

CURRICULUM OF 2017
DIPLOMA 4 INFORMATICS TECHNIQS PROGRAM
INFORMATION TECHNOLOGY DEPARTMENT
ACADEMIC YEAR : 2017 / 2018

SEMESTER 1

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI171001	Civic Education	2		2	3		3
2	RTI171002	Pancasila Education	2		2	3		3
3	RTI171003	Organization And Communication Science	2		2	3		3
4	RTI171004	Office Computer Applications		2	2		4	4
5	RTI171005	English For Information Technology 1	2		2	3		3
6	RTI171006	Information Technology Concepts	2		2	4		4
7	RTI171007	Discrete Mathematics	2		2	4		4
8	RTI171008	Occupational Health And Safety	2		2	4		4
9	RTI171009	Programming Fundamental	2		2	4		4
10	RTI171010	Programming Fundamentals (Lab.)		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			16	5	21	28	10	38

SEMESTER 2

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI172001	Religious Education	2		2	3		3
2	RTI172002	Documentation Techniques	2		2	3		3
3	RTI172003	English For Information Technology 2	2		2	3		3
4	RTI172004	Operating System	2		2	4		4
5	RTI172005	Software Engineering	2		2	4		4
6	RTI172006	Linear Algebra	2		2	4		4
7	RTI172007	Database	2		2	3		3
8	RTI172008	Database (Lab)		2	2		4	4
9	RTI172009	Algorithm And Data Structure	2		2	4		4
10	RTI172010	Algorithm And Data Structure (Lab.)		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			16	5	21	28	10	38

SEMESTER 3

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI173001	User Interface Design	2		2	3		3
2	RTI173002	Computing Statistics	2		2	3		3
3	RTI173003	Artificial Intelligence		2	2		4	4
4	RTI173004	Web Design And Programming		3	3		6	6
5	RTI173005	Advanced Database		3	3		6	6
6	RTI173006	Computer Networking	2		2	3		3
7	RTI173007	Computer Networking (Lab.)		2	2		4	4
8	RTI173008	Object-Oriented Programming	2		2	3		3
9	RTI173009	Object-Oriented Programming (Lab)		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			8	13	21	12	26	38

SEMESTER 4

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI174001	Information System	2		2	4		4
2	RTI174002	Object-Oriented Analysis And Design		3	3		6	6
3	RTI174003	Project Management	2		2	4		4
4	RTI174004	Project 1		3	3		8	8
5	RTI174005	Cognitive Computing		2	2		4	4
6	RTI174006	Advanced Web Programming		3	3		6	6
7	RTI174007	Database System Management		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			4	14	18	8	30	38

SEMESTER 5

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI175001	E-Business	2		2	4		4
2	RTI175002	Project 2		4	4		12	12
3	RTI175003	Mobile Programming		3	3		6	6
4	RTI175004	Data Warehouse		3	3		6	6
5	RTI175005	Software Testing	2		2	4		4
6	RTI175006	Network Programming		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			4	13	17	8	30	38

SEMESTER 6

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI176001	Digital Entrepreneurship	2		2	4		4
2	RTI176002	Decision Making System		3	3		6	6
3	RTI176003	Database Technology		3	3		6	6
4	RTI176004	Multimedia Computing	2		2	4		4
5	RTI176005	Internet Of Things		3	3		6	6
6	RTI176006	Image Processing And Com. Vision		3	3		6	6
7	RTI176007	Framework-Based Programming		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			4	15	19	8	30	38

SEMESTER 7

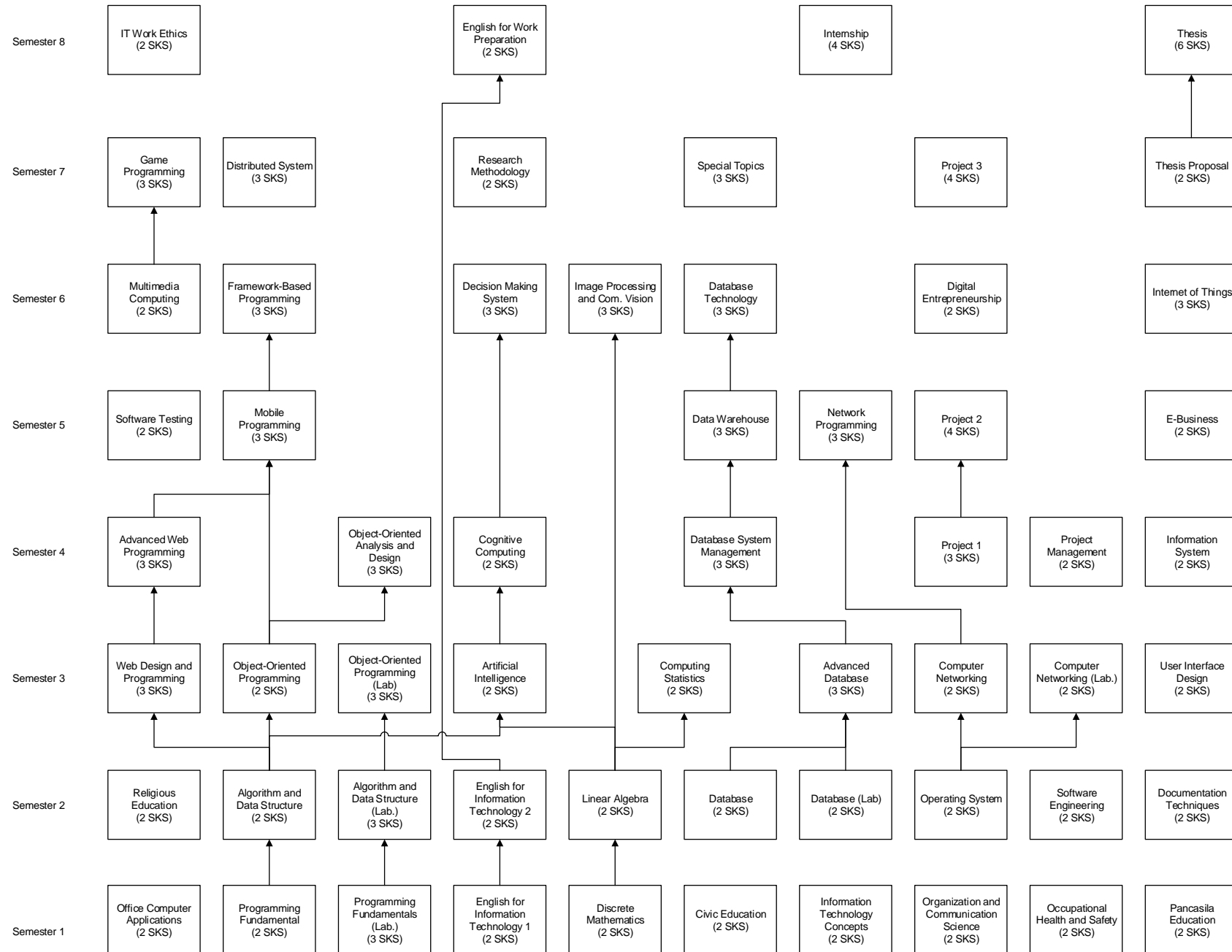
No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI177001	Special Topics	2		2	4		4
2	RTI177002	Project 3		4	4		12	12
3	RTI177003	Thesis Proposal		2	2		6	6
4	RTI177004	Distributed System		3	3		6	6
5	RTI177005	Research Methodology	2		2	4		4
6	RTI177006	Game Programming		3	3		6	6
TOTAL HOURS / CREDIT PER WEEK			4	12	16	8	30	38

