturer)				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: 40 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material from meetings 1-16					
DESCRIPTION					
Answer the assignment questions provided.					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UAS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 35% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					
3. Stroud, KA and Dexter J. , Engineering Mathematics, Palgrave Macmillan, 2013 4. Munir, Rinaldi, “Discrete Mathematics Ed. 5th Revision”, Informatics Bandung, 2012.					

ASSESSMENT AND EVALUATION PLAN

Software engineering

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to understand Software Concepts	- Able to understand the characteristics and processes of the Software - Able to understand Software category - Able to understand the quality and life cycle of Software - Able to understand Software process model	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	Quiz 1: 10 % UTS: 30 %
2	Students are able to understand the concept of software process models	- Be able to explain the meaning and function of the software development cycle - Able to understand the prototyping model - able to understand the Linear Sequential Model - SDLC Process Model Waterfalls - Increment Process Model - Increment Model - Able to understand the spiral model - Able to understand RAD Models - Able to understand the Incremental Model - Able to understand the Spiral Model Able to understand the Component Assembly Model	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
3	Students are able to understand and explain systems engineering	- Able to understand the concept of systems engineering - Able to create and understand information strategy planning - Able to identify the needs of a system - Able to model the architecture of a system Able to analyze the specifications of a system	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
4	**Quiz 1**			
5	Context Diagrams And Data Flow Diagrams	- Able to understand the concept of software development in the form of a context diagram Able to understand the concept of software development in the form of data flow diagrams and their derivatives	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	

6	Students can understand and make designs Entity Relationship Diagram _ (ERD) of a software concept	Able to understand the principles and concepts of ERD design	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
7	- Understand the basic principles of software design and implementation - Knowing the main features of software for analysis modeling and software design - Make and know the analysis model and system design in UML notation for simple problems a Be able to make use case diagrams from a case study	- UML software design principles and concepts - Introduction to Modeling with star UML/Power Designer Understanding of making use case diagrams in a case	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
8	**UTS**			
9	Students can understand and create sequence diagrams for designing software development	- Modeling introduction using star UML/Power Designer - Sequence Diagram Components	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	Quiz 2: 10 % U A S: 30 %
10	- Students can understand and create a Candidate Class for designing software development Students can understand and create Interaction Diagrams for designing software development	- Definition of Candidate Class and Interaction Diagram - Create Candidate Class Create Interaction Diagrams	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
11	Students can understand and operate the Class Diagram model in software development	- Definition of Class Diagrams - Create Class Diagrams	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
12	- Students can understand and operate the State Transition Diagram model in software development - Students can understand and operate the Activity Diagram model in software development Students can understand the concept of Refinement in software development	- Definition of State Transition Diagrams - Understanding Activity Diagrams - Definition of Refinement in software development - Create State Transition Diagrams - Create Activity Diagrams Implement Refinements	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
13	**Quiz 2**			
14	- Students can understand Component Diagrams in software development	- Understanding Component and deployment diagrams in software development	Quiz 1: 25 questions UTS: 45 questions	

	- Students can understand and create the concept of deployment diagrams	- Create Component Diagrams - Create Deployment Diagrams	UAS: 35 questions	
15	Students can understand and make Object Oriented Analysis & Design	- Definition of Object & Class - Defining Classes - Relations in Object inheritance	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
16	- Students can test software with the Whitebox & Blackbox model Students can perform software testing in terms of integration, validation and system testing	- Definition of software testing - White box testing - Blackbox testing - Integration testing validation	Quiz 1: 25 questions UTS: 45 questions UAS: 35 questions	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Software engineering**				
CODE	**RTI212005**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Eka Larasati Amalia, S.ST., MT.				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2 does 25 soles					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand Jobsheet 9-11					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
12th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					

1. Ian Sommerville, *Software Engineering, 6th edition* , Addison-Wesley Pub Co., 2000.
2. William R. King , 2015, Planning for Information Systems, Routledge.
3. Harlan D. Mills, Richard C. Linger, Alan R. Hevner, *Principles of Information Systems Analysis and Design* , Academic Press, 1990.
4. Sprague, RH and McNurlin, BC, *Information Systems Management in Practice, 5th edition,* Prentice-Hall, 2002.
5. Ward, J et al., *Strategic Planning for Information Systems Practice, 2nd edition* , Wiley, 1996

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Software engineering**				
CODE	**RTI212005**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Eka Larasati Amalia, S.ST., MT.				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS does 45 soles					
SUB COURSE LEARNING ACHIEVEMENTS					
Understand Jobsheets 1-8					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					

1. Ian Sommerville, *Software Engineering, 6th edition* , Addison-Wesley Pub Co., 2000.
2. William R. King , 2015, Planning for Information Systems, Routledge.
3. Harlan D. Mills, Richard C. Linger, Alan R. Hevner, *Principles of Information Systems Analysis and Design* , Academic Press, 1990.
4. Sprague, RH and McNurlin, BC, *Information Systems Management in Practice, 5th edition,* Prentice-Hall, 2002.
5. Ward, J et al., *Strategic Planning for Information Systems Practice, 2nd edition* , Wiley, 1996

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	**Software engineering**				
CODE	**RTI212005**	**WEIGHT (credits) / hour**	**2/4**	**SEMESTER**	2
SUPPORTING LECTURER	Eka Larasati Amalia, S.ST., MT.				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS did 35 questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Understanding Jobsheets 1-16					
DESCRIPTION					
Answer questions correctly					
WORKING METHOD					
Working within 4 X 50 ”					
OUTER FORMAT					
Student answer					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week	4 X 50 ”				
OTHERS REQUIRED:					
REFERENCES					

1. Ian Sommerville, *Software Engineering, 6th edition* , Addison-Wesley Pub Co., 2000.
2. William R. King , 2015, Planning for Information Systems, Routledge.
3. Harlan D. Mills, Richard C. Linger, Alan R. Hevner, *Principles of Information Systems Analysis and Design* , Academic Press, 1990.
4. Sprague, RH and McNurlin, BC, *Information Systems Management in Practice, 5th edition,* Prentice-Hall, 2002.
5. Ward, J et al., *Strategic Planning for Information Systems Practice, 2nd edition* , Wiley, 1996

ASSESSMENT AND EVALUATION PLAN

Decision Support System

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	• Students can explain the role and influence of decision making in everyday life. • Students can explain the forming elements of decision making • And explain the use and Management Information System. • Students can explain the advantages of using managerial decision making and management information systems • Students can explain the functions, processes that occur and the types of decisions and decision-making phases	• Managerial Decision Making and Management Information Systems • Framework for decision support • Definition of Decision Support System • GDSS • EIS, ES, AI • The difference between MIS and DSS • Decision-making • The decision-making phase (Intelligence, design, choice, implementation • Structured Decisions • Semi-structured decisions • Unstructured Decisions	• Group discussion regarding the differences in EIS, ES and AI and examples of their application • Quiz 1 (1 question)	Task 1: 2% Task 2: 2% Task 3: 2% Task 4: 2% Group discussion : 2% Quiz 1: 15% UTS: 15%
2	• Students understand and are able to apply the *Weighted Sum Product, Weighted Product,* and SAW methods	• *Multicriteria Decision Making* method *Weighted Product* • SAW	• Task 1: solve decision-making cases using the WP, WSM, and SAW methods • Quiz 1 (1 question)	
3-4	• Students know the stages of ranking with the AHP method • Students are able to find the eigenvector values in the matrix between AHP criteria • Students are able to find the eigenvector values in the matrix between alternatives on each criterion of the AHP method • Students are able to find the final weight to be sorted as AHP output	• *Multicriteria Decision Making* method Analytic Hierarchy Process	• Task 2: solving cases of decision making using the AHP method • Quiz 1 (1 question) • UTS (1 question)	
5	**Quiz 1**			

6	• Students know the stages of ranking using the Elimination Et Choix Traduisant la Realité (ELECTRE) method • Students can distinguish *concordance* and *discordance* on ELECTRE • Students are able to find the final weight to be sorted as ELECTRE output	*Multicriteria Decision Making* method ELECTRE	• Task 3: solve a decision-making case using the Electre method • Quiz 2 (1 question)	
7	• Students know the stages of ranking using the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) method • Students can distinguish positive ideal solutions and negative ideal solutions in TOPSIS • Students are able to find the final weight to be sorted as TOPSIS output	Multicriteria Decision Making TOPSIS method	• Task 4: solving cases of decision making using the Topsis method • Quiz 2 (1 question)	
8	**UTS**			
9	• Students understand the definition and use of the Multi-Objective Optimization Method on The Basic of Ratio Analysis (MOORA) • Students are able to understand making decision matrices according to MOORA rules • Students know the stages of ranking using the Multi-Objective Optimization Method on The Basic of Ratio Analysis (MOORA) • Students are able to determine the criteria that are ordered as the MOORA ranking • Students are able to find the final weight to be sorted as MOORA output	Multicriteria Decision Making method Moora(1)	• Task 5: solve a decision-making case using the Moora method • UTS (1 question)	Task 5: 2% Task 6: 2% Task 7: 2% Task 8: 2% Discussion : 6% Quiz 2: 15% UAS: 20%

10	• Students know the meaning of GDSS • Students can simulate GDSS either directly or using a prototype • Students get to know the ranking between groups of decision makers	*Group Decision Support System* and various BORDA/HARE rankings	• Task 6: solving cases of decision making using the Borda method • UTS (1 question)	
11	• Students know various combinations of DSS methods • Students look for journals related to SPK research	Combination of Methods	• Group discussions related to journal/proceeding analysis related to decision making using a combination method	
12	• **Quiz 2**			
13	• Students can know the meaning and purpose of fuzzy in SPK • Students know the types of fuzzy including the Fuzzy Inference System • Students know and are able to make membership matrices in fuzzy	Introduction to Fuzzy	• Group discussions related to journal/proceeding analysis related to decision making using the Fuzzy method	
14	• Students understand and know Sugeno's FIS stages • Students know and are able to apply fuzzification to the Sugeno method • Students are able to apply Sugeno's FIS calculation solutions in implementing SPK	Fuzzy Inference System (Sugeno)	• Task 7: solving cases of decision making using the FIS Sugeno method	
15	• Students understand and know Tsukamoto's FIS stages • Students know and are able to apply fuzzification to the Tsukamoto method • Students are able to apply Tsukamoto's FIS calculation solutions in implementing SPK	Fuzzy Inference System (Tsukamoto)	• Task 8: solving cases of decision making using Tsukamoto's FIS method	

16	• Students are able to make a project from one of the methods that have been taught in the SPK course	Final project presentation	• Major Assignment: create a decision support system project using one of the methods taught in the DSS course	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Decision Support System				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of decision support systems Students understand and are able to apply the Weighted Sum Product, Weighted Product, and SAW methods Students understand and are able to apply the AHP method					
DESCRIPTION					
5. Answer Quiz questions related to the WSM, WP, SAW, and AHP methods					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes					
OUTER FORMAT					
• Job Object: Quiz • Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 15% of 100% assessment of this course					

IMPLEMENTATION SCHEDULE	
4th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	

1. Shimizu, Tamio, and friends, 2006, Strategic Alignment Process and Decision Support Systems: Theory and Case Studies, by Idea Group Inc.
2. Goul,Michael, and Karen Corral, 2005, Enterprise model management and next generation decision support, Elsevier BV All rights reserved.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Decision Support System				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Topsis and electre material quiz					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand and apply the electre method Students can understand and apply the topsis method					
DESCRIPTION					
Answering Quiz questions related to decision making using the electre and topsis methods					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 60 minutes					
OUTER FORMAT					
G. Job Object: Quiz H. Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 2 assessment weight is 15% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
12th week	60 minutes				
OTHERS REQUIRED:					

REFERENCES

3. Shimizu, Tamio, and friends, 2006, Strategic Alignment Process and Decision Support Systems: Theory and Case Studies, by Idea Group Inc.
4. Goul,Michael, and Karen Corral, 2005, Enterprise model management and next generation decision support, Elsevier BV All rights reserved.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Decision Support System				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Midterm exam					
ASSESSMENT TITLE					
UTS material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of decision support systems Students understand and are able to apply the Weighted Sum Product, Weighted Product, and SAW methods Students understand and are able to apply the AHP method Students can understand and apply the electre method Students can understand and apply the topsis method					
DESCRIPTION					
Answer UTS questions related to the AHP, MOORA, BORDA methods					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes					
OUTER FORMAT					
• Work Object: UTS • Outcome Form: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UTS assessment weight is 15% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					

8th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
1. Shimizu, Tamio, and friends, 2006, Strategic Alignment Process and Decision Support Systems: Theory and Case Studies, by Idea Group Inc. 2. Goul,Michael, and Karen Corral, 2005, Enterprise model management and next generation decision support, Elsevier BV All rights reserved.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Decision Support System				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	6
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Final exams					
ASSESSMENT TITLE					
UAS material 1-17					
SUB COURSE LEARNING ACHIEVEMENTS					

Students can understand the concept of decision support systems
Students understand and are able to apply the Weighted Sum Product, Weighted Product, and SAW methods
Students understand and are able to apply the AHP method
Students can understand and apply the electre method
Students can understand and apply the topsis method
Students understand and are able to apply the MOORA method
Students can understand and apply the BORDA method
Students can understand and apply the combination method
Students understand and are able to apply the FUZZY method
Students can understand and apply Sugeno's FIS method
Students can understand and apply Tsukamoto's FIS method

DESCRIPTION

Presenting a decision-making system project using one of the methods taught in DSS courses

WORKING METHOD

- The questions are done through e-learning lms.polinema.ac.id
- UAS is presented within 15 minutes

OUTER FORMAT

- Work Object: UAS
- Presentation by student groups

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Conformity of answers : 100%

The UAS assessment weight is 20% of 100% of the assessment for this course

IMPLEMENTATION SCHEDULE

17th week	15 minutes

OTHERS REQUIRED:

REFERENCES

1. Shimizu, Tamio, and friends, 2006, Strategic Alignment Process and Decision Support Systems: Theory and Case Studies, by Idea Group Inc.
2. Goul,Michael, and Karen Corral, 2005, Enterprise model management and next generation decision support, Elsevier BV All rights reserved.

ASSESSMENT AND EVALUATION PLAN

Advanced Web Programming

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	- Students are able to **understand** the concept of Web Framework (C2) - Students are able to **install** Web Framework (C1) - Students are able to **understand** the structure of the Web Framework (C2)	Web Frameworks: - Introduction to Web Frameworks - Installing Web Frameworks - Web Framework Structure		Task 1: 5% Task 2: 5% Task 3: 5% Task 4: 5% Task 5: 5% Task 6: 5% Task 7: 5% Quiz 1: 10% UTS: 10%
2	- Students **understand** the concept of routing Web Framework (C2) - Students **apply** routing on the Web Framework (C3) - Students **understand** the controller concept (C2) - Students are able to **implement** controllers on the Web Framework (C3)	Controllers & Routing: - Understanding of routing - Routing implementation - Understanding of controllers		
3	- Students **understand** the concept of view in the Web Framework (C2) - Students are able to **apply** the template engine to the Web Framework (C3) view - Students are able *to* **do** layouts in the Web Framework (C3) view	View - Introduction to views - engine templates - Layouts		
4	- Students are able to **understand** the concept of models in the Web Framework (C2) - Students are able **to make** a connection to the database (C3) - Students are able to **make** schema migrations (C3) - Students are able to **make** seeders (C3)	Model: - Introduction to models - Introduction to migration - Introduction to seeding		
5	**Quiz 1**			
6	- Students **understand** the concept of authentication with Web Framework (C2)	Authentication: - Authentication - Registration Form		

	- Students are able to **make** a registration form (C6) - Students are able to **create** a login form (C6)	- Login Form		
7	- Students **understand** the concept of ORM (C2) - Students are able **to perform** CRUD operations with ORM (C6)	ORMs: - Introduction to ORMs - CRUD with ORMs		
8	**UTS**			
9	- Students are able **to understand** the concept of ORM with databases that have relations (C6) - Students are able **to perform** CRUD operations with relations in ORM (C6)	CRUD related: - ORM relation concept - ORM relational CRUD		Task 8: 5% Duty 9: 5% Task 10: 20% Quiz 2: 10% UAS: 15%
10	- Students are able **to upload** files with the Web Framework (C3) - Students are able **to build** reporting features (C3)	Upload and Reporting: - Upload files - Reporting		
11	- Students **understand** the concept of RESTful (C2) - Students are able to **build** token authentication on RESTful API (C3) - Students are able to **build** CRUD with RESTful API (C3)	RESTful APIs: - Introduction to RESTful APIs - Authenticate with a RESTful API token - Build a CRUD RESTful API		
12	**Quiz 2**			
13 - 16	Students **build** projects based on selected case studies (C6)	Project		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	Advanced Web Programming				
CODE	RTI194006	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Ade Ismail S. Kom., M. TI 2. Dian Hanifudin Subhi, S. Kom., M. Kom. 3. Habibie Ed Dien, S. Kom., MT 4. Kadek Suarjuna Batubulan, S. Kom, MT 5. Million Ni'ma Shoumi, S.Kom., M.Kom 6. Moch. Zawaruddin Abdullah, S.ST., M.Kom 7. Putra Prima Arhandi, ST, M. Kom.				

ASSESSMENT FORMS

Mid Semester Examination (UTS)

ASSESSMENT TITLE

The ORM implementation for a simple case study

SUB COURSE LEARNING ACHIEVEMENTS

- Students understand the concept of authentication with Web Framework (C2)
- Students are able to make a registration form (C6)
- Students are able to create a login form (C6)
- Students understand the concept of ORM (C2)
- Students are able to perform CRUD operations with ORM (C6)
- Students are able to create case studies (C6)

DESCRIPTION

- From the company profile and web admin case studies that have been done at previous meetings, develop website pages with additional or improved functions for authentication, CRUD features with ORM and other features/menus that will add to the usefulness of the application built web-based. The complexity of features/functions affects the assessment. Implement authentication and CRUD features with ORM in a simple case study.

WORKING METHOD

1. Project name UTS_NIM1_NIM2, example: UTS_193171XXXX
2. The project is done in groups, where one group consists of 2 students
3. The uploaded project is 1 document file (UTS_NIM) containing the account link and the project repository on Github

OUTER FORMAT

A. Work Object: Website page in accordance with the selected case study
B. Output Form: report containing program code and screenshots of web pages in PDF format on A4 paper size. The student's name, NIM, and class are written at the top left. Systematize the file name is UTS_NIM1_NIM2

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Report format structure	: 10%
Implementation suitability	: 50%
Case study accuracy	: 40%
The UTS assessment weight is 10% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
8th week	1 week
OTHERS REQUIRED:	
REFERENCES	
1. *Muhammad Azamuddin, Hafid Mukhlasin, 2019. Laravel the PHP framework for web artisans, Kungfu Koding.*	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	Algorithms and Data Structures				
CODE	RTI192009	**WEIGHT (credits) / hour**	2 credits / 3 hours	**SEMESTER**	2
SUPPORTING LECTURER	Imam Fahrur Rozi, ST., MT.				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Students understand the basic concepts of programming Students understand the definition of class, object, and the stages of making an array of objects Students understand the use of Brute Force and Divide-Conquer algorithms					
DESCRIPTION					
Answer Quiz questions related to basic programming concepts, class, object, array of objects, Brute Force, and Divide-Conquer					
WORKING METHOD					
1. The questions are done through e-learning lms.polinema.ac.id 2. Quiz done in 35 minutes					
OUTER FORMAT					
A. Job Object: Quiz B. Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 10% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
4th week	35 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education 2. Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher 3. Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher 4. Hariyanto, B. 2007. Data Structure. Bandung: Informatics 5. Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher 6. Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher					

ASSESSMENT AND EVALUATION PLAN

Job Preparation English

Week	Sub-CP-MK	Subject	Assessment form	Weight
1-2	▪ Read and understand job advertisements and choose the right type of job according to your strengths and weaknesses.	● Reading Job Advertisements ○ Assessing Yourself ○ Parts of Job Advertisement ○ Questions to Ask Yourself after Reading Job Ads ○ Terms and Abbreviations Usually Found in Job Advertisements	● Task 1: Make a Mind Map and Search for suitable job vacancies ● Quiz 1 (5 questions) ● UTS (6 questions) ● UAS (2 questions)	Task 1: 2.5% Task 2: 2.5% Task 3: 2.5% Task 4: 2.5% Task 5: 2.5% Task 6: 2.5% Quiz 1: 10% UTS: 25%
3-4	● Write a job application letter	● Writing a Job Application Letter ● Things to Consider Before Writing A Job Application Letter ● Online Application Letters ● Job Application Letter Template ● Sample of Job Application Letter	● Task 2: Write *an Application Letter* and *Resume* ● Quiz 1 (8 questions) ● UTS (7 questions) ● UAS (3 questions)	
5-6	● Write a CV	● Writing a Curriculum Vitae ● Things to Consider Before Writing a Curriculum Vitae ● Information a CV Should Include ● Curriculum Vitae Template ● Sample of CV	● Task 3: Write a CV for professional personal data ● Quiz 1 (7 questions) ● UTS (7 questions) ● UAS (3 questions)	
7-8	● Practicing Job Interviews	● Conducting a Job Interview ● Kinds of Job Interviews ● Things to Prepare before Having a Job Interview ● Things Supposed to Do on a D Day (of the Job Interview) ● Common Questions Asked by the Interviewer	● Task 4: Practice an online job interview ● UTS (8 questions) ● UAS (4 questions)	
9	**UTS**			

10-11	• Practice effective presentations	• Delivering an Effective Presentation
		  • Factors Make People Irritated during Presentation
		  • Things to Consider before Presentation
		  • Things to Consider in Making Power Point Slides
		  • Things to Do during Presentations
			• Task 7: Create and carry out professional presentations for the world of work.
			• Quiz 2 (5 questions)
			• UAS (3 questions)
				Task 7: 2.5%
				Task 8: 2.5%
				Task 9: 2.5%
				Task 10: 2.5%
				Assignment 11: 2.5%
				Task 12: 2.5%
				Quiz 2: 10%
				UAS: 25%

12-16	• Understand the tips and do the TOEIC ® or PECT	• Preparing for TOEIC ® or PECT (Polytechnic English Competency Test)
		  • Strategies and Practice of Speaking Tests of TOEIC ® or PECT
		  • Strategies and Practice of Written Tests of TOEIC ® or PECT
			• Task 8: TOEIC Reading & Listening Practice and Try-Out
			• Quiz 2 (5 questions)
			• UAS (4 questions)	

17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D3 INFORMATICS MANAGEMENT**				
ASSESSMENT METHOD					
SUBJE	Job Preparation English				
CODE	RTI196001	**WEIGHT (credits) / hour**	2 credits / 3 hours	**SEMESTER**	8
SUPPORTING LECTURER	Faiz Ushbah Mubarok, S.Pd, M.Pd.				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-4					
SUB COURSE LEARNING ACHIEVEMENTS					
Students understand how to read job vacancies Students are able to write *an Application Letter* Students are able to write *resumes* Students are able to write *Curriculum Vitae* Students are able to conduct *interviews*					
DESCRIPTION					
Carry out a simulation of applying for a job related to the material Unit 1-4 *Application Letter, Resume* , *Curriculum Vitae, and Job interview*					
WORKING METHOD					
1. Answer the questions given in the video conference 2. Students answer questions within 15 minutes					
OUTER FORMAT					
A. Job Object: Quiz B. Outcome Form: student interview answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 10% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
9th week	35 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Asri, Atiqah Nurul, et.al. 2018. *English for Job Preparation* : Fourth Edition. Polynema Press 2. Downes, Colm. 2012. Cambridge English for Job Hunting. Cambridge: Cambridge University Press. 3. Grussendorf, Marion. 2011. Oxford English for Presentations. Oxford: Oxford University Press.					

4. Moss, James, Lee, Clayton, and Atkinson, Peter. 2007. Presenting for Success. Business English Pod.
5. Pledger, Path. 2015. Oxford English for Human Resources. Oxford: Oxford University Press.
6. Trew, Grant. 2008. Tactics for TOEIC ® Listening and Reading Strategies. Oxford: Oxford University Press.
7. Skills Academy. 2020. Job Interview Tips.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D3 INFORMATICS MANAGEMENT**				
	ASSESSMENT METHOD				
SUBJE	Job Preparation English				
CODE	RTI196001	**WEIGHT (credits) / hour**	2 credits / 3 hours	**SEMESTER**	8
SUPPORTING LECTURER	Faiz Ushbah Mubarok, S.Pd, M.Pd.				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz material 11-16					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to answer the TOEIC Reading & Listening Try-Out test					
DESCRIPTION					
Answer Quiz questions related to Unit 11-16 TOEIC Reading & Listening material.					
WORKING METHOD					
1. The questions are done through e-learning lms.polinema.ac.id 2. Quiz done in 60 minutes					
OUTER FORMAT					
A. Job Object: Quiz B. Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 10% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
16th week	60 minutes				
OTHERS REQUIRED:					
REFERENCES					
1. Asri, Atiqah Nurul, et.al. 2018. *English for Job Preparation* : Fourth Edition. Polynema Press 2. Downes, Colm. 2012. Cambridge English for Job Hunting. Cambridge: Cambridge University Press. 3. Grussendorf, Marion. 2011. Oxford English for Presentations. Oxford: Oxford University Press. 4. Moss, James, Lee, Clayton, and Atkinson, Peter. 2007. Presenting for Success. Business English Pod. 5. Pledger, Path. 2015. Oxford English for Human Resources. Oxford: Oxford University Press.					

6. Trew, Grant. 2008. Tactics for TOEIC ® Listening and Reading Strategies. Oxford: Oxford University Press.
7. Skills Academy. 2020. Job Interview Tips.

ASSESSMENT AND EVALUATION PLAN

Big Data

Week	Sub-CP-MK	Subject	Assessment form	Weight
1-3	Students are able to explain the concept of Big Data.	● Definition of Big Data ● Background Emergence of Big Data technology ● Benefits of Big Data Technology ● Definition of Hadoop ● History of the Emergence of Hadoop ● Hadoop Ecosystem ● Storage on Hadoop ● Parallel Processing on Hadoop	● Exercise 1	Exercise 1: 3% Quiz 1: 9% Exercise 2: 12% UTS: 9%
4	**Quiz 1**			
5-7	Students are able to explain concepts, and work with HDFS.	● Definition and How HDFS Works ● Name nodes & Data Nodes ● Works with HDFS ● Create applications that interact with HDFS	● Exercise 2	
8	**UTS**			
9-11	Students are able to explain concepts, and work with the MapReduce framework.	● Understanding MapReduce ● Mappers & Reducers ● The MapReduce daemon ● Definition of MapReduce Job ● Create MapReduce Jobs ● Another Example of MapReduce Job Implementation	● Exercise 3	Exercise 3: 12% Quiz 2: 6% Exercise 4: 3% Exercise 5: 3% UAS: 12%
12	**Quiz 2**			
13	Students are able to explain an overview of research and development with Big Data.	● Research ● Development ● Current developments in Big Data Technology ● Some examples of the latest technologies in the Hadoop ecosystem	● Exercise 4	

		● Examples of using big data in scientific research. ● Examples of popular big data products.		
14-16	Students mention and explain examples of using Big Data in the field of modern research.	● Scientific Publication Concept ● Searching for Scientific Publication Articles ● Big Data research in the field of handling Covid-19 ● Big Data Research in Education. ● Big Data research in the industrial/retail sector.	● Exercise 5	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Big Data				
CODE	RTI196003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dian Hanifudin Subhi, S. Kom., M. Kom. 3. Vipkas Al Hadid Firdaus, ST., MT 4. Habibie Ed Dien, S. Kom., MT 5. M. Hasyim Ratsanjani S. Kom., M. Kom. 6. M. Shulhan Khairy, S. Kom., M. Kom. 7. Noprianto S. Kom., M. Eng.				
ASSESSMENT FORMS					
Review papers					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to explain the concept of Big Data.					
DESCRIPTION					
Conduct literature reviews and write review papers					
WORKING METHOD					
1. Find 5 (10) papers that have similar topics, regarding the use of big data. Example: "big data stock market", "big data disaster", "big data pandemic", "big data culinary" 2. Create a review paper. An example of a review paper, usually a review paper has the keyword "an overview"					
OUTER FORMAT					
Work Object: Quiz 1 Outer Form: review paper					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Number of papers reviewed: 25% Quality of review paper made: 75% The score for Quiz 1 is 9% of 100% for this course					
IMPLEMENTATION SCHEDULE					
4th week			1 week		
OTHERS REQUIRED:					

REFERENCES

1.Nataraj Dasgupta. 2018. "Practical Big Data Analytics".