SEMESTER 8

No	CRS CODE	COURSE	CREDIT POINT		CREDIT	HOURS / WEEK		TTL HOURS
			THEORY	PRACT		THEORY	PRACT	
1	RTI178001	English For Work Preparation	2		2	3		3
2	RTI178002	IT Work Ethics	2		2	3		3
3	RTI178003	Internship		4	4		18	18
4	RTI178004	Thesis		6	6		14	14
TOTAL HOURS / CREDIT PER WEEK			4	10	14	6	32	38

TOTAL HOURS / CREDIT PER WEEK KESELURUHAN	CREDIT POINT		JML CRED IT	HOURS / WEEK		TTL HOURS
	THEORY	PRACT		THEORY	PRACT	
	60	87		106	198	

Curriculum Chart Academic Year 2017/2018



SHORT SYLLABUS 2017
DIPLOMA 4 INFORMATION TECHNICS PROGRAM
INFORMATION TECHNOLOGY DEPARTMENT
2017 / 2018 ACADEMIC YEAR

Course	: Civic Education
Code	: RTI171001
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 1
Graduate Learning Outcomes	<ul style="list-style-type: none"> : 1 Contribute in developing the quality of living a life as a member of society, citizen, and also for the development of civilization based on Pancasila 2 Play a role as a proud citizen who loves his/her country, and have great nationalism and responsibility to his/her country. 3 Respect the diversity in cultures, views, religions and beliefs, and also point of views or inventions. 4 Cooperate and have a sense of social empathy and concern to society and environment. 5 Abide the law and have great discipline as a member of the society and citizen.
Learning Outcomes	: Understand both the theoretical and practical concepts of living a life as a member of society, citizen as discussed in Country and Citizenship, Archipelagic Concepts, The National Defense, human Rights, Democracy, Good Governance, and Civil Society topics.
Topics of Discussion	: Country and Citizenship, Archipelagic Concepts, The National Defense, human Rights, Democracy, Good Governance, and Civil Society topics.
References	: <ul style="list-style-type: none"> 1. Robert Klitgaard, dkk. 2002. Penuntun Pemerantasan Korupsi dalam Pemerintahan Daerah. Buku Obor, Jakarta. 2. Ahmad Zaki, Membentuk Karakter Bangsa yang Jujur bebas Korupsi, http://ogaloogi.com/membentuk-karakter-bangsa-jujur-bebas-korupsi/, diakses 7 Juni 2012. 3. Ariesti Vetami Gaos, Melawan regenerasi Koruptor, http://perspektif.net/english/article.php?article_id=1441, akses 11 Juni 2012. 4. Erika Revida, Korupsi di Indonesia: Masalah dan Solusinya, http://repository.usu.ac.id/bitstream/123456789/3800/1/fisip-erika1.pdf, diakses tanggal 7 Juni 2012. 5. Fathur Rahman, Pendidikan Anti Koupse, http://www.equator-news.com/kolom/20120410/pendidikan-anti-korupsi, akses 11 Juni 2012 6. Iding R. Hasan, Menakar Urgensi Amendemen Kelima UUD 1945, Pikiran Rakyat, 26 Agustus 2010, diakses tanggal 27 Agustus 2010. 7. M. Bashori Muchsin, PNS Muda dan Berhala Uang, Media Indonesia, 13 Desember 2011.

8. Mirza Nasution, Hukum dan Konstitusi, <http://buscar-manuales.com/download/fungsi-dan-kedudukan-konstitusi-6.html>, diakses tanggal 15 Juli 2012.