2. Buyya, Rajkumar. Calheiros, Rodrigo N. Dastjerdi, Amir Vahid. 2016."Big Data Principles and Paradigms".

3. Morgan Kaufmann., J. Lescovec, A. Rajaraman, and J. Ullman, “Mining of Massive Datasets”.

4. Udemy - The Ultimate Hands-On Hadoop: Tame your Big Data!

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Big Data				
CODE	RTI196003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dian Hanifudin Subhi, S. Kom., M. Kom. 3. Vipkas Al Hadid Firdaus, ST., MT 4. Habibie Ed Dien, S. Kom., MT 5. M. Hasyim Ratsanjani S. Kom., M. Kom. 6. M. Shulhan Khairy, S. Kom., M. Kom. 7. Noprianto S. Kom., M. Eng.				
ASSESSMENT FORMS					
Review papers					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to explain concepts, and work with the MapReduce framework.					
DESCRIPTION					
Perform bigdata analytics and visualization using bigquery					
WORKING METHOD					
Perform bigdata analytics on a database then create a visualization using bigquery					
OUTER FORMAT					
Work Object: Quiz 2 Outer Form: Report					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conclusion from big data analytics performed: 50% Generated visualization: 50% The weight for Quiz 1 is 6% of 100% for this course					
IMPLEMENTATION SCHEDULE					
12th week			1 week		
OTHERS REQUIRED:					
REFERENCES					

1.Nataraj Dasgupta. 2018. "Practical Big Data Analytics".
2. Buyya, Rajkumar. Calheiros, Rodrigo N. Dastjerdi, Amir Vahid. 2016."Big Data Principles and Paradigms".
3. Morgan Kaufmann., J. Lescovec, A. Rajaraman, and J. Ullman, “Mining of Massive Datasets”.
4. Udemy - The Ultimate Hands-On Hadoop: Tame your Big Data!

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Big Data				
CODE	RTI196003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dian Hanifudin Subhi, S. Kom., M. Kom. 3. Vipkas Al Hadid Firdaus, ST., MT 4. Habibie Ed Dien, S. Kom., MT 5. M. Hasyim Ratsanjani S. Kom., M. Kom. 6. M. Shulhan Khairy, S. Kom., M. Kom. 7. Noprianto S. Kom., M. Eng.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to explain the concept of Big Data. Students are able to explain concepts, and work with HDFS.					
DESCRIPTION					
Answer questions from meeting material 1-7					
WORKING METHOD					
Problems are done through Google Form					
OUTER FORMAT					
Work Object: Quiz 2 Outcome: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The UTS assessment weight is 6% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
8th week			60 minutes		
OTHERS REQUIRED:					
REFERENCES					

1.Nataraj Dasgupta. 2018. "Practical Big Data Analytics".
2. Buyya, Rajkumar. Calheiros, Rodrigo N. Dastjerdi, Amir Vahid. 2016."Big Data Principles and Paradigms".
3. Morgan Kaufmann., J. Lescovec, A. Rajaraman, and J. Ullman, “Mining of Massive Datasets”.
4. Udemy - The Ultimate Hands-On Hadoop: Tame your Big Data!

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Big Data				
CODE	RTI196003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	1. Yoppy Yunhasnawa, S.ST., M.Sc. 2. Dian Hanifudin Subhi, S. Kom., M. Kom. 3. Vipkas Al Hadid Firdaus, ST., MT 4. Habibie Ed Dien, S. Kom., MT 5. M. Hasyim Ratsanjani S. Kom., M. Kom. 6. M. Shulhan Khairy, S. Kom., M. Kom. 7. Noprianto S. Kom., M. Eng.				
ASSESSMENT FORMS					
Big data portfolio					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to explain the concept of Big Data. Students are able to explain concepts, and work with HDFS. Students are able to explain concepts, and work with the MapReduce framework. Students are able to explain an overview of research and development with Big Data. Students mention and explain examples of using Big Data in the field of modern research					
DESCRIPTION					
Make a Big Data portfolio project in the form, data sources, and free case studies but with the following considerations: • At a minimum it's a MapReduce Job with data that you create yourself, you run it on a Hadoop cluster, and you interpret/explain what the results are like. • It's even better if you can find your own case studies with other valid data sources (for example: from Kaggle.com, or from other sources) and can be processed, then you create a MapReduce Job. • Perfect score (A), if you don't just make MapReduce Jobs but you can also combine it with other (technology) stacks such as web applications (PHP/NodeJS/React etc.) or mobile or desktop					
WORKING METHOD					
• Done individually (one student makes 1 Big Data portfolio project) • The Hadoop cluster used can be your own cluster, borrowed from a friend, or one provided by the supervisor (if any). • If you choose to use data from other sources and then the data is too large for your cluster, please reduce the data to a minimum of 100 rows or 1 MB					
OUTER FORMAT					

Work Object: UAS
Outer Shape:

- Compressed project source code file with ZIP format
- Video in MP4 format which contains the following points:
  - Explanation of what case study you created.
  - An explanation of where the data was obtained and what form the data is in.
  - An explanation of the important source code, at least an explanation in the map process and the reduce process.
  - Explanation of the execution results.
  - What is the output description like?
- The videos collected can be made as simple as possible, no need to edit, the important thing is that the explanations are clear and your face is visible when explaining. You can make the video with makeshift tools like recorded Zoom. It can also be done in another way that you think is easy.
- Video length cannot be longer than 10 minutes.
- All of these files are collected in your respective GitHub repository, which is equipped with a Readme file containing screenshots of the results and video URLs explaining your project.
- If you pass the collection limit, then you are considered not taking the UAS.

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

Conformity of answers: 10 0 %
The UTS assessment weight is 12% of 100% of the assessment for this course

IMPLEMENTATION SCHEDULE

17th week	1 week

OTHERS REQUIRED:

REFERENCES

1.Nataraj Dasgupta. 2018. "Practical Big Data Analytics".
2. Buyya, Rajkumar. Calheiros, Rodrigo N. Dastjerdi, Amir Vahid. 2016."Big Data Principles and Paradigms".
3. Morgan Kaufmann., J. Lescovec, A. Rajaraman, and J. Ullman, “Mining of Massive Datasets”.
4. Udemy - The Ultimate Hands-On Hadoop: Tame your Big Data!

ASSESSMENT AND EVALUATION PLAN

IoT (Internet of Things)

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Students are able **to explain** the concept and architecture of IoT ● Students are able to **explain** standard IoT delivery protocols ● Students can **understand** the MQTT delivery protocol ● Students are able to **explain** various IoT cloud platforms	● Types of Device Constraints (Microcontroller Units, sensors, actuators) ● Definition of Edge Computing ● Definition and examples of Cloud Computing		Duty : 20% Quiz 2x: 20% UTS : 30% UAS : 30%
2	● Students are able to **explain** the basics of microcontrollers ● Students are able **to understand** about boards and pin definitions ● Students can **understand** MCU input and output ● Students are able to **explain** protocol interfacing	● Board introduction and pin definition ● MCU Input-Output ● ADC-DAC (Analog to Digital Converter) ● Protocol Interfacing (UART, I2C , SPI) ● Voltage Divider		
3	● Students are able to install & configure supporting software & hardware ● Students are able to use Arduino IDE, VS code platform io, and Fritzing ● Students can assemble an MCU with several sensors, actuators and LCDs ● Students are able to make simple MCU and Writing code	● Fritzing Designer ● Arduino IDE ● Visual Studio 2017 Community ● Debugging with Serial Monitor ● Assembling on the project board: 5 different LEDs, DHT11, LCD1602, LDR ● Added NodeMCU libraries		
4	**Quiz 1**			
5	● Students are able **to understand** about ordinary LEDs and RGB LEDs ● Students are able to **explain** how digitalWrite works ● Students are able **to implement** Coding Running LEDs ● Students are able **to develop** LED simulations	Implementation of Running LED Programs		

6	● Students can **explain** how the DHT11 sensor works ● Students can **understand** how analogRead works ● Students can **display** temperature and humidity in degrees and farenheit on a serial monitor in real time	Implementation of the DHT11 Temperature & Humidity Sensor Program		
7	● Students can **explain** how the LDR light sensor works ● Students can **calculate and display** the light intensity received by the LDR sensor analogously ● Students can **display** temperature and humidity values on a serial monitor ● Students can **classify** information on the serial monitor: "Dark", "Dim", "Bright" ● Students can **explain** the process of calculating distances based on waves sent and received ● Students can **display** the distance between objects with ultrasonic objects on the serial monitor screen in cm and inches	● Implementation of Light Sensor Program (LDR) ● Ultrasonic Sensor Program Implementation		
8	**UTS**			
9	● Students can **explain** how LCD I2C 16x2 works ● Students can **understand** the location of the I2C pin ● Students can **display** sensor values on the 16x2 I2C LCD ● Students are able to **calibrate** LCD I2C	LCD I2C 16x2		

10	● Students are able to **explain** the concept of TCP/IP ● Students are able to **explain** the concept of the Socket TCP/IP protocol so that the MCU can communicate with other devices ● Students can **create** a socket client program on the MCU side that is tasked with sending sensor data to Socket Server in real-time ● Students are able **to explain** how socket servers work as "listening" for all connected client sockets ● Students are able **to explain** the concept of Asynchronous socket with communication ● Students can **create** a Socket Server program with GUI C#, Java, Python, etc. to receive MCU sensor data, then display it in real-time on the socket server side	● Server Sockets ● Client sockets		
11	● Students **understand** various IoT cloud platforms ● Students are able to **install and configure** the IoT platform.	IoT platform installation		
12	**Quiz 2**			
13	● Students are able **to configure** user rules on the IoT Platform ● Students are able to **configure** smart devices ● Students are able **to implement** programs on the smart device side referring to the IoT Server library used ● Students are able to **communicate** between smart devices and IoT Servers ● Students are able to **display** sensor data to the IoT Dashboard System as monitoring	IoT Dashboard System Management		

14-15	● Students are able to **develop** software on the smart device side. ● Students are able to **install** and configure message brokers. ● Students are able to **process** sensor data on local or cloud servers. ● Students can **make** a simple sensor data dashboard	● Smart device configuration ● IoT Gateway concept ● Message brokers		
15-16	Students are able to solve simple cases with IoT technology	Project		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJEC	**INTERNET OF THINGS**				
CODE	**RTI196005**	**WEIGHT (credits) / hour**	**3 credits/ 6 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Noprianto, S.Kom., M.Eng				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1 is accessed within the LMS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-3					
DESCRIPTION					
Stages of creating an IoT project for the final project					
WORKING METHOD					
LMS					
OUTER FORMAT					
Quiz Student Paper Draft 1					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The score for Quiz 1 is 10% of 100% for this course					
IMPLEMENTATION SCHEDULE					
4th week			150 minutes		
OTHERS REQUIRED:					
REFERENCES					
1. Arduino Programming For Beginners, 2019, Jasakom 2. Smart Attendance with Smart Card and Fingerprint, 2021, Polinema Press					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJEC	**INTERNET OF THINGS**				
CODE	**RTI196005**	**WEIGHT (credits) / hour**	**3 credits/ 6 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Noprianto, S.Kom., M.Eng				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2 is accessed within the LMS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 8-11					
DESCRIPTION					
Stages of creating an IoT project for the final project					
WORKING METHOD					
LMS					
OUTER FORMAT					
Draft Student Paper Quiz 2					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The score for Quiz 2 is 10% of 100% for this course					
IMPLEMENTATION SCHEDULE					
12th week			150 minutes		
OTHERS REQUIRED:					
REFERENCES					
1. Arduino Programming For Beginners, 2019, Jasakom 2. Smart Attendance with Smart Card and Fingerprint, 2021, Polinema Press					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJEC	**INTERNET OF THINGS**				
CODE	**RTI196005**	**WEIGHT (credits) / hour**	**3 credits/ 6 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Noprianto, S.Kom., M.Eng				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS (IoT Project Follow Up)					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Stages of creating an IoT project for the final project					
WORKING METHOD					
LMS					
OUTER FORMAT					
UTS Student Draft Paper					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The weight for Quiz 2 is 30% of 100% for this course					
IMPLEMENTATION SCHEDULE					
8th week	150 minutes				
OTHERS REQUIRED:					
REFERENCES					

1. Arduino Programming For Beginners, 2019, Jasakom
2. Smart Attendance with Smart Card and Fingerprint, 2021, Polinema Press

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJEC	**INTERNET OF THINGS**				
CODE	**RTI196005**	**WEIGHT (credits) / hour**	**3 credits/ 6 hours**	**SEMESTER**	1
SUPPORTING LECTURER	Noprianto, S.Kom., M.Eng				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS (IoT Project)					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material in weeks 1 to 16					
DESCRIPTION					
IoT Final Project Make an IoT project to solve certain cases, complete from ***the controller/smart device to the monitoring system dashboard*** , the project is a follow-up to the Quiz 1, Quiz 2, and UTS draft papers that were made. Some of the provisions that must be carried out are as follows ● Projects must be done in groups (5%) ● The proposed system can be seen in *the cloud(online)(30%)* ● Monitoring and controlling use Node-RED and message brokers use broker servers that are managed or self-configured. For example using Mosquitto, RabbitMQ, Kafka, and similar (10%) ● Presented in groups with a specified schedule (20%) ● The program code must be stored in the repository, while the project demo video and uploaded on YouTube (10%) ● Make a final report in scientific article format (25%)					
WORKING METHOD					
Group					
OUTER FORMAT					
Project					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100%					

The weight for Quiz 2 is 30% of 100% for this course	
IMPLEMENTATION SCHEDULE	
17th week	150 minutes
OTHERS REQUIRED:	
REFERENCES	
1. Arduino Programming For Beginners, 2019, Jasakom 2. Smart Attendance with Smart Card and Fingerprint, 2021, Polinema Press	

ASSESSMENT AND EVALUATION PLAN

Computer network

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Students can explain the role and influence of data communication & computer networks in everyday life. (C2) ● Students can explain the components that make up computer networks and types of computer networks (C2)	● Definition of Computer Networks ● Influence of Computer Networks ● Basic Communication ● Computer Network Components ● Types of Computer Networks ● Computer Network General Symbol	● Oral test ● Quiz 1 (4 questions) ● UTS (6 questions) ● UAS (2 questions)	Task 1: 10% Quiz: 20% UTS: 2 0%
2	● Students can explain the function of network protocols (C2) ● Students can explain the advantages of using the OSI and TCP layered models and the basic functions of each layer (C2) ● Students can understand and explain the addresses used in network work (C2)	● Network Protocol ● Model/Layered Use ● Network addressing	● Oral test ● Quiz 1 (4 questions) ● UTS (6 questions) ● UAS (2 questions)	

3	Students can explain the functions, processes that occur and the types of protocols that exist in the upper layers of the OS and TCP models (C2)	● Application Layer - Interface between networks ● Client-Server and Peer-to-peer ● Application and Service layer protocols: ○ DNS ○ WWW and HTTP ○ E-mail ○ FTP ○ DHCP ○ File Sharing ○ Telnet	● Oral test ● Quiz 1 (4 questions) ● UTS (7 questions) ● UAS (2 questions)	
4	Students can explain the functions & roles of the Transport layer, as well as the TCP and UDP protocols. (C2)	● Uses of the Transport Layer ● Transport Layer Protocol Type ● Port Address	● Oral test ● Quiz 1 (4 questions) ● UTS (7 questions) ● UAS (2 questions)	
5	Students can explain the functions of the Network layer, addressing, and routing functions (C2)	● Address ● Encapsulation ● Routing ● Decapsulation ● Network Layer Protocol	● Oral test ● Quiz 1 (4 questions) ● UTS (7 questions) ● UAS (2 questions)	
6	**Quiz 1**			
7 -8	Students can understand and explain the structure and type and use of IPv4 addresses on networks (C2)	● IPv4 address ● IPv4 Types and Uses ● Calculation and Allocation of IPv4 for the network	● Task 1 ● UTS (7 questions) ● UAS (2 questions)	
9	**UTS**			
10	Students can explain the role of the DataLink layer of the OSI model, the physical addressing of network devices and network topology logically. (C2)	● Network Media Access Service ● Local Media Transfer Control ● DataLink Layer Frames ● Connecting the Upper Layer to the Media ● Data Link Layer Protocol ● Physical Addressing ● Network Topology	● Oral test ● Quiz 2 (10 questions) ● UAS (7 questions)	Task 2: 10% Quiz: 20% UAS: 2 0%
11	Students can explain the physical media used in computer network communications, the protocols and services that exist at the	● Communication Signals ● Signaling and Coding	● Oral test ● Quiz 2 (10 questions)	

	physical layer and the use of signal bits that represent data frames. (C2)	● Computer Network Capacity Measurement ● Physical Media ● Wireless Media and Technology	● UAS (7 questions)	
12	**Quiz 2**			
13	Students can identify and explain media requirements, connection types, devices needed to build computer networks (C2)	● Selection of Physical Connections - devices and their selection factors ● Selection of LAN and WAN topologies ● Address Allocation ● Subnet Calculation	● Oral test ● UAS (7 questions)	
14 -15	Students can explain how to use and configure basic routers and static routing (C2)	● Cisco IOS ● IOS Configuration and Mode Files ● Basic IOS Command Structure ● Network Connectivity Testing	● Task 2 ● UAS (7 questions)	
1 6	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4006	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can explain the role and influence of data communication & computer networks in everyday life. (C2) Students can explain the components that make up computer networks and types of computer networks (C2) Students can explain the function of network protocols (C2) Students can explain the advantages of using the OSI and TCP layered models and the basic functions of each layer (C2) Students can understand and explain the addresses used in network work (C2) Students can explain the functions, processes that occur and the types of protocols that exist in the upper layers of the OS and TCP models (C2) Students can explain the functions & roles of the Transport layer, as well as the TCP and UDP protocols. (C2) Students can explain the functions of the Network layer, addressing, and routing functions (C2)					
DESCRIPTION					
Answer quiz questions from meeting material 1-5					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Work Object: Quiz 1 Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The weight for Quiz 1 is 20 % of 100% for this course					
IMPLEMENTATION SCHEDULE					
Week 6				10 0 minutes	

OTHERS REQUIRED:
REFERENCES
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4006	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can explain the role of the DataLink layer of the OSI model, the physical addressing of network devices and network topology logically. (C2) Students can explain the physical media used in computer network communications, the protocols and services that exist at the physical layer and the use of signal bits that represent data frames. (C2)					
DESCRIPTION					
Answering quiz questions from meeting material 10-11					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Work Object: Quiz 2 Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The weight for Quiz 2 is 20 % of 100% for this course					
IMPLEMENTATION SCHEDULE					
Week 12			10 0 minutes		
OTHERS REQUIRED:					
REFERENCES					
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4006	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can explain the role and influence of data communication & computer networks in everyday life. (C2) Students can explain the components that make up computer networks and types of computer networks (C2) Students can explain the function of network protocols (C2) Students can explain the advantages of using the OSI and TCP layered models and the basic functions of each layer (C2) Students can understand and explain the addresses used in network work (C2) Students can explain the functions, processes that occur and the types of protocols that exist in the upper layers of the OS and TCP models (C2) Students can explain the functions & roles of the Transport layer, as well as the TCP and UDP protocols. (C2) Students can explain the functions of the Network layer, addressing, and routing functions (C2) Students can understand and explain the structure and type and use of IPv4 addresses on networks (C2)				
DESCRIPTION					
Answer UTS questions from meeting material 1-8					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Work Object: UTS Outcome Form: UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The UTS assessment weight is 20 % of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					

9th week	10 0 minutes
OTHERS REQUIRED:	
REFERENCES	
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4006	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
U US					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can explain the role and influence of data communication & computer networks in everyday life. (C2) Students can explain the components that make up computer networks and types of computer networks (C2) Students can explain the function of network protocols (C2) Students can explain the advantages of using the OSI and TCP layered models and the basic functions of each layer (C2) Students can understand and explain the addresses used in network work (C2) Students can explain the functions, processes that occur and the types of protocols that exist in the upper layers of the OS and TCP models (C2) Students can explain the functions & roles of the Transport layer, as well as the TCP and UDP protocols. (C2) Students can explain the functions of the Network layer, addressing, and routing functions (C2) Students can understand and explain the structure and type and use of IPv4 addresses on networks (C2) Students can explain the role of the DataLink layer of the OSI model, the physical addressing of network devices and network topology logically. (C2) Students can explain the physical media used in computer network communications, the protocols and services that exist at the physical layer and the use of signal bits that represent data frames. (C2) Students can identify and explain media requirements, connection types, devices needed to build computer networks (C2) Students can explain how to use and configure basic routers and static routing (C2)					
DESCRIPTION					
Answer U A S questions from meeting material 1-15					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Job Object: U A S					

Outcome Form: U A S student answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % The UTS assessment weight is 20 % of the 100 % assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 16	10 0 minutes
OTHERS REQUIRED:	
REFERENCES	
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007	

ASSESSMENT AND EVALUATION PLAN

Computer Network Practicum

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Students know the types of network cables (C1) ● Students can prepare UTP cable (C3) ● Students use UTP cable. (C3) ● Students are able to test UTP cable (C4)	● Kinds and Types of Network Cables ● Cable Straight through, Crossover, rollover ● LAN tester	● Practicum 1 ● Quiz 1 (4 questions) ● UTS (6 questions) ● UAS (2 questions)	Practicum 1: 5% Practicum 2: 5% Practicum 3: 5% Practicum 4: 5% Practicum 5: 5% Practicum 6: 5% Quiz: 10% UTS: 1 0%
2	● Students are able to install NIC (C3) ● Students are able to configure the NIC to get configuration parameters from the DHCP server or manually (C3)	● NIC identification ● Identification of PC Hardware ● Dynamic IP client configuration ● Troubleshooting Clients	● Practicum 2 ● Quiz 1 (4 questions) ● UTS (6 questions) ● UAS (2 questions)	
3	Students are able to use several Application layer protocols in the network (C3)	● DNS - dig, nslookup ● FTP ● Telnet ● SSH	● Practicum 3 ● Quiz 1 (4 questions) ● UTS (7 questions) ● UAS (2 questions)	
4	Students are able to use network tools to observe how Transport layer protocols (C3) work	● TCP-3 way handshake ● UDP client processes ● Netstat and Nmap ● Catch and identify TCP packets with WireShark	● Practicum 4 ● Quiz 1 (4 questions) ● UTS (7 questions) ● UAS (2 questions)	
5	● Students know the Ping tool and route (C1) ● Students can use Ping and route (C3) ● Students can analyze network problems with Ping and route tools (C4)	● Workstation basic configuration ● View configuration results ● Ping utility ● Route utility	● Practicum 5 ● Quiz 1 (4 questions) ● UTS (7 questions) ● UAS (2 questions)	
6	**Quiz 1**			
7 -8	Students can do network subnetting (C3)	● Class A subnetting ● Class B subnetting ● Class C subnetting	● Practicum 6 ● UTS (7 questions) ● UAS (2 questions)	
9	**UTS**			
10	● Students know the ping and traceroute tools in observing the path to a certain host (C1)	● Traceroute	● Practicum 7 ● Quiz 2 (6 questions) ● UAS (7 questions)	Practicum 7: 5% Practicum 8: 5%

	● Students can use the ping and traceroute tools to observe paths to certain hosts (C3)			Practicum 9: 5% Practicum 10: 5% Practicum 11: 5% Quiz 2: 10% UAS: 15 %
11	● Students know the ARP tool (C1) ● students can use the ARP Tool (C3)	● ARP	● Practicum 8 ● Quiz 2 (6 questions) ● UAS (7 questions)	
12	Students can configure Access Points, install wifi adapters and connect wirelessly (C3)	Wireless media: ● Installing wireless adapters ● Access Point Configuration ● wifi connection	● Practicum 9 ● Quiz 2 (8 questions)	
13	**Quiz 2**			
14	Students are able to design a local network (C6)	Local Network Design ● Analysis and design of device requirements ● Address allocation analysis and design	● Practicum 10 ● UAS (7 questions)	
15-16	Students are able to configure routers with basic commands and static routing (C3)	Router Configuration ● Name ● Passwords ● Interfaces	● Practicum 11 ● UAS (7 questions)	
1 7	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4007	**WEIGHT (credits) / hour**	2 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					
Students know the types of network cables (C1) Students can prepare UTP cable (C3) Students use UTP cable. (C3) Students are able to test UTP cable (C4) Students are able to install NIC (C3) Students are able to configure the NIC to get configuration parameters from the DHCP server or manually (C3) Students are able to use several Application layer protocols in the network (C3) Students are able to use network tools to observe how Transport layer protocols (C3) work Students know the Ping tool and route (C1) Students can use Ping and route (C3) Students can analyze network problems with Ping and route tools (C4)					
DESCRIPTION					
Answer quiz questions from meeting material 1-5					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Work Object: Quiz 1 Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 %					

The weight for Quiz 1 is 10 % of 100% for this course	
IMPLEMENTATION SCHEDULE	
Week 6	10 0 minutes
OTHERS REQUIRED:	
REFERENCES	
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007 3. Raphael Hertzog & Roland Mas, "The Debian Administrator's Handbook". Freexian, October 2015.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4007	**WEIGHT (credits) / hour**	2 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students know the ping and traceroute tools in observing the path to a certain host (C1) Students can use the ping and traceroute tools to observe paths to certain hosts (C3) Students know the ARP tool (C1) Students can use the ARP Tool (C3) Students can configure Access Points, install wifi adapters and connect wirelessly (C3)					
DESCRIPTION					
Answer quiz questions from meeting material 10-12					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Work Object: Quiz 2 Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The weight for Quiz 2 is 10 % of 100% for this course					
IMPLEMENTATION SCHEDULE					
Week 13				10 0 minutes	
OTHERS REQUIRED:					
REFERENCES					

1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011
2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007
3. Raphael Hertzog & Roland Mas, "The Debian Administrator's Handbook". Freexian, October 2015.

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4007	**WEIGHT (credits) / hour**	2 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students know the types of network cables (C1) Students can prepare UTP cable (C3) Students use UTP cable. (C3) Students are able to test UTP cable (C4) Students are able to install NIC (C3) Students are able to configure the NIC to get configuration parameters from the DHCP server or manually (C3) Students are able to use several Application layer protocols in the network (C3) Students are able to use network tools to observe how Transport layer protocols (C3) work Students know the Ping tool and route (C1) Students can use Ping and route (C3) Students can analyze network problems with Ping and route tools (C4) Students can do network subnetting (C3)					
DESCRIPTION					
Answer quiz questions from meeting material 1-8					
WORKING METHOD					
The questions are done through TCExam					
OUTER FORMAT					
Work Object: UTS Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					

Conformity of answers: 10 0 % UTS assessment weight is 10 % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
Week 9	10 0 minutes
OTHERS REQUIRED:	
REFERENCES	
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007 3. Raphael Hertzog & Roland Mas, "The Debian Administrator's Handbook". Freexian, October 2015.	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computer network				
CODE	RTI20 4007	**WEIGHT (credits) / hour**	2 credits / 6 hours	**SEMESTER**	3
SUPPORTING LECTURER	Arief Prasetyo, S.Kom., M.Kom. Yuri Ariyanto, S.Kom., M.Kom. Kadek Suarjuna Batubulan, S.Kom., MT Sofyan Noor Arief, SST., M.Kom.				
ASSESSMENT FORMS					
Online test					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students know the types of network cables (C1) Students can prepare UTP cable (C3) Students use UTP cable. (C3) Students are able to test UTP cable (C4) Students are able to install NIC (C3) Students are able to configure the NIC to get configuration parameters from the DHCP server or manually (C3) Students are able to use several Application layer protocols in the network (C3) Students are able to use network tools to observe how Transport layer protocols (C3) work Students know the Ping tool and route (C1) Students can use Ping and route (C3) Students can analyze network problems with Ping and route tools (C4) Students can do network subnetting (C3) Students know the ping and traceroute tools in observing the path to a certain host (C1) Students can use the ping and traceroute tools to observe paths to certain hosts (C3) Students know the ARP tool (C1) Students can use the ARP Tool (C3) Students can configure Access Points, install wifi adapters and connect wirelessly (C3) Students are able to design a local network (C6) Students are able to configure routers with basic commands and static routing (C3)					
DESCRIPTION					

Answer quiz questions from meeting materials 1-16	
WORKING METHOD	
The questions are done through TCExam	
OUTER FORMAT	
Work Object: UAS Outer Form: student quiz answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % UAS assessment weight is 15 % of 100% of the assessment of this course	
IMPLEMENTATION SCHEDULE	
Week 17	10 0 minutes
OTHERS REQUIRED:	
REFERENCES	
1. James F. Kurose & Keith Ross, “Computer Networking : A Top-Down Approach Featuring the Internet” Addison-Wesley, 2011 2. Cisco Systems, Inc.” CCNA Exploration I : Network Fundamentals”. Indianapolis: Cisco Press, 2007 3. Raphael Hertzog & Roland Mas, "The Debian Administrator's Handbook". Freexian, October 2015.	