Course	: Pancasila Education
Code	: RTI171002
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 1
Graduate Learning Outcomes	: 1 Uphold the humanity values in performing his/her role based on religion, moral, and ethics. 2 Contribute in developing the quality of living a life as a member of society, citizen, and also for the development of civilization based on Pancasila 3 Play a role as a proud citizen who loves his/her country, and have great nationalism and responsibility to his/her country. 4 Respect the diversity in cultures, views, religions and beliefs, and also point of views or inventions. 5 Abide the law and have great discipline as a member of the society and citizen.
Learning Outcomes	: Understand the concepts Pancasila in Historical References, Pancasila as the Country Policy, Pancasila as an Ideology, Pancasila as a Philosophy System, Pancasila as the Basic of Ethical System, Pancasila as the Basic of Science Development, Pancasila as a Paradigm of Living as a Citizen and a Member of Society, Pancasila and Human Rights, Tipikor in Pancasila Perspective
Topics of Discussion	: Pancasila in Historical References, Pancasila as the Country Policy, Pancasila as an Ideology, Pancasila as a Philosophy System, Pancasila as the Basic of Ethical System, Pancasila as the Basic of Science Development, Pancasila as a Paradigm of Living as a Citizen and a Member of Society, Pancasila and Human Rights, Tipikor in Pancasila Perspective
References	: 1. Alrasid, Harun. 2003. Naskah UUD 1945 Sesudah Empat Kali Diubah oleh MPR. Jakarta : UI Press. 2. Kaelan, H. (ed). 2002. Pendidikan Kewarganegaraan Untuk Perguruan Tinggi. Yogyakarta : Paradigma. 3. Pasha, Mustafa Kamal dkk. 2003. Pancasila dalam Tinjauan Historis, Yuridis, dan Filosofis. Yogyakarta : Citra Karsa Mandiri.

Course	: Organization And Communication Science
Code	: RTI171003
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 1

Graduate Learning Outcomes	: 1 Cooperate and have social empathy and concern to both society and the environment.
	2 Understand the quality assurance and the fundamental of occupational health and safety (K3) in IT product development.
Learning Outcomes	: Understand the concepts of organization and leadership especially in the information system project management.
Topics of Discussion	: Organization and leadership especially in the information system project management.
References	: 1. Romlah, Siti, dan Deddy Kusbianto, 2012, Organisasi dan Kepemimpinan, Modul Ajar, Polinema, Malang
	2. Gari Yukl, 2007, Leadership in Organizations, Prentice Hall.
	3. Muchlas, Makmuri, 2005, Perilaku Organisasi, Edisi ke 1, Gajah University Press, Yogyakarta.
	4. Louis Carter, David Ulrich, and Marshall Goldsmith, 2004, Best Practices in Leadership Development and Organization Change, Pfeiffer Wiley.

Course	: Office Computer Applications
Code	: RTI171004
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 1
Graduate Learning Outcomes	: 1 Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website.
	2 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.
	3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement the fundamentals of computer application in Microsoft Office (Word, PowerPoint, and Excel) and Excel Macro in which later can be applied in the computer.
Topics of Discussion	: Fundamentals of computer application in Microsoft Office (Word, PowerPoint, and Excel) and Excel Macro in which later can be applied in the computer.
References	: 1. Online Training Solutions, 2015, Microsoft Office Excell 2016 Step By Step, Microsoft Press.
	2. Gary R McClain, 2007, Presentations: Proven Techniques for Creating Presentations That Get Results,

Course	: English For Information Technology 1
Code	: RTI171005
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 1

Graduate Learning Outcomes	: 1 Possess good command in communication techniques both in written and orally using Bahasa Indonesia and English. 2 Able to communicate both orally and in written using English as the international language.
Learning Outcomes	: Posses good command in the concepts of Describing Objects and Their Functions, Giving and Writing Instructions, Using Imperatives and Sequences, Comparing a Process Using Time Clause, Expressing Ideas and Opinion, Reading Graphs/Charts, Using Appropriate Charts/Graphs to Present A Mini Survey, Describing Future Plans, Describing Jobs, Analyzing Problems and Giving Possible Solutions, Using Modals to Show Possibility and Ability.
Topics of Discussion	: Describing Objects and Their Functions, Giving and Writing Instructions, Using Imperatives and Sequences, Comparing a Process Using Time Clause, Expressing Ideas and Opinion, Reading Graphs/Charts, Using Appropriate Charts/Graphs to Present A Mini Survey, Describing Future Plans, Describing Jobs, Analyzing Problems and Giving Possible Solutions, Using Modals to Show Possibility and Ability.
References	: 1. Demetriades, Dinos. 2008. Information Technology Workshop. Oxford: Oxford University Press. 2. Glasbergen, Randy. 2007. Office Safety Latest Innovation (Cartoon). (Online), (www.ebrainy.com, accesses on May 17, 2008)Glendinning, Eric H and McEwan, John. 2002 a. Basic English for Computing. Oxford: Oxford University Press.

Course	: Information Technology Concepts
Code	: RTI171006
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 1
Graduate Learning Outcomes	: Possess good knowledge on ITC-related technology development and recent issues (ethics, social, legal, and economy).
Learning Outcomes	: Possess good command in Technology Concepts, Technology Innovation, Science and Technology Development, Engineering Ethics, ICT Development, Computer System, Computer System Concept, Software Engineering Concepts such as Data Representation, Boolean Algebra, Flowchart, Internet and Computer Network, IT Application in Various Field of Work, IT Certification.
Topics of Discussion	: Technology Concepts, Technology Innovation, Science and Technology Development, Engineering Ethics, ICT Development, Computer System, Computer System Concept, Software Engineering Concepts such as Data Representation, Boolean Algebra, Flowchart, Internet and Computer Network, IT Application in Various Field of Work, IT Certification.
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.

Course	: Discrete Mathematics
Code	: RTI171007
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 1
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess command in the concepts of Discrete, Logic, Sets, Mathematical Induction, Relation and Function, Recursive, Theory of Numbers, Combinatorial, Graph, Tree.
Topics of Discussion	: Discrete, Logic, Sets, Mathematical Induction, Relation and Function, Recursive, Theory of Numbers, Combinatorial, Graph, Tree.
References	: <ol style="list-style-type: none"> 1. Yan watequlis, Cahya Rahmad, Deasy Sandhya Elya, 2017, Matematika Diskrit, Polinema press. 2. Kenneth H. Rosen, 2007, Discrete Mathematics and Its Application, Mc Graw-Hill. 3. C.L. Liu, 2008, Elements of Discrete Mathematics, McGraw-Hill, Inc. 4. Steven G. Krantz, 2009, Discrete Mathematics Demystified, McGraw-Hill.

Course	: Occupational Health And Safety
Code	: RTI171008
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 1
Graduate Learning Outcomes	: 1 Possess good understanding in quality assurance and the fundamental of occupational health and safety (K3) principles in IT product development. 2 Able to manage resources as time, human resources, ITC product development budget, using project management software and by regarding Occupational and Health Safety (K3).
Learning Outcomes	: Possess an ample knowledge on the concepts of Occupational health and Safety (K3), K3 Policy, Public Health, Work Place , Occupational Safety, Insurance, K3 Organization
Topics of Discussion	: The concepts of Occupational health and Safety (K3), K3 Policy, Public Health, Work Place , Occupational Safety, Insurance, K3 Organization.
References	: <ol style="list-style-type: none"> 1. Undang-undang No.1 tahun 1970 tentang keselamatan kerja

2. Undang-undang No.13 tahun 2003 tentang Ketenagakerjaan (Paragraf 5 Pasal 86 dan 87: Keselamatan
3. UU No. 3 tahun 1992 (Jaminan Sosial Tenaga Kerja)
4. PP No. 33 Tahun 1977
5. Keputusan Menteri Kesehatan No. 61/MENKES/SK/II/ 1998 Tentang : Persyaratan Kesehatan Lingkungan Kerja
6. Hadi Setia Tunggal, 2007, Peraturan sistem manajemen keselamatan dan kesehatan kerja, Harvarindo

Course	: Programming Fundamental
Code	: RTI171009
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 1
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess an ample knowledge on the concepts of Algorithm, Algorithm Representation, Translator, Programming Languages, Types of Data, Variable, Constant, Value, Expression, Input-Output, Case Analysis, Branching, Iteration, Array, Function/Procedure
Topics of Discussion	: The concepts of Algorithm, Algorithm Representation, Translator, Programming Languages, Types of Data, Variable, Constant, Value, Expression, Input-Output, Case Analysis, Branching, Iteration, Array, Function/Procedure
References	: <ol style="list-style-type: none"> 1. Sebesta, Robert, 2016. Concept of programming languages edisi global, addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Belajar Dasar Algoritma dan Pemograman C++, Deepublish.

Course	: Programming Fundamentals (Lab.)
Code	: RTI171010
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 1
Graduate Learning Outcomes	: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)

	2	Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
	3	Able to show independent, excellent and measurable performance.
Learning Outcomes	:	Able to apply and implement Algorithm, Translator, Programming Languages, Types of Data, Variable, Constant, Value, Expression, Input-Output, Sequence, Case Analysis, Branching, Iteration, Array, Function/Procedure.
Topics of Discussion	:	Algorithm, Translator, Programming Languages, Types of Data, Variable, Constant, Value, Expression, Input-Output, Sequence, Case Analysis, Branching, Iteration, Array, Function/Procedure.
References	:	<ol style="list-style-type: none"> 1. Sebesta, Robert, 2016. Concept of programming languages edisi global, addison Wesley, Publ. 2. Sestoft, Peter, 2017. Programming Language Concepts, Springer, Publ. 3. T. Henny Febriana Harumy, 2016. Belajar Dasar Algoritma dan Pemograman C++, Deepublish.

Course	:	Religious Education
Code	:	RTI172001
Credit / Hours	:	2 Credits (3 hours/week)
Semester	:	2
Graduate Learning Outcomes	:	<ol style="list-style-type: none"> 1 Possess a sense of piety and able to show the religious nature. 2 Uphold the value of humanity in carrying out one's duties based on religion, morals, and ethics.
Learning Outcomes	:	Possess a good understanding on the meaning of religion, Aqidah, Sharia and Morals, God, The Universe and Human Being, Religion Science and technology and Arts, Islam Perspective in Socio-Cultural, Politics, and Economic Issues.
Topics of Discussion	:	Religion, Aqidah, Sharia and Morals, God, The Universe and Human Being, Religion Science and technology and Arts, Islam Perspective in Socio-Cultural, Politics, and Economic Issues.
References	:	<ol style="list-style-type: none"> 1. Al-Qur'an dan Terjemahnya, Jakarta, Depag. 2. Chaney, David (ed. Idi Subandy Ibrahim), 2005, Life styles Sebuah pengantar Komprehensif, Jalasutra, Jogjakarta. 3. Hossein Nasr, Sayyed, 2003, The Heart Of Islam, Pesan-pesan Universal Islam Untuk Kemanusiaan (terj. Nurasiah Faqih), Mizan, Bandung.