ASSESSMENT AND EVALUATION PLAN

Project management

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students can understand the concept of project management in general and can understand the life cycle of a project	5. Project management 6. IS project life cycle 7. Project relationship with the organization 8. Profession in project management	• Results of group discussions • Case analysis in software projects • Quiz 1 (5 questions) • UTS (2 questions) • UAS (2 questions)	Task 1: 5% Task 2: 5% Group discussion : 8% Quiz 1: 1 2 % UTS: 2 0 %
2	• Students can understand the roles and functions of each personnel associated with the PL Project	4. Understanding the organizational structure of the project 5. Project implementers 6. The roles and functions of personnel in the project	• Discuss the roles and functions of personnel in an PL project and form a small organization in a group according to the PL project activities • Quiz 1 (5 questions) • UTS (3 questions) • UAS (3 questions)	
3	Students can prepare software project proposals (SCRUM)	• Definition of business cases • Project proposal templates • Terms of reference	• Task 1 : Design a software project proposal that defines what will be done, business needs, TOR, expected results etc. (proposal template will be provided) • Quiz 1 (5 questions) • UTS (3 questions) • UAS (3 questions)	
4	**Quiz 1**			
5	• Students are able to plan a project management	• Basic project management plan • Develop an integrated project management plan • Create a project management plan template	• Discussion: Develop a project management plan, the contents of the project management plan • UTS (2 questions) • UAS (2 questions)	
6	• Students are able to plan PL project scope management	• Project scope basics • Process of Gathering Requirements • The process of defining scope n • The process of compiling a work breakdown structure and dictionary • Using Microsoft Project to create a Work Breakdown Structure	• Arranging project scope by using microsoft project to define process scope • UTS (3 questions) • UAS (3 questions)	

7	• Students are able to plan PL project time management	• Project time management plan • The process defines project activities • Process sequencing activities • The process of estimating project resource requirements • The process determines the duration of the activity The process of compiling a project activity schedule with Ms. Project	• Task 2: Arrange time management in PL/duration projects using Microsoft Project • UTS (3 questions) • UAS (3 questions)	
8	**UTS**			
9	Students are able to plan cost management in PL projects	• Project cost management plan • The process of estimating activity costs • The process of preparing a project budget • Compile a project budget with Ms.Excel (template) Develop project budget with Ms. software . Project	• Discussion: Arranging budget management in PL/duration projects using Microsoft Project • Quiz 2 (3 questions) • UAS (3 questions)	Task 1: 5% Task 2: 5% Discussion : 10% Quiz 2: 1 0 % U A S: 2 0 %
10	• Students are able to plan HR management in PL projects	• Project HR management • Project HR management plan • The process of planning project HR Develop a project HR management plan using the template provided	• Discussion: Arranging HR management in PL/duration projects using microsoft project (1x50') • Quiz 2 (3 questions) • UAS (4 questions)	
11	• **Quiz 2**			
1 2	• Students are able to plan cost management in PL projects	• Project cost management plan • The process of estimating activity costs • The process of preparing a project budget • Compile a project budget with Ms.Excel (template) Develop project budget with Ms. software . Project	• Task 3: Arrange communication management in the PL/duration project using the prepared template • UAS (3 questions)	

1 3	• Students are able to plan HR management in PL projects	• Project HR management • Project HR management plan • The process of planning project HR Develop a project HR management plan using the template provided	• Discussion: Setting up risk management in PL/duration projects using the prepared templates • UAS (3 questions)	
14	• Students are able to plan communication management in PL projects	• Project communication management planning Workshop on making a project communication management plan	• Discussion: Make a report on the results of monitoring time and costs in PL projects • UAS (3 questions)	
15	• Students are able to plan risk management in PL projects	• Risk management plan • The process of identifying risks • The process of conducting a qualitative risk analysis • The process of conducting a quantitative risk analysis • The process of determining responses to risk • Compile project register Workshop on preparing a project risk management plan	• Discussion: Making reports on the results of HR monitoring and communication in PL projects • UAS (3 questions)	
16	• Students are able to monitor and control time and costs in PL projects	3. The concept of supervising the implementation of the project schedule and budget of the PL project 4. Techniques for controlling schedules and costs (PV curves, EV, schedule performance index, crashing) Using MS project to control schedule and cost in PL project	• Task 4: Prepare the final PL project report along with the attachments to the PL project report • UAS (3 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**

ASSESSMENT METHOD

SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					

ASSESSMENT FORMS

Quiz 1

ASSESSMENT TITLE

Quiz material 1-3

SUB COURSE LEARNING ACHIEVEMENTS

Students can understand the concept of project management
Students can understand the roles and functions of personnel
Students can compile software proposals

DESCRIPTION

Students can understand the concept of project management
Students can understand the roles and functions of personnel
Students can compile software proposals

DESCRIPTION

6. Answer Quiz questions related to project management concepts, personnel functions and PL proposals / case study presentations

WORKING METHOD

- The questions are done through e-learning lms.polinema.ac.id
- Quiz done in 35 minutes

OUTER FORMAT

- Job Object: Quiz
- Output Form: Student Quiz answers / Case study presentation

IMPLEMENTATION SCHEDULE

4th week	35 minutes

OTHERS REQUIRED:
REFERENCES
• Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices . • Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4

SUPPORTING LECTURER	
ASSESSMENT FORMS	
Quiz 2	
ASSESSMENT TITLE	
Quiz material 9-10	
SUB COURSE LEARNING ACHIEVEMENTS	
Students can understand and plan cost management in PL projects Students can understand and plan HR management in PL projects	
DESCRIPTION	
Answering Quiz questions related to project management concepts in the form of costs and HR/ Presentation	
WORKING METHOD	
• The questions are done through e-learning lms.polinema.ac.id • Quiz done in 35 minutes • If the presentation is held for 15 minutes	
OUTER FORMAT	
I. Job Object: Quiz J. Output Form: student Quiz answers/ presentations	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers : 100% Quiz 1 assessment weight is 12% of 100% assessment of this course	
IMPLEMENTATION SCHEDULE	
11th week	35 minutes
OTHERS REQUIRED:	
REFERENCES	
• Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices . • Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Midterm exam					
ASSESSMENT TITLE					
UTS material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students can understand the concept of project management Students can understand the roles and functions of personnel Students can compile software proposals Students are able to plan a project management Students are able to plan PL project scope management Students are able to plan PL project time management					

DESCRIPTION	
Answer UTS questions related to the concept of project management	
WORKING METHOD	
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 60 minutes	
OUTER FORMAT	
• Work Object: UTS • Outcome Form: UTS student answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers : 100% The UTS assessment weight is 20% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
8th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
• Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices . • Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology	

ASSESSMENT METHOD					
SUBJECT	Project management				
CODE	RTI	**WEIGHT (credits) / hour**	3 credits / 6 hours	**SEMESTER**	4
SUPPORTING LECTURER					
ASSESSMENT FORMS					
Final exams					
ASSESSMENT TITLE					
UAS material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to plan cost management in PL projects Students are able to plan HR management in PL projects Students are able to plan cost management in PL projects Students are able to plan HR management in PL projects Students are able to plan communication management in PL projects Students are able to plan risk management in PL projects Students are able to monitor and control time and costs in PL projects					
DESCRIPTION					
Answer UAS questions related to the concept of project management					
WORKING METHOD					
• The questions are done through e-learning lms.polinema.ac.id • UTS is done in 35 minutes					
OUTER FORMAT					
• Work Object: UAS • Outcome Form: student UAS answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
8th week	35 minutes				
OTHERS REQUIRED:					
REFERENCES					

- Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices .
- Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology

ASSESSMENT AND EVALUATION PLAN

Religion

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	Students are able to live up to the vision of Islamic Religious Education in Public Higher Education (M1)	➢ RPS and Lecture Contracts ➢ INTRODUCTION: ➢ Vision of Religious Education ➢ Course Description ➢ Lecture Approach ➢ Lecture Rules		Individual Tasks : 15% Group Assignment : 15% Quiz 1 : 10% Quiz 2 : 10% UTS : 20% UAS : 30%
2	Students are able to build the character that religion is a need and human nature (M1)	PEOPLE AND RELIGION ➢ Religion and Islam concept ➢ Religion Human Needs ➢ Dimensions of Islamic Teachings ➢ Methods of Understanding Islam ➢ Islamic Religious Mission ➢ The Future of Religion		
3	Students are able to build the character that religion is a need and human nature (M1)	PEOPLE AND RELIGION ➢ Religion and Islam concept ➢ Religion Human Needs ➢ Dimensions of Islamic Teachings ➢ Methods of Understanding Islam ➢ Islamic Religious Mission ➢ The Future of Religion		
4	**Quiz 1**			

5	Students are able to explain the concept of monotheism as the basic principle of Muslim life and explain the differences in views of life between monotheism and shirk (M1)	THE CONCEPT OF TAUHID ➢ Monotheism of Human Needs ➢ Human Problems: Shirk ➢ Impact of Tawhid		
6	Students are able to understand human nature and its function in life according to Islam (M2)	HUMAN CONCEPT ➢ Humans in Islamic view ➢ Functions and Duties of human life ➢ The Reality of the Life of the World and the Hereafter		
7	Students are able to understand human nature and its function in life according to Islam (M2)	HUMAN CONCEPT ➢ Humans in Islamic view ➢ Functions and Duties of human life ➢ The Reality of the Life of the World and the Hereafter		
8	**UTS**			
9	Students are able to explain the important meaning of Islamic views on environmental sustainability and its relationship with the environment where students work (M3)	ECOLOGICAL INSIGHTS IN ISLAM ➢ Nature of the Universe in Islam ➢ The Meaning And And Nature Of Sunnatullah ➢ Benefits of the Universe ➢ Islam and environmental insight		
10	Students have the knowledge to apply morals in their profession and daily life (M4)	MORAL ACTUALIZATION ➢ The Meaning of the Apostle's Struggle ➢ Actualization of the Apostle's Mission ➢ Application of Prophet's Attributes – in technology ➢ Worship and moral formation		

11	Students have the knowledge to apply the nature and foundation of science and technology in modern society (M4)	science and technology ➢ The Nature of Knowledge in Islam ➢ Science and Technology Paradigm ➢ Knowledge Resources ➢ Dhikr And Thought Pattern Application		
12	Students have the knowledge to apply the nature of work and work ethic associated with the actualization of jihad in modern society (M4)	WORK ETHIC ➢ Internal Work Ethic, Islam ➢ Work Motivation in Islam ➢ Actualization of Jihad in Development		
13	**Quiz 2**			
14	Students are able to provide responses to the concept of the meaning of Islamic economics, principles and ethics then analyze the management of zakat, waqf, infaq and alms and support the implementation of Islamic economics in Indonesia (M5)	ECONOMY ➢ Definition, Principles and Ethics of Sharia Economics ➢ Empowerment of the people through the Sharia Economy ➢ Kapita Selecta: Management of Zakat, Waqf, infaq and alms		
15	Students are able to provide responses to the nature and meaning of family in modern society and argue about the function and role of mosques in forming a happy society (M5)	ISLAMIC COMMUNITY ➢ Family Functions in Islam ➢ The Process of Establishing a Sakinah Family (Marriage) ➢ The mosque is the center of civilization		
16	Students are able to provide responses to the nature and meaning of family in modern society and argue about the function and role of mosques in forming a happy society (M5)	ISLAMIC COMMUNITY ➢ Family Functions in Islam ➢ The Process of Establishing a Sakinah Family (Marriage) ➢ The mosque is the center of civilization		

17	UAS	
TOTAL WEIGHT		100%

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT PLAN				
SUBJE	**ISLAMIC EDUCATION**				
CODE	RTI222001	**WEIGHT (credits) / hour**	2 credits/ 2 hours	**SEMESTER**	1
SUPPORTING LECTURER	Ahmad Bahauddin				
FORMS OF TASKS					
Individual Tasks					
ASSESSMENT TITLE					
Task 1: Resumes of the Chapter on Humans and Religion					
SUB COURSE LEARNING ACHIEVEMENTS					
● Students are able to build the character that religion is a need and human nature					
DESCRIPTION					
Make a resume from the video link that I have shared, provided that: At least 2 pages and include your opinion about the material accompanied by clear and reliable reference sources.					
WORKING METHOD					
- Students view videos of human and religious material - Students make a resume from the material that has been presented					
OUTER FORMAT					
- The object of cultivation: the material core of humans and religion - Outer Form: Resume					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Resume content accuracy The accuracy of the verses of the Qur'an and Hadith					
IMPLEMENTATION SCHEDULE					
2nd week	1 week				
OTHERS REQUIRED:					
https://www.youtube.com/watch?v=zRUC8xfxTQU					
REFERENCES					
Al Qur'an Al Karim and Qur'an Android, Fadloli, Sri Nurkudri, Abd. Chalim. 2018. Islamic Religious Education in Public Universities. Malang: AM Publishing, Kemenristekdikti. 2016. Islamic Religious Education Module for Higher Education. Jakarta: Director General of Belmawa Kemenristekdikti, Samiun Jazuli. Ahzami. 2014. Life in the View of the Qur'an. Jakarta: Human Echo, Abdullah, M. Amin. 2012. Islamic Studies in Higher Education. Yogyakarta Student Library					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**ISLAMIC EDUCATION**				
CODE	RTI222001	**WEIGHT (credits) / hour**	2 credits/ 2 hours	**SEMESTER**	1
SUPPORTING LECTURER	Ahmad Bahauddin				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz 1: 5 essay questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-3					
DESCRIPTION					
Answer the quiz questions provided					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
Student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 100% : % The assessment weight for Assignment 1 is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
4th week	100 minutes				
OTHERS REQUIRED:					
REFERENCES					
Al Qur'an Al Karim and Qur'an Android, Fadloli, Sri Nurkudri, Abd. Chalim. 2018. Islamic Religious Education in Public Universities. Malang: AM Publishing, Kemenristekdikti. 2016. Islamic Religious Education Module for Higher Education. Jakarta: Director General of Belmawa Kemenristekdikti, Samiun Jazuli. Ahzami. 2014. Life in the View of the Qur'an. Jakarta: Human Echo, Abdullah, M. Amin. 2012. Islamic Studies in Higher Education. Yogyakarta Student Library					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D2 SITE SOFTWARE DEVELOPMENT**				
	ASSESSMENT PLAN				
SUBJE	**ISLAMIC EDUCATION**				
CODE	RTI222001	**WEIGHT (credits) / hour**	2 credits/ 2 hours	**SEMESTER**	1
SUPPORTING LECTURER	Ahmad Bahauddin				

FORMS OF TASKS

Group Tasks

ASSESSMENT TITLE

Group 1 Task: The Concept of Tawhid

SUB COURSE LEARNING ACHIEVEMENTS

- Students are able to explain the concept of monotheism as the basic principle of Muslim life and explain the differences in views of life between monotheism and shirk

DESCRIPTION

Discuss the chapters that have been divided according to the RPS
Write a paper with the conditions:

1. cover
2. Introduction
3. Formulation of the problem
4. Fill
5. Closing
6. Bibliography

Create PPT for presentations

WORKING METHOD

1. Understand and discuss the material provided per group.
2. Prepare presentation materials and papers according to the material.
3. Conducting presentations and discussions related to the material.
4. Each group that does not present writes down three questions each as material for discussion.
5. The lecturer provides validation at the end of the presentation.

OUTER FORMAT

- a. Worked Object: The concept of monotheism
- b. Outer Form: PPT and term papers

INDICATORS, CRITERIA AND WEIGHT ASSESSMENT

1. Accuracy of paper and PPT components.
2. Accuracy in presenting presentation material.
3. Ability to make presentations communicative and interesting.

a. Assessment Weight: 5% of the overall assessment for this course.