Course	: Documentation Techniques
Code	: RTI172002
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 2
Graduate Learning Outcomes	: Possess good command on documentation techniques and IT products quality assurance.
Learning Outcomes	: Possess good command on Standard Document Software Engineering concepts
Topics of Discussion	: Standard Document Software Engineering concepts
References	: 1. Ian Sommerville, 2007, Software Engineering, 8 th Edition, Addison Wesley 2. Software Engineering Standards Committee of the IEEE Computer Society, "IEEE Standard 1063-2001 Software User Documentation".

Course	: English For Information Technology 2
Code	: RTI172003
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 2
Graduate Learning Outcomes	: 1 Possess good command in communication techniques both in written and orally using Bahasa Indonesia and English. 2 Able to communicate both orally and in written using English as the international language.
Learning Outcomes	: Posses a good command in the concepts of Describing Objects and Their Functions, Describing about Process, Expressing Certainty using If-Clause, Analyzing problems and Providing Their Solutions and Preventions, Writing Short Report Based on A Newspaper/Articles, Describing Strengths and Weaknesses, Writing A Review, Describing Past Experiences and Habits, Analyzing Updated Articles/Topics in the Media, Writing Scientific Journal/Article Summary, Future Perfect Tense, Connectors (and, but, or, and so), Adverb of Quantity.
Topics of Discussion	: Describing Objects and Their Functions, Describing about Process, Expressing Certainty using If-Clause, Analyzing problems and Providing Their Solutions and Preventions, Writing Short Report Based on A Newspaper/Articles, Describing Strengths and Weaknesses, Writing A Review, Describing Past Experiences and Habits, Analyzing Updated Articles/Topics in the Media, Writing Scientific Journal/Article Summary, Future Perfect Tense, Connectors (and, but, or, and so), Adverb of Quantity.
References	: 1. Demetriades, Dinos. 2008. Information Technology Workshop. Oxford: Oxford University Press. 2. Olejniczak, Maja. 2011. English for Information Technology 1. Essex: Pearson Education Limited.

Course	: Operating System
Code	: RTI172004
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 2
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess the knowledge on Operating System Fundamental Concepts, Life Cycle, Inter-Process Communication, Synchronization, Multi Process and Multi Thread, Memory Management, Process Scheduling, IO Connection, File System.
Topics of Discussion	: Operating System Fundamental Concepts, Life Cycle, Inter-Process Communication, Synchronization, Multi Process and Multi Thread, Memory Management, Process Scheduling, IO Connection, File System.
References	: 1. Andrew S. Tanenbaum, 2008, Modern Operating System, 3th Edition, Prentice Hall. 2. William Stallings, 2008, Operating System, 6th Edition, Prentice Hall.

Course	: Software Engineering
Code	: RTI172005
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 2
Graduate Learning Outcomes	: 1 Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC. 2 Possess good command on the ITC product development methods to provide solutions using one or more application domain.
Learning Outcomes	: Possess good command on Introduction to Software Engineering, Software Process (SDLC), Software Requirements, System Modeling, Introduction to Object-Oriented Design, Interface Design, Rapid Software Development, Testing Fundamentals, Software Management Concepts.
Topics of Discussion	: Introduction to Software Engineering, Software Process (SDLC), Software Requirements, System Modeling, Introduction to Object-Oriented Design, Interface Design, Rapid Software Development, Testing Fundamentals, Software Management Concepts.
References	: 1. Ian Sommerville, 2007, Software Engineering, 8th Edition, Addison Wesley 2. William R. King, 2015, Planning for Information Systems, Routledge.

Course	: Linear Algebra
Code	: RTI172006
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 2
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess ample understanding on the concepts of Linear Equations, Matrix, Determinant, Vector.
Topics of Discussion	: Linear Equations, Matrix, Determinant, Vector.
References	: <ol style="list-style-type: none"> 1. Lipschutz, Lipson, 2009, Schaum's Outline of Linear Algebra, 4th edition, New York: McGraw-Hill. 2. Anton, Rorres, 2013, Elementary Linear Algebra: Applications Version, 11th edition, New York: Wiley. 3. Vince, 2017, Mathematics for Computer Graphics, London: Springer-Verlag.

Course	: Database
Code	: RTI172007
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 2
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess good knowledge in Database Concepts, Database Architecture and Data Modeling, Data Normalization, SQL DDDL, SQL DML, Query Select, Join, Sub Query, Nested Query, ER Diagram Design, ER Diagram Mapping to Relational Model.
Topics of Discussion	: Database Concepts, Database Architecture and Data Modeling, Data Normalization, SQL DDDL, SQL DML, Query Select, Join, Sub Query, Nested Query, ER Diagram Design, ER Diagram Mapping to Relational Model.
References	: <ol style="list-style-type: none"> 1. Elmasry, R. and S. Navathe, 2016, Fundamental of Database Systems, 3rd edition, Addison Wesley. 2. Andrew J. Oppel, 2010, Databases Demystified, McGraw-Hill/Osborne. 3. Fathansyah , 2015, Basis Data Dasar, Bandung Informatika.

Course	: Database (Lab)
---------------	-------------------------

Code	: RTI172008
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 2
Graduate Learning Outcomes	<p>: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)</p> <p>2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.</p> <p>3 Able to show independent, excellent and measurable performance.</p>
Learning Outcomes	: Able to perform Data Normalization, MySQL DDL, MySQL DML, MySQL Query Select, MySQL Jin, MySQL Sub Query, MySQL Nested Query, SQL Server SQL DDL, SQL Server SQL DML, SQL Server Query Select, SQL Server Jin, SQL Server jin, SSQL Server String, Filtering, SQL Server Aggregate, (Mod 4,5,6,9 Querying)
Topics of Discussion	: Data Normalization, MySQL DDL, MySQL DML, MySQL Query Select, MySQL Jin, MySQL Sub Query, MySQL Nested Query, SQL Server SQL DDL, SQL Server SQL DML, SQL Server Query Select, SQL Server Jin, SQL Server jin, SSQL Server String, Filtering, SQL Server Aggregate, (Mod 4,5,6,9 Querying)
References	: <ol style="list-style-type: none"> 1. Elmasry, R. and S. Navathe, 2016, Fundamental of Database Systems, 3rd edition, Addison Wesley. 2. Andrew J. Oppel, 2010, Databases Demystified, McGraw-Hill/Osborne. 3. Fathansyah , 2015, Basis Data Dasar, Bandung Informatika.

Course	: Algorithm And Data Structure
Code	: RTI172009
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 2
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess good understanding in the concepts of Searching, Sorting, Queue, Stack , Tree, Graf, Bruteforce, Greedy, Devide-Conquer, Decrease-Conquer, DFS, BFS, Backtracking, Branch and Bound, String Machine, Dynamic Programming.
Topics of Discussion	: Searching, Sorting, Queue, Stack , Tree, Graf, Bruteforce, Greedy, Devide-Conquer, Decrease-Conquer, DFS, BFS, Backtracking, Branch and Bound, String Machine, Dynamic Programming.

References

:

1. Hariaynto, Bambang, 2007, Struktur Data, Penerbit Informatika-Bandung.
2. Sjukani, M, 2007, Algoritma (Algoritma dan Struktur Data 1) dengan C, C++, dan Java. Mitra Wacana Media
3. Sjukani, M, 2007, Struktur Data (Algoritma dan Struktur Data 2) dengan C, C++. Mitra Wacana Media.
4. T. Henny Febriana Harumy, 2016. Belajar Dasar Algoritma dan Pemograman C++, Deepublish.

Course : **Algorithm And Data Structure (Lab.)****Code** : **RTI172010****Credit / Hours** : **3 Credits (6 hours/week)****Semester** : **2**

Graduate Learning Outcomes :

- 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
- 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
- 3 Able to show independent, excellent and measurable performance.

Learning Outcomes : Able to implement Searching, Sorting, Queue, Stack , Tree, Graf, Bruteforce, Greedy, Devide-Conquer, Decrease-Conquer, DFS, BFS, Backtracking, Branch and Bound, String Machine, Dynamic Programming.

Topics of Discussion :

Searching, Sorting, Queue, Stack , Tree, Graf, Bruteforce, Greedy, Devide-Conquer, Decrease-Conquer, DFS, BFS, Backtracking, Branch and Bound, String Machine, Dynamic Programming.

References :

1. Hariaynto, Bambang, 2007, Struktur Data, Penerbit Informatika-Bandung.
2. Sjukani, M, 2007, Algoritma (Algoritma dan Struktur Data 1) dengan C, C++, dan Java. Mitra Wacana Media.

3. Sjukani, M, 2007, Struktur Data (Algoritma dan Struktur Data 2) dengan C, C++. Mitra Wacana Media.
4. T. Henny Febriana Harumy, 2016. Belajar Dasar Algoritma dan Pemograman C++, Deepublish.

Course : **User Interface Design**
Code : **RTI173001**
Credit / Hours : **2 Credits (3 hours/week)**
Semester : **3**
Graduate Learning Outcomes : Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.

Learning Outcomes : Possess good knowledge in the concepts of Introduction to Human-Computer Interaction, Human Factor, types of Dialog, Input Output Devices, Interface Design, Ergonomic Aspects, Evaluation Techniques.

Topics of Discussion :
 Introduction to Human-Computer Interaction, Human Factor, types of Dialog, Input Output Devices, Interface Design, Ergonomic Aspects, Evaluation Techniques.

References :
 1. Kalbach, James. 2007. Designing Web Navigation. O'Reilly.
 2. England, David , et al. 2010. Task Models and Diagrams for User Interface Design. Springer.
 3. Ballard, Barbara. 2007. Designing the Mobile User Experience. Little Springs Design, Inc., USA.
 4. Galitz, Wilbert O. 2007. The Essential Guide to UI Design. Third Edition.

Course : **Computing Statistics**
Code : **RTI173002**
Credit / Hours : **2 Credits (3 hours/week)**
Semester : **3**
Graduate Learning Outcomes :
 1 Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
 2 Possess good understanding on smart computing principles in logic and mathematical proof techniques in order to provide effective alternative solutions.

Learning Outcomes : Possess good understanding on the concepts of Statistic Fundamentals, Forecasting, Clustering, Classification, Text Data Feature Extraction,

Topics of Discussion :
 Statistic Fundamentals, Forecasting, Clustering, Classification, Text Data Feature Extraction, Anova Test.

References :

1. Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc..
2. David R. Anderson, 2017, Statistics for Business and Economics, Cengage Learning EMEA.

Course	: Artificial Intelligence
Code	: RTI173003
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 3
Graduate Learning Outcomes	: 1 Able to apply smart computing in problem solving process based on analysis and information given in ITC products. 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement Problem Solving, Knowledge Representation, Expert System, Natural Language Processing, Uncertainty, Fuzzy Logic, Artificial Neural Network, Searching, Planning.
Topics of Discussion	: Problem Solving, Knowledge Representation, Expert System, Natural Language Processing, Uncertainty, Fuzzy Logic, Artificial Neural Network, Searching, Planning.
References	: <ol style="list-style-type: none"> 1. David L. Poole, Alan K. Mackworth, 2003, Artificial Intelligence, Foundations of Computational Agents, Graha Ilmu. 2. Harris C. Michael, 2011, Artificial Intelligence, Penerbit Marshall Cavendish Benchmark. 3. Norvig, Peter , 2014, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp, Morgan Kaufmann.