IMPLEMENTATION SCHEDULE

3rd week	1 week
OTHERS REQUIRED:	
Tasks are done in groups	
REFERENCES	
Al Qur'an Al Karim and Qur'an Android, Fadloli, Sri Nurkudri, Abd. Chalim. 2018. Islamic Religious Education in Public Universities. Malang: AM Publishing, Kemenristekdikti. 2016. Islamic Religious Education Module for Higher Education. Jakarta: Director General of Belmawa Kemenristekdikti, Samiun Jazuli. Ahzami. 2014. Life in the View of the Qur'an. Jakarta: Human Echo, Abdullah, M. Amin. 2012. Islamic Studies in Higher Education. Yogyakarta Student Library	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**ISLAMIC EDUCATION**				
CODE	RTI222001	**WEIGHT (credits) / hour**	2 credits/ 2 hours	**SEMESTER**	1
SUPPORTING LECTURER	Ahmad Bahauddin				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz 2: Memorizing Letters related to handouts 10-12					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 10-12					
DESCRIPTION					
Make videos that contain memorization					
WORKING METHOD					
Memorizing videos					
OUTER FORMAT					
Tutorial video					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 100% : % The assessment weight for Assignment 2 is 10% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
13th week	50 minutes				
OTHERS REQUIRED:					
REFERENCES					
Al Qur'an Al Karim and Qur'an Android, Fadloli, Sri Nurkudri, Abd. Chalim. 2018. Islamic Religious Education in Public Universities. Malang: AM Publishing, Kemenristekdikti. 2016. Islamic Religious Education Module for Higher Education. Jakarta: Director General of Belmawa Kemenristekdikti, Samiun Jazuli. Ahzami. 2014. Life in the View of the Qur'an. Jakarta: Human Echo, Abdullah, M. Amin. 2012. Islamic Studies in Higher Education. Yogyakarta Student Library					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**ISLAMIC EDUCATION**				
CODE	RTI222001	**WEIGHT (credits) / hour**	2 credits/ 2 hours	**SEMESTER**	1
SUPPORTING LECTURER	Ahmad Bahauddin				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
UTS: 20 multiple choice questions					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-8					
DESCRIPTION					
Answer the UTS questions provided					
WORKING METHOD					
Problems are done within 2 hours of lessons					
OUTER FORMAT					
UTS student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 100% : % The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
9th week			100 minutes		
OTHERS REQUIRED:					
REFERENCES					
Al Qur'an Al Karim and Qur'an Android, Fadloli, Sri Nurkudri, Abd. Chalim. 2018. Islamic Religious Education in Public Universities. Malang: AM Publishing, Kemenristekdikti. 2016. Islamic Religious Education Module for Higher Education. Jakarta: Director General of Belmawa Kemenristekdikti, Samiun Jazuli. Ahzami. 2014. Life in the View of the Qur'an. Jakarta: Human Echo, Abdullah, M. Amin. 2012. Islamic Studies in Higher Education. Yogyakarta Student Library					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	**ISLAMIC EDUCATION**				
CODE	RTI222001	**WEIGHT (credits) / hour**	2 credits/ 2 hours	**SEMESTER**	1
SUPPORTING LECTURER	Ahmad Bahauddin				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
UAS: making an interview report					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand material 1-16					
DESCRIPTION					
Preparation of interview reports and connected with the arguments of the Qur'an and Hadith					
WORKING METHOD					
Problems are done within 1 week					
OUTER FORMAT					
Student report					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 100% : % The UTS assessment weight is 30% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week				100 minutes	
OTHERS REQUIRED:					
REFERENCES					
Al Qur'an Al Karim and Qur'an Android, Fadloli, Sri Nurkudri, Abd. Chalim. 2018. Islamic Religious Education in Public Universities. Malang: AM Publishing, Kemenristekdikti. 2016. Islamic Religious Education Module for Higher Education. Jakarta: Director General of Belmawa Kemenristekdikti, Samiun Jazuli. Ahzami. 2014. Life in the View of the Qur'an. Jakarta: Human Echo, Abdullah, M. Amin. 2012. Islamic Studies in Higher Education. Yogyakarta Student Library					

ASSESSMENT PLAN AND COURSE EVALUATION
ENGLISH 2

Week	Sub-CP-MK	Subject	Assessment form	Weight
1-3	▪ Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Programming***	Topic 1: Programming ● Stages in Programming ● Flowcharting ● ProgrammingLanguage. ● **Grammar Study** : **Describing objects and their functions, Describing Process, and Reporting Screen Messages**	● Task 1: Flowchart regarding daily activities ● Quiz 1 (5 questions) ● UTS (6 questions) ● UAS (2 questions)	Task 1: 2.5% Task 2: 2.5% Task 3: 2.5% Task 4: 2.5% Task 5: 2.5% Task 6: 2.5% Quiz 1: 10% UTS: 25%
4-6	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Database.***	Topic 2: Databases ● Database Basics ● **Grammar Study: Expressing Certainty, Using If-Clause** ● Data Processing ● Data Storage and Backup	● Quiz 1 (8 questions) ● UTS (7 questions) ● UAS (3 questions)	
7-8	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Computer Security.***	Topic 3: Computer Security ● Computer Threats ● **Grammar Study: Simple Past Tense.** ● Computer Crimes ● **Grammar Study: Analyzing Problems and Their Solutions, and Writing Short Reports**	● Task 2: Compile news articles about *Computer Crime* in Indonesia. ● UTS (8 questions) ● UAS (4 questions)	
9	**UTS**			
10-11	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *Electronic Publishing.***	Topic 4: Electronic Publishing ● Electronic Publishing ● **Grammar Study: Expressing Agreement/Disagreement, The Infinitives**	● Task 3: Make a display design for *an Electronic Book Reader* with an English display . ● Quiz 2 (5 questions) ● UAS (3 questions)	Task 7: 2.5% Task 8: 2.5% Task 9: 2.5% Task 10: 2.5% Assignment 11: 2.5% Task 12: 2.5% Quiz 2: 10% UAS: 25%
12-14	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic of *E-commerce***	Topic 5: E-Commerce ● E-commerce Types ● E-commerce Features ● **Grammar Study: Adverbs of Quantities, Linking Words**	● Task 4: Make an analysis of the appearance of an *e-commerce/online shop website* ● Quiz 2 (5 questions)	

		(and, so, or, but) ● Online Transactions ● Transaction Security	● UAS (4 questions)	
15-16	● Mastering and applying oral and written communication techniques using English in **the context of Informatics Engineering with the topic *Recent Development in IT***	Topic 6: Recent Developments on Information Technology ● Current Changes in Interactions ● Recent Developments in Computing ● **Grammar Study: Future Tense, Making a Summary of an Article**	● Task 5: Prepare a journal article summary ● Quiz 2 (5 questions) ● UAS (4 questions)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJE	English 2				
CODE	RTI212003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	2
SUPPORTING LECTURER	Faiz Ushbah Mubarok, S.Pd, M.Pd.				
ASSESSMENT FORMS					
QUIZ 1					
ASSESSMENT TITLE					
Quiz material 1 - 3					
SUB COURSE LEARNING ACHIEVEMENTS					
Able to answer questions about the material from topics 1 - 3.					
DESCRIPTION					
Solve individual questions on the topic of *Programming* , *Database* and *Computer Security.*					
WORKING METHOD					
1. Answer all questions from online quiz questions					
OUTER FORMAT					
A. Job Object: Quiz B. Outcome: Student answers on online quizzes					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of Answers : 100% Quiz 1 assessment weight is 20% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
Week 9	1 week				
OTHERS REQUIRED:					
REFERENCES					

1. Asri, Atiqah Nurul. 2018. *English for Informatics 2* : Seventh Edition. The module has not been published yet.
2. Glendinning, Eric H and McEwan, John. (2012). *Basic English for Computing Revised and Updated* . Oxford: Oxford University Press.
3. Hills, David. (2012). *English for Information Technology Vocational English Course Book 2* . Essex: Pearson Education Limited.
4. Esteras, Santiago Remacha. (2010). *Infotech English for Computer Users Workbook* . Cambridge: Cambridge University Press.
5. Esteras, Santiago Remacha. (2011). *Infotech English for Computer Users Student's Book* . Cambridge: Cambridge University Press.
6. Fabre, Elena Marco, and Esteras, Santiago Remacha. (2007). Professional English in Use: ICT. Cambridge: Cambridge University press.
7. Olejniczak, Maja. (2011). *English for Information Technology 1 Vocational English Course Book* . Essex: Pearson Education Limited

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	English 2				
CODE	RTI212003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	2
SUPPORTING LECTURER	Faiz Ushbah Mubarok, S.Pd, M.Pd.				
ASSESSMENT FORMS					
QUIZ 2					
ASSESSMENT TITLE					
Quiz material 4-6					
SUB COURSE LEARNING ACHIEVEMENTS					
Able to answer questions about the material from topics 4 - 6.					
DESCRIPTION					
Complete individual questions on the topic of *E-Commerce, Electronic Publishing and Recent Development on IT.*					
WORKING METHOD					
2. Answer all questions from online quiz questions					
OUTER FORMAT					
C. Job Object: Quiz D. Outcome: Student answers on online quizzes					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of Answers : 100% Quiz 2 assessment weight is 25% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
Week 16	1 week				
OTHERS REQUIRED:					
REFERENCES					
1. Asri, Atiqah Nurul. 2018. *English for Informatics 2* : Seventh Edition. The module has not been published yet. 2. Glendinning, Eric H and McEwan, John. (2012). *Basic English for Computing Revised and Updated* . Oxford: Oxford University Press. 3. Hills, David. (2012). *English for Information Technology Vocational English Course Book 2* . Essex: Pearson Education Limited. 4. Esteras, Santiago Remacha. (2010). *Infotech English for Computer Users Workbook* . Cambridge: Cambridge University Press. 5. Esteras, Santiago Remacha. (2011). *Infotech English for Computer Users Student's Book* . Cambridge: Cambridge University Press. 6. Fabre, Elena Marco, and Esteras, Santiago Remacha. (2007). Professional English in Use: ICT. Cambridge: Cambridge University press. 7. Olejniczak, Maja. (2011). *English for Information Technology 1 Vocational English Course Book* . Essex: Pearson Education Limited					

ASSESSMENT AND EVALUATION PLAN

Algorithm and Data Structure Practicum

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Able to apply basic programming concepts (selection, looping, arrays, functions) by creating programs using the Java programming language	● Election ● loop ● Arrays ● Function	● Task 1: Jobsheet 1	Task 1: 2.5% Task 2: 2.5% Task 3: 2.5% Task 4: 2.5% Task 5: 2.5% Task 6: 2.5% Quiz 1: 10% UTS: 25%
2	● Able to create classes with the Java programming language ● Able to implement object creation	● Compile data object in Java language ● Adding attributes to data objects ● Adding methods to data objects ● Applying data objects in case studies.	● Task 2: Jobsheet 2 ● Quiz 1 (1 question) ● UTS (1 question) ● UAS (2 questions)	
3	● Students are able to make logic about arrays of objects in Java ● Students are able to apply the creation of an array of objects	● Declare and instantiate Arrays in Java ● Declare and instantiate the Java language Array of object variables ● Make an assignment Array of objects ● Displays an Array of objects	● Task 3: Jobsheet 3 ● Quiz 1 (1 question) ● UTS (1 question) ● UAS (2 questions)	
4	**Quiz 1**			
5	● brute force and divide -conquer algorithms ● Students are able to apply the use of algorithms brute force and divide-conquer	● Definition of Algorithm Brute Force ● Divide-conquer algorithm ● Big(O) Complexity Algorithm ● How to calculate Big(O) notation	● Task 4: Jobsheet 4 ● UTS (1 question) ● UAS (42 questions)	
6	● Students are able to make algorithms for searching bubble sort, selection sort and insertion sort ● Students are able to apply algorithms of searching bubble sort, selection sort and insertion sort in the program	● Definition of Sorting ● Bubble Sort Algorithm ● Selection Sort Algorithm ● Insertion Sort Algorithm	● Task 5: Jobsheet 5 ● UTS (1 question) ● UAS (1 question)	
7	● Students are able to create search algorithms with sequential search and binary search ● Students are able to apply sequential search and binary search algorithms in the program	● Definition of search ● Sequential search/linear search algorithm ● Binary search algorithm ● Merge sort algorithm	● Task 6: Jobsheet 6 ● UTS (1 question) ● UAS (1 question)	

	● Students are able to apply enrichment material about the merge sort algorithm in the program			
8	**UTS**			
9	● Students are able to create a Stack data structure ● Students are able to apply the stack algorithm in the program	● Definition of Stacks ● Operations on the Stack ● push operation ● pop operation ● Convert Infix Arithmetic Equations to Postfix using Stack	● Task 7: Jobsheet 7 ● Quiz 1 (1 question) ● UAS (1 question)	Task 7: 2.5% Task 8: 2.5% Task 9: 2.5% Task 10: 2.5% Assignment 11: 2.5% Task 12: 2.5% Quiz 2: 10% UAS: 25%
10	● Students are able to create Queue data structures ● Students are able to apply the queue algorithm in the program	● Understanding Queue Data Structures ● enqueuing operation ● dequeue operation	● Task 8: Jobsheet 8 ● Quiz 2 (1 question) ● UAS (1 question)	
11	● Students are able to create a linked list data structure ● Students create linked lists in the program ● Students are able to distinguish what problems can be solved using a linked list	● *Linked List* data structure ● Operation *add Single Linked List* ● Operation *remove Single Linked List* ● *Get Single Linked List* operation ● *Single Linked List print* operation	● Task 9: Jobsheet 9 ● Quiz 2 (1 question) ● UAS (1 question)	
12	● Students are able to create a double linked list data structure ● Students are able to apply double linked lists to the program	● Understanding the *Double Linked List data structure* ● Operation *add Double Linked List* ● Operation *remove Double Linked List* ● Operation *get Double Linked List* ● *Double Linked List print* operation	● Task 10: Jobsheet 10 ● Quiz 2 (1 question) ● UAS (1 question)	
13	**Quiz 2**			
14	● Students are able to make tree algorithms in general ● Students are able to apply binary trees to programs ● Students are able to create a Binary Search Tree algorithm ● Students are able to apply Binary Search Tree to the program	● Definition of Trees ● Definition of Binary Trees ● Definition of Binary Search Tree ● Binary Search Tree insert operation ● Binary Search Tree delete operation	● Task 11: Jobsheet 11 ● UAS (1 question)	