Course	: Web Design And Programming
Code	: RTI173004
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 3
Graduate Learning Outcomes	: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)

	2	Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
	3	Able to show independent, excellent and measurable performance.
Learning Outcomes	:	Able to implement Web Tech, CSS, JS, HTML, PHP, Basic Programming di PHP, Form Handling, Cookies dan Session, PHP Database Programming.
Topics of Discussion	:	Web Tech, CSS, JS, HTML, PHP, Basic Programming di PHP, Form Handling, Cookies dan Session, PHP Database Programming.
References	:	<ol style="list-style-type: none"> 1. Deborah Levinson, Todd Belton, 2017, Build Your First Web App, MIT Press. 2. Harvey Deitel and Paul Deitel, 2007, Internet & World Wide Web: How to Program, 4th Edition, Prentice Hall. 3. Collins, Marc, 2017, Pro HTML5 with CSS, JavaScript, and Multimedia, APress.

Course	:	Advanced Database
Code	:	RTI173005
Credit / Hours	:	3 Credits (6 hours/week)
Semester	:	3
Graduate Learning Outcomes	:	<ol style="list-style-type: none"> 1. Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 2. Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 3. Able to show independent, excellent and measurable performance.
Learning Outcomes	:	Able to implement Transact SQL - Select, Types of Data, Built In Function, Sub Query, Expression Table (View, Scalar Function, Inline Table Value Function, Derived Table, Common Table Expression), Set Operator, Window Rank, Pivoting, Stored Procedure, Programming, Error Handling, Rollback, Commit, and develop Database final project.
Topics of Discussion	:	

Transact SQL - Select, Types of Data, Built In Function, Sub Query, Expression Table (View, Scalar Function, Inline Table Value Function, Derived Table, Common Table Expression), Set Operator, Window Rank, Pivoting, Stored Procedure, Programming, Error Handling, Rollback, Commit, and develop Database final project.

References :

1. Itzik Ben-Gan, et al., 2012, Querying Microsoft SQL Server 2012: Exam 70-461 Training Kit , Mocoosoft.
2. Orin Thomasn, et al., 2012, Training Kit (Exam 70-462): Administering Microsoft SQL Server 2012,

Course : **Computer Networking**
Code : **RTI173006**
Credit / Hours : **2 Credits (3 hours/week)**
Semester : **3**
Graduate Learning Outcomes : Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.

Learning Outcomes : Possess good command on the Concepts of Communication Networking, Protocol, Model, Address, Application Layer, Application Protocol, Transport Layer, Network Layer, IPv4, Subnetting, Data Link

Topics of Discussion :
 Concepts of Communication Networking, Protocol, Model, Address, Application Layer, Application Protocol, Transport Layer, Network Layer, IPv4, Subnetting, Data Link Protocol, Physical Layer.

References :

1. Stalling, William. , 2007, Data and Computer Communication, Prentice Hall Inc.
2. Lammle, Todd. , 2016, CCNA ICND2 Study Guide: Exam 200-105, John Wiley & Sons.

Course : **Computer Networking (Lab.)**
Code : **RTI173007**
Credit / Hours : **2 Credits (4 hours/week)**
Semester : **3**
Graduate Learning Outcomes : 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.

	3	Able to show independent, excellent and measurable performance.
Learning Outcomes	:	Able to perform Hardware Networking Identification, Cabling, IP Configuration, DNS, FTP and Remote Service, Netstat-nmap, PING and Route, Subnetting, Traceroute, ARP, Wireless, Network Design Analysis, Router Configuration.
Topics of Discussion	:	
		Identify Hardware Networking, Cabling, IP Configuration, DNS, FTP and Remote Service, Netstat-nmap, PING and Route, Subnetting, Traceroute, ARP, Wireless, Network Design Analysis, Router Configuration.
References	:	
		1. Stalling, William. , 2007, Data and Computer Communication, Prentice Hall Inc.
		2. Lammle, Todd. , 2016, CCNA ICND2 Study Guide: Exam 200-105, John Wiley & Sons.

Course	:	Object-Oriented Programming
Code	:	RTI173008
Credit / Hours	:	2 Credits (3 hours/week)
Semester	:	3
Graduate Learning Outcomes	:	Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	:	Possess good command in OOP Concept, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, Collection.
Topics of Discussion	:	
		OOP Concept, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, Collection.
References	:	
		1. Horstmann, C. S., & Cornell, G., 2007. Core Java Volume I–Fundamentals, Eight Edition. Network Circle, Santa Clara: Prentice Hall.
		2. Horstmann, C. S., & Cornell, G. 2008. Core Java Volume II–Advanced Features, Eight Edition. Network

Course	:	Object-Oriented Programming (Lab)
Code	:	RTI173009
Credit / Hours	:	3 Credits (6 hours/week)
Semester	:	3
Graduate Learning Outcomes	:	1. Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)

	2	Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
	3	Able to show independent, excellent and measurable performance.
Learning Outcomes	:	Possess good command in OOP Concept, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, Collection.
Topics of Discussion	:	
OOP Concept, Class and Object, Encapsulation, Inheritance, Abstraction, Polymorphism, GUI, Collection.		
References	:	
<ol style="list-style-type: none"> 1. Horstmann, C. S., & Cornell, G. 2008. Core Java Volume II–Advanced Features, Eighth Edition. Network Circle, Santa Clara: Prentice Hall. 2. Danny Poo, Derek Kiong, "Object-Oriented Programming and Java", Springer, 2008P.J. Deitel, H.M. 2007 Deitel. Java How to Program Seventh Edition. New Jersey : Pearson, Prentice Hall. 		