15	● Students are able to make Graph algorithms in General ● Students are able to apply the Graph algorithm to the program	● Definition of Graphs ● Graph implementation in linked list ● Graph implementation in arrays	● Task 12: Jobsheet 12 ● UAS (1 question)	
16	Students are able to create java programs according to case studies using Collections in the Java library	Best Practice Collection	● UAS (1 question)	
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Algorithm and Data Structure Practicum				
CODE	RTI212009	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	2
SUPPORTING LECTURER	1. Maybe Astiningrum, ST., M.Kom. 2. Imam Fahrur Rozi, ST., MT 3. Mustika Mentari, S.Kom., M.Kom 4. Mamluatul Hani'ah, S.Kom., M.Kom. 5. Rokhimatul Wakhidah, S.Pd., MT 6. Noprianto SKom., MEng. 7. Septian Enggar Sukmana, S.Pd., MT				
ASSESSMENT FORMS					
Task					
ASSESSMENT TITLE					
Jobsheets and Assignments					
SUB COURSE LEARNING ACHIEVEMENTS					
Mastering the concept of Object, Array of Object, Bruteforce, Divide-Conquer, Searching, Sorting, Queue, Stack, Single Linked List, Double Linked List, Tree, Graph.					
DESCRIPTION					
Complete simple case studies in the form of practicum steps and assignments					
WORKING METHOD					
1. Do the practicum according to the steps on the jobsheet 2. Answer the questions at the end of the practicum 3. do the work at the end of the worksheet 4. Make reports on the results of worksheets and assignments 5. Assignments are done independently and collected in softcopy form via e-learning lmsslc .polinema.ac.id					
OUTER FORMAT					
Work Object: Jobsheet practicum and assignments Output Form: a report containing the results of practicum and assignments in PDF format on A4 paper size. The student's name, NIM, and class are written at the top left. Systematic file name is Assignment X_Class_Name of Student					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					

Report format structure : 10% Conformity of answers : 9 0 % Assignment assessment weight is 30 % of 100% assessment of this course	
IMPLEMENTATION SCHEDULE	
Week 1 -3, 4-7, 9-12, 14-16	1 week
OTHERS REQUIRED:	
REFERENCES	

1. Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education
2. Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher
3. Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher
4. Hariyanto, B. 2007. Data Structure. Bandung: Informatics
5. Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher
6. Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Algorithm and Data Structure Practicum				
CODE	RTI212009	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	2
SUPPORTING LECTURER	Maybe Astiningrum, ST., M.Kom. Imam Fahrur Rozi, ST., MT Mustika Mentari, S.Kom., M.Kom Mamluatul Hani'ah, S.Kom., M.Kom. Rokhimatul Wakhidah, S.Pd., MT Noprianto SKom., MEng. Septian Enggar Sukmana, S.Pd., MT				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Quiz material 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to implement basic programming concepts in Java programs Students are able to implement the stages of creating classes and objects in Java programs Students are able to implement arrays of objects in Java programs					
DESCRIPTION					
Create programs by utilizing the basic concepts of programming, class, object, array of objects, Brute Force, and Divide-Conquer using the Java programming language					
WORKING METHOD					
1. The questions are done through e-learning lmsslc .polinema.ac.id 2. Quiz done within 10 0 minutes					
OUTER FORMAT					
A. Job Object: Quiz B. Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 1 assessment weight is 10 % of 100% assessment of this course					

IMPLEMENTATION SCHEDULE	
4th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher Hariyanto, B. 2007. Data Structure. Bandung: Informatics Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Algorithm and Data Structure Practicum				
CODE	RTI212009	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	2
SUPPORTING LECTURER	Maybe Astiningrum, ST., M.Kom. Imam Fahrur Rozi, ST., MT Mustika Mentari, S.Kom., M.Kom Mamluatul Hani'ah, S.Kom., M.Kom. Rokhimatul Wakhidah, S.Pd., MT Noprianto SKom., MEng. Septian Enggar Sukmana, S.Pd., MT				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz material 9-12					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to implement the concepts of Stack, Queue, Linked List and Double Linked List in Java programs Students are able to implement the Stack, Queue, Linked List and Double Linked List stages in Java programs Students are able to implement Stack, Queue, Linked List and Double Linked List in Java programs					
DESCRIPTION					
Create programs using the Java programming language by utilizing the concepts of Stack, Queue, Linked List and Double Linked List					
WORKING METHOD					
1. The questions are done through e-learning lmsslc.polinema.ac.id 2. Quiz done in 100 minutes					
OUTER FORMAT					
A. Job Object: Quiz B. Outcome Form: student Quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% Quiz 2 assessment weight is 10% of 100% assessment of this course					

IMPLEMENTATION SCHEDULE	
13th week	60 minutes
OTHERS REQUIRED:	
REFERENCES	
Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher Hariyanto, B. 2007. Data Structure. Bandung: Informatics Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher	

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Algorithm and Data Structure Practicum				
CODE	RTI212009	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	2
SUPPORTING LECTURER	Maybe Astiningrum, ST., M.Kom. Imam Fahrur Rozi, ST., MT Mustika Mentari, S.Kom., M.Kom Mamluatul Hani'ah, S.Kom., M.Kom. Rokhimatul Wakhidah, S.Pd., MT Noprianto SKom., MEng. Septian Enggar Sukmana, S.Pd., MT				
ASSESSMENT FORMS					
Practical work					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to implement meeting material 1 - 7 in the Java program					
DESCRIPTION					
Create programs using the Java programming language by utilizing the concepts of Object, Array of Objects, Brute Force, Divide-Conquer, Searching, Sorting.					
WORKING METHOD					
The questions are done through e-learning lmsslc.polinema.ac.id The questions were done in 120 minutes					
OUTER FORMAT					
Work Object: UTS Outer Form: student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UTS assessment weight is 25% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
8th week	120 minutes				

OTHERS REQUIRED:
REFERENCES
Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher Hariyanto, B. 2007. Data Structure. Bandung: Informatics Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Algorithm and Data Structure Practicum				
CODE	RTI212009	**WEIGHT (credits) / hour**	2 credits / 3 hours	**SEMESTER**	2
SUPPORTING LECTURER	Maybe Astiningrum, ST., M.Kom. Imam Fahrur Rozi, ST., MT Mustika Mentari, S.Kom., M.Kom Mamluatul Hani'ah, S.Kom., M.Kom. Rokhimatul Wakhidah, S.Pd., MT Noprianto SKom., MEng. Septian Enggar Sukmana, S.Pd., MT				
ASSESSMENT FORMS					
Practical work					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to implement meeting material 1 - 16 in the Java program					
DESCRIPTION					
Create programs using the Java programming language by utilizing the concepts of Algorithms and Data Structures according to the given case studies					
WORKING METHOD					
The questions are done through e-learning lmsslc.polinema.ac.id The questions were done in 120 minutes					
OUTER FORMAT					
Work Object: UAS Outer Form: student answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers : 100% The UAS assessment weight is 25% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
17th week			120 minutes		

OTHERS REQUIRED:
REFERENCES
Goodrich, MT, Tamassia, R., & Goldwasser, MH 2014. Data Structures & Algorithms in Java 6th Edition. Wiley Global Education Ramadhani, C. 2015. Basic Algorithm and Data Structure with Java Language. Yogyakarta: Andi Publisher Nugroho, A. 2008. Algorithms and Data Structures in Java Language. Yogyakarta: Andi Publisher Hariyanto, B. 2007. Data Structure. Bandung: Informatics Buana, IS, Nata, GN M, & Arnawa, IK 2018. Data Structure. Yogyakarta: Andi Publisher Kadir, A. Theory and Application of Data Structures Using Java. 2015. Yogyakarta: Andi Publisher

ASSESSMENT AND EVALUATION PLAN
COMMUNICATION AND ORGANIZATIONAL SCIENCES

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	1) Students are able to recognize the final goal of the course 2) Students are able to explain the definition of communication 3) Students are able to understand the concept of effective communication in information systems project organizations	1) The ultimate goal of lectures 2) Definition of communication 3) Effective communication concept		Quiz 1 : 10% Quiz 2 : 10% UTS : 20% UAS : 20% Task 1 : 10% Task 2 : 10% Task 3 : 10% Task 4 : 10%
2	Students are able to explain how to become a good listener	Good listening technique		
3	Students Able to Master the techniques of being a good speaker and their implementation	1) Good speaker technique 2) Communication constraints 3) Practice communicating to be a good speaker in front of discussion forums		
4	**Quiz 1**			
5	Students are able to explain the definition of leadership and leadership styles/typologies	- Leadership definition - Leadership style/typology		
6	Students are able to explain and describe the criteria for a leader in the industrial era 4.0 (technology and information era)	Leadership needed in the era of the industrial revolution 4.0 (technology and information era)		
7	Students are able to master and understand the theory of organization	1) organization theory 2) Articles of Association 3) Chairman 4) Organizational structure		
8	**UTS**			

9	Students are able to understand the definition of authority, power and responsibility in an organization	1)Authority 2)Power 3)Responsibility in organization		
10	Students are able to master the procedures for running a team in an organization (organizational behavior and culture)	1)Definition of organizational culture 2)Functions/roles of organizational culture 3)Type/type of organizational culture 4)The process of forming organizational culture and communication		
11	Students are able to implement leadership in an organization	1)The practice of running a team within an information systems project organization		
12	Students are able to understand effective communication methods in organizations	1)The practice of implementing effective communication methods within an organization		
13	**Quiz 2**			
14	Students are able to master techniques in negotiating	1)Negotiation definition 2)Negotiation approach 3)Negotiation characteristics 4)Negotiation steps		
15	Students are able to master good presentation techniques in an information system project Applying good presentation techniques in an information system project in a discussion forum	- Good presentation technique in an information system project in a discussion forum		
16	Students are able to master the concept of moderation and minutes	1)Moderation 2)Minutes		
17	**UAS**			
TOTAL WEIGHT				**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	Communication and Organizational Science				
CODE	**RTI212010**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	M. Unggul Pamenang, S.ST., MT				
ASSESSMENT FORMS					
Quiz 1					
ASSESSMENT TITLE					
Evaluation Quiz chapters 1-3					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand chapters 1-3					
DESCRIPTION					
Independent task of compiling an essay					
WORKING METHOD					
offline					
OUTER FORMAT					
Student essay answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100 % The score for Quiz 1 is 10% of 100% for this course					
IMPLEMENTATION SCHEDULE					
4th week				4 hours	
OTHERS REQUIRED:					
REFERENCES					
1) Siti Romlah, 2018, Communication and Organizational Studies, Polynema Teaching Module, Malang					
Supporters:					
1) Romlah, Siti, and Deddy Kusbianto, 2012, Organization and Leadership, Teaching Module, Polynema, Malang 2) Deddy KPA, Communication Studies in Organizations, Polynema, 2007 3) Gari Yukl, 2007, Leadership in Organizations, Prentice Hall 4) Muchlas, Makmuri, 2005, Organizational Behavior, 1st Edition, Gajah University Press, Yogyakarta 5) Louis Carter, David Ulrich, and Marshall Goldsmith, 2004, Best Practices in Leadership Development and Organizational Change, Pfeiffer Wiley.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	Communication and Organizational Science				
CODE	**RTI212010**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	M. Unggul Pamenang, S.ST., MT				
ASSESSMENT FORMS					
Quiz 2					
ASSESSMENT TITLE					
Quiz Evaluation of material 9-12					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand chapter material 9-12					
DESCRIPTION					
Independent task of compiling the Organizational Structure and job descriptions					
WORKING METHOD					
Offline					
OUTER FORMAT					
Reports on the organizational structure and job descriptions					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100% Quiz 2 assessment weight is 10% of 100% assessment of this course					
IMPLEMENTATION SCHEDULE					
13th week	4 hours				
OTHERS REQUIRED:					
REFERENCES					
1) Siti Romlah, 2018, Communication and Organizational Studies, Polynema Teaching Module, Malang					
Supporters:					
1) Romlah, Siti, and Deddy Kusbianto, 2012, Organization and Leadership, Teaching Module, Polynema, Malang 2) Deddy KPA, Communication Studies in Organizations, Polynema, 2007 3) Gari Yukl, 2007, Leadership in Organizations, Prentice Hall 4) Muchlas, Makmuri, 2005, Organizational Behavior, 1st Edition, Gajah University Press, Yogyakarta 5) Louis Carter, David Ulrich, and Marshall Goldsmith, 2004, Best Practices in Leadership Development and Organizational Change, Pfeiffer Wiley.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJE	Communication and Organizational Science				
CODE	**RTI212010**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	M. Unggul Pamenang, S.ST., MT				
ASSESSMENT FORMS					
UTS					
ASSESSMENT TITLE					
Evaluation of material 1-7					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material in chapters 1-7					
DESCRIPTION					
Make a video about meeting simulations, in which there are leaders and members					
WORKING METHOD					
Group					
OUTER FORMAT					
Tutorial video					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100% The UTS assessment weight is 20% of 100% of the assessment for this course					
IMPLEMENTATION SCHEDULE					
13th week	4 hours				
OTHERS REQUIRED:					
REFERENCES					
2) Siti Romlah, 2018, Communication and Organizational Studies, Polynema Teaching Module, Malang					
Supporters:					
6) Romlah, Siti, and Deddy Kusbianto, 2012, Organization and Leadership, Teaching Module, Polynema, Malang 7) Deddy KPA, Communication Studies in Organizations, Polynema, 2007 8) Gari Yukl, 2007, Leadership in Organizations, Prentice Hall 9) Muchlas, Makmuri, 2005, Organizational Behavior, 1st Edition, Gajah University Press, Yogyakarta 10) Louis Carter, David Ulrich, and Marshall Goldsmith, 2004, Best Practices in Leadership Development and Organizational Change, Pfeiffer Wiley.					

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM : D4 INFORMATICS ENGINEERING**				
	ASSESSMENT METHOD				
SUBJECT	Communication and Organizational Science				
CODE	**RTI212010**	**WEIGHT (credits) / hour**	**2 credits/ 4 hours**	**SEMESTER**	1
SUPPORTING LECTURER	M. Unggul Pamenang, S.ST., MT				
ASSESSMENT FORMS					
UAS					
ASSESSMENT TITLE					
Final evaluation of material 1-16					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to understand the material in chapters 1-16					
DESCRIPTION					
Working on UAS Questions 1. What are the benefits of communication for you? 2. Give an example of the communication you have to do if you are in charge of being a moderator in a scientific meeting? 3. What should you do if you are a resource person at an event (scientific meeting, as a speaker at a scientific meeting)? 4. How should you be a leader in the era of the industrial revolution 4.0? 5. What do you know about society 5.0? 6. **Independent task :** **COLLECT ASSIGNMENT On the drive within 24 hours from now.** What have you done in participating in the organization this year 1. Organization name, place, address of organization in Malang 2. Your position in the Organization 3. An important experience in your life in the organization 4. The things you like/dislike in the organization 5. What strengths/weaknesses do you think you have in the organization? 6. The things that you consider important in life in the organization 7. Hope in the future for the development of the organization 8. The importance of organization to your life					
WORKING METHOD					
Individual					
OUTER FORMAT					
UAS Student Answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
(indicator) : 100%					

The UAS assessment weight is 20% of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
17th week	4 hours
OTHERS REQUIRED:	
REFERENCES	
1) Siti Romlah, 2018, Communication and Organizational Studies, Polynema Teaching Module, Malang	
Supporters:	
1) Romlah, Siti, and Deddy Kusbianto, 2012, Organization and Leadership, Teaching Module, Polynema, Malang 2) Deddy KPA, Communication Studies in Organizations, Polynema, 2007 3) Gari Yukl, 2007, Leadership in Organizations, Prentice Hall 4) Muchlas, Makmuri, 2005, Organizational Behavior, 1st Edition, Gajah University Press, Yogyakarta 5) Louis Carter, David Ulrich, and Marshall Goldsmith, 2004, Best Practices in Leadership Development and Organizational Change, Pfeiffer Wiley.	

ASSESSMENT AND EVALUATION PLAN

Statistics and Computing

Week	Sub-CP-MK	Subject	Assessment form	Weight
1	● Students understand and can explain the basic concepts of statistics ● Students are able to distinguish between descriptive and inferential statistics ● Students know the use of computational statistics in general	● Understanding statistics ● Types of statistics ● The benefits of computational statistics in various fields	● Task 1: Oral test	Task 1: 1 % Task 2: 1.5 % Task 3: 1.5 % Task 4: 1.5 % Assignment 5: 1.5 % Task 6: 1.5 % Quiz 1: 1 5% UTS: 2 0%
2	● Students understand the meaning of data ● Students are able to distinguish the types of data ● Students know data collection techniques	● Definition of data ● Data types ● Data collection technique	● Task 2: written assignment ● Quiz 1 (2 questions)	
3	Able to apply data collection techniques	● Primary data and secondary data	● Assignment 3: written assignment and presentation ● Quiz 1 (3 questions)	
4	**Quiz 1**			
5	● Students are able to understand the meaning of data centering ● Students are able to understand and apply the mean, median, mode	● Definition of data centering ● Means ● Median ● mode	● Task 4: written assignment ● U TS (1 question) ● U US (1 question)	
6	● Students are able to explain the concept of data distribution ● Students are able to explain and apply range, variance, and standard deviation calculations ● Students are able to understand the tendency of data centers on data distribution	● The basic concept of data distribution ● Measures of data distribution (range, variance, standard deviation) ● Symmetric and asymmetric distribution of data	● Task 5: written assignment ● UTS (2 questions) ● UAS (1 question)	
7	● Students are able to understand the concept of opportunity ● Students are able to understand calculation techniques in the concept	● Definition of opportunity ● Calculation techniques in odds ● Set concept	● Task 6: written assignment ● UTS (2 questions) ● UAS (1 question)	

	of probability (permutations and combinations) ● Students master the concept of set			
8	**UTS**			
9	● Students are able to apply probability calculation techniques ● Students are able to apply Bayesian rules	● Opportunity calculation technique application ● Bayes Rule	● Assignment 7 : written assignment ● Quiz 2 (1 question) ● UAS (1 question)	
10	● Students are able to apply the normal distribution ● Students are able to apply the concept of discrete distribution	● Normal Distribution	● Task 8: written assignment ● Quiz 2 (1 question) ● UAS (1 question)	Task 7 : 1.5% Task 8: 1.5% Assignment 9: 1.5% Assignment 10: 1.5% Assignment 11: 1.5% Assignment 12: 1.5% Assignment 13: 1.5% Quiz 2: 1 5% UAS: 30%
11	● Students are able to understand the concept of population ● Students are able to understand the sample concept ● Students are able to understand sampling techniques ● Students are able to apply sampling techniques	● Population Concept ● Sample Concept ● Sampling technique	● Task 9: oral test ● Quiz 2 (1 question) ● UAS (1 question)	
1 2	**Quiz 2**			
13	● Students understand Confidence Intervals ● Students are able to understand the basic concept of a hypothesis ● Students are able to understand the steps of hypothesis testing	● Confidence Intervals ● Hypothesis testing steps	● Assignment 10 : written assignment ● UAS (1 question)	
14	Students understand the types of hypotheses	● One Way Hypothesis ● Two Way Hypothesis	● Assignment 11: written assignment	
15	Students understand and are able to apply techniques to perform simple regression analysis	Simple regression analysis	● Assignment 12: written assignment	
16	Students understand and are able to apply techniques to perform multiple regression analysis	Multiple regression analysis	● Assignment 13: written assignment	
17	**UAS**			

TOTAL WEIGHT	**100%**

	MALANG STATE POLYTECHNIC **INFORMATION TECHNOLOGY DEPARTMENT** **STUDY PROGRAM: D4 INFORMATICS ENGINEERING**				
ASSESSMENT METHOD					
SUBJECT	Computational Statistics				
CODE	RTI214003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	4
SUPPORTING LECTURER	Muhammad Afif Hendrawan, S.Kom., MT Dr. Rakhmat Arianto, S.ST., M.Ko m Elok Nur Hamdana, ST, MT				
ASSESSMENT FORMS					
Case study					
ASSESSMENT TITLE					
Quiz 1					
SUB COURSE LEARNING ACHIEVEMENTS					
Students understand and can explain the basic concepts of statistics Students are able to distinguish between descriptive and inferential statistics Students know the use of computational statistics in general Students understand the meaning of data Students are able to distinguish the types of data Students know data collection techniques Able to apply data collection techniques					
DESCRIPTION					
There is data on the nutritional status of children under five in Magelang City based on District and Gender. From these data, it is known that there are 4 categories of nutritional groupings, viz 1. Nutrition is very lacking 2. Malnutrition 3. Good nutrition 4. More nutrition The file can be opened at the following link: https://drive.google.com/file/d/117IBg4tIq0HBv90F6MpKYXbJDgv57fVe/view?usp=sharing Based on the file, explain what data there is and the data type of each sata 1. Can the toddler nutrition data be categorized as one-way data or two-way data? Explain why. 2. Show in graphical form the total number of children under five who have been weighed in Magelang Regency. Next, display the percentage of male and female babies who have been					

weighed. 3. The Health Office of Kabapan Magelang wants to know the percentage of nutrition data for toddlers for each category. Make a data presentation according to the request. 4. The Regent of Magelang wants to make a policy related to assistance to improve toddler nutrition. Therefore, the Regent must know the number of children under five for each category in all sub-districts in Magelang Regency. This data will be very useful for prioritizing assistance later. To make it easier for the Regent, what presentation can be shown	
WORKING METHOD	
Questions are accessed and answers are uploaded via e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Job Object: quiz Outer Form: student quiz answers	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % The score for Quiz 1 is 15% of 100% for this course	
IMPLEMENTATION SCHEDULE	
4th week	180 minutes
OTHERS REQUIRED:	
REFERENCES	
Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc. Fosyth, David, 2018, Probability and Statistics for Computer Science, Springer Kadir, 2015, Applied Statistics: Concepts, Examples and Data Analysis with the SPSS/Lisrel Program in Research, 3rd Edition, Rajawali Pers. Widarjono, Agus, Applied Statistics with Excel and SPSS, UPP STIM YKPN, 2015	

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SUPPORTING LECTURER	Muhammad Afif Hendrawan, S.Kom., MT Dr. Rakhmat Arianto, S.ST., M.Ko m Elok Nur Hamdana, ST, MT				
ASSESSMENT FORMS					
writing test					
ASSESSMENT TITLE					
Quiz 2					
SUB COURSE LEARNING ACHIEVEMENTS					
Students are able to apply probability calculation techniques Students are able to apply Bayesian rules Students are able to apply the normal distribution Students are able to apply the concept of discrete distribution Students are able to understand the concept of population Students are able to understand the sample concept Students are able to understand sampling techniques Students are able to apply sampling techniques					
DESCRIPTION					
Answer questions related to week 9-11 material					
WORKING METHOD					
Questions are accessed and answers are uploaded via e-learning lmsslc .polinema.ac.id					
OUTER FORMAT					
Job Object: quiz Outer Form: student quiz answers					
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT					
Conformity of answers: 10 0 % The score for Quiz 2 is 15% of 100% for this course					
IMPLEMENTATION SCHEDULE					

12th week	180 minutes
OTHERS REQUIRED:	
REFERENCES	
Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc. Fosyth, David, 2018, Probability and Statistics for Computer Science, Springer Kadir, 2015, Applied Statistics: Concepts, Examples and Data Analysis with the SPSS/Lisrel Program in Research, 3rd Edition, Rajawali Pers. Widarjono, Agus, Applied Statistics with Excel and SPSS, UPP STIM YKPN, 2015	

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ASSESSMENT METHOD					
SUBJECT	Computational Statistics				
CODE	RTI214003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	4
SUPPORTING LECTURER	Muhammad Afif Hendrawan, S.Kom., MT Dr. Rakhmat Arianto, S.ST., M.Ko m Elok Nur Hamdana, ST, MT				
ASSESSMENT FORMS					
Case study					
ASSESSMENT TITLE					
UTS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students understand and can explain the basic concepts of statistics Students are able to distinguish between descriptive and inferential statistics Students know the use of computational statistics in general Students understand the meaning of data Students are able to distinguish the types of data Students know data collection techniques Able to apply data collection techniques Students are able to understand the meaning of data centering Students are able to understand and apply the mean, median, mode Students are able to explain the concept of data distribution Students are able to explain and apply range, variance, and standard deviation calculations Students are able to understand the tendency of data centers on data distribution Students are able to understand the concept of opportunity Students are able to understand calculation techniques in the concept of probability (permutations and combinations) Students master the concept of set					
DESCRIPTION					
There is transaction data for 1 year from a company that produces FMCG goods. As a data analyst, you are asked to process purchase order (wholesale) data to obtain information easily. The following is a purchase order data link from the company: https://drive.google.com/file/d/13cH5D1oY6aWTaVEHqJ1O0E58suAj0wBu/view?usp=sharing					

Here are some cases that you must solve: a. Look for the 5 products with the largest number of orders. (25 points) b. Based on point a, make a bar chart of these products (20 points) c. Calculate the mean, median, Q1, Q3, and IQR from the data point a. (35 points) d. Calculate the variance and standard deviation values from point a data. (20 points) e. BONUS! SKEWNESS ANALYSIS! Find the distribution of product orders at point a by month. Draw a bar chart, then conclude whether the product orders show a slope. If so, in which direction	
WORKING METHOD	
Questions are accessed and answers are uploaded via e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Work Object: UTS Outcome Form: answers to questions and results of student analysis	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % UTS assessment weight is 20 % of 100% of the assessment for this course	
IMPLEMENTATION SCHEDULE	
8th week	180 minutes
OTHERS REQUIRED:	
REFERENCES	
Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc. Fosyth, David, 2018, Probability and Statistics for Computer Science, Springer Kadir, 2015, Applied Statistics: Concepts, Examples and Data Analysis with the SPSS/Lisrel Program in Research, 3rd Edition, Rajawali Pers. Widarjono, Agus, Applied Statistics with Excel and SPSS, UPP STIM YKPN, 2015	

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ASSESSMENT METHOD					
SUBJECT	Computational Statistics				
CODE	RTI214003	**WEIGHT (credits) / hour**	2 credits / 4 hours	**SEMESTER**	4
SUPPORTING LECTURER	Muhammad Afif Hendrawan, S.Kom., MT Dr. Rakhmat Arianto, S.ST., M.Ko m Elok Nur Hamdana, ST, MT				
ASSESSMENT FORMS					
Case study					
ASSESSMENT TITLE					
UAS					
SUB COURSE LEARNING ACHIEVEMENTS					
Students understand and can explain the basic concepts of statistics Students are able to distinguish between descriptive and inferential statistics Students know the use of computational statistics in general Students understand the meaning of data Students are able to distinguish the types of data Students know data collection techniques Able to apply data collection techniques Students are able to understand the meaning of data centering Students are able to understand and apply the mean, median, mode Students are able to explain the concept of data distribution Students are able to explain and apply range, variance, and standard deviation calculations Students are able to understand the tendency of data centers on data distribution Students are able to understand the concept of opportunity Students are able to understand calculation techniques in the concept of probability (permutations and combinations) Students master the concept of set Students are able to apply probability calculation techniques Students are able to apply Bayesian rules Students are able to apply the normal distribution Students are able to apply the concept of discrete distribution					

Students are able to understand the concept of population Students are able to understand the sample concept Students are able to understand sampling techniques Students are able to apply sampling techniques Students understand Confidence Intervals Students are able to understand the basic concept of a hypothesis Students are able to understand the steps of hypothesis testing Students understand the types of hypotheses Students understand and are able to apply techniques to perform simple regression analysis Students understand and are able to apply techniques to perform multiple regression analysis	
DESCRIPTION	
Conduct an analysis of a case study	
WORKING METHOD	
Questions are accessed and answers are uploaded via e-learning lmsslc .polinema.ac.id	
OUTER FORMAT	
Work Object: UAS Outcome Form: answers to questions and results of student analysis	
INDICATORS, CRITERIA AND WEIGHT ASSESSMENT	
Conformity of answers: 10 0 % UAS assessment weight is 30 % of 100% of the assessment of this course	
IMPLEMENTATION SCHEDULE	
Week 17	180 minutes
OTHERS REQUIRED:	
REFERENCES	
Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc. Fosyth, David, 2018, Probability and Statistics for Computer Science, Springer Kadir, 2015, Applied Statistics: Concepts, Examples and Data Analysis with the SPSS/Lisrel Program in Research, 3rd Edition, Rajawali Pers. Widarjono, Agus, Applied Statistics with Excel and SPSS, UPP STIM YKPN, 2015	

BIBLIOGRAPHY

Anderson, L., & Krathwohl, D. (2001). A Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. New York: Longman.

Bloom, BS (1984). Taxonomy of Educational Objectives Book 1: Cognitive Domain 2nd edition Edition. Boston: Addison Wesley Publishing Company.

Minister of Education and Culture of the Republic of Indonesia. (2013, June 10). Implementation of the Indonesian National Qualification Framework for Higher Education. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 73 of 2013. Jakarta, Jakarta, Indonesia: Ministry of Education and Culture of the Republic of Indonesia.

Minister of Education and Culture of the Republic of Indonesia. (2014, August 21). Diplomas, Competency Certificates, and Higher Education Professional Certificates. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 81 of 2014. Jakarta, Jakarta, Indonesia: Ministry of Education and Culture of the Republic of Indonesia.

Minister of Education and Culture of the Republic of Indonesia. (2020, January 24). National Higher Education Standards. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020. Jakarta, Jakarta, Indonesia: Ministry of Education and Culture of the Republic of Indonesia.

Minister of Education and Culture of the Republic of Indonesia. (2020, January 24). Accreditation of Study Programs and Universities. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 5 of 2020. Jakarta, Jakarta, Indonesia: Ministry of Education and Culture of the Republic of Indonesia.

President of the Republic of Indonesia. (2012, January 17). Indonesian National Qualifications Framework. Regulation of the President of the Republic of Indonesia Number 8 of 2012. Jakarta, Jakarta, Indonesia: Minister of Law and Human Rights of the Republic of Indonesia.

President of the Republic of Indonesia. (2012, August 10). Higher education. Law Number 12 of 2012. Jakarta, Jakarta, Indonesia: Ministry of the State Secretariat of the Republic of Indonesia.