Course	:	Information System
Code	:	RTI174001
Credit / Hours	:	2 Credits (4 hours/week)
Semester	:	4
Graduate Learning Outcomes	:	<ol style="list-style-type: none"> 1 Possess good command on the ITC product development methods to provide solutions using one or more application domain. 2 Possess good knowledge on ITC-related technology development and recent issues (ethics, social, legal, and economy).
Learning Outcomes	:	Possess good command on the Information System Fundamental Concepts, Business Fundamental, Individual Information System and Group Collaboration System, Business Operation System, DSS and Expert System, E-Commerce, ERP, CRM, Global Information System, The
Topics of Discussion	:	
Information System Fundamental Concepts, Business Fundamental, Individual Information System and Group Collaboration System, Business Operation System, DSS and Expert System, E-Commerce, ERP, CRM, Global Information System, The Impact of Information System.		
References	:	
<ol style="list-style-type: none"> 1. Stair, Ralph, Reynolds, George. 2017. Fundamentals of Information Systems, Cengage Learning. 2. Rainer, Turban and Potter, 2007, Introduction to Information Systems, 1st Edition John Wiley & Sons. 3. D.P. Goyal, 2014., Management Information Systems: Managerial Perspectives), 4th edition, Vikas Publishing House. 4. Kenneth C. Laudon, Jane P. Laudon, 2017, Management Information Systems: Managing the Digital Firm, Pearson. 		

5. Jane P. Laudon, Kenneth C. Laudon, 2007, Management Information Systems: Managing the Digital Firm, 10th Edition, Prentice Hall.

Course	: Object-Oriented Analysis And Design
Code	: RTI174002
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 4
Graduate Learning Outcomes	<ol style="list-style-type: none"> 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement UML, Behaviour Diagram (Use Case Diagram and Activity Diagram), Scenario Diagram, Structure Diagram (Class Diagram), Interaction Diagram (Sequence Diagram), Design Pattern Fundamentals, Design Method Pattern, Factory Method Pattern, Builder Pattern, Singleton Pattern, MVC.
Topics of Discussion	: UML, Behaviour Diagram (Use Case Diagram and Activity Diagram), Scenario Diagram, Structure Diagram (Class Diagram), Interaction Diagram (Sequence Diagram), Design Pattern Fundamentals, Design Method Pattern, Factory Method Pattern, Builder Pattern, Singleton Pattern, MVC.
References	: <ol style="list-style-type: none"> 1. Brown, David William, 2002. An Introduction to Object-Oriented Analysis: Objects and UML in Plain English, 2nd edition, Wiley India Pvt. Limited. 2. Shouhong Wang, Hai Wang, 2012, Information Systems Analysis and Design, Universal Publishers. 3. John Hunt, 2013, The Unified Process for Practitioners: Object-Oriented Design, UML and Java, Second Edition, Springer Science & Business Media.

Course	: Project Management
Code	: RTI174003
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 4

Graduate Learning Outcomes	: 1 Show a sense of responsibility in his/her field of work independently. 2 Internalize the spirit of independence, struggle, and entrepreneurship. 3 Possess good command on the ITC product development methods to provide solutions using one or more application domain. 4 Possess good command on documentation techniques and IT products quality assurance. 5 Possess good understanding in quality assurance and the fundamental of occupational health and safety (K3) principles in IT product development. 6 Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors. 7 Able to manage resources as time, human resources, ITC product development budget, using project management software and by regarding Occupational and Health Safety (K3). 8 Able to maintain and expand professional network and cooperation results outside the institution. 9 Able to show a sense of responsibility on one's group performance and both supervise and evaluate on the work assigned to his/her subordinate. 10 Able to perform self-evaluation to the supervised-group, and able to manage independent learning.
Learning Outcomes	: Possess good command in the concepts of Introduction to Project Management, Project Management Cycle, Project Scope Management, Time-Table Management, Budget Management, Project Quality Management (QMS), Human Resources Management, Risk Management, Communication Management, PDCA, Software Development Standard Process
Topics of Discussion	: Introduction to Project Management, Project Management Cycle, Project Scope Management, Time-Table Management, Budget Management, Project Quality Management (QMS), Human Resources Management, Risk Management, Communication Management, PDCA, Software Development Standard Process.
References	: 1. Murali Chemuturi, Thomas M. Cagley, 2010, Mastering Software Project Management: Best Practices, 2. Kathy Schwalbe, 2009, Information Technology Project Management, 6th Edition, Course Technology.

Course	: Project 1
Code	: RTI174004
Credit / Hours	: 3 Credits (8 hours/week)
Semester	: 4
Graduate Learning Outcomes	: 1 Internalize values, norms, and academic ethics.

- 2 Show a sense of responsibility in his/her field of work independently.
- 3 Internalize the spirit of independence, struggle, and entrepreneurship.
- 4 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
- 5 Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors.
- 6 Able to perform documentation and quality assurance to every development process, utilization, modification, maintenance and security of ITC products based on the given standard.
- 7 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.
- 8 Able to show independent, excellent and measurable performance.
- 9 Able to review case study on science technology application which consider and also apply humanity values based on one's field of expertise in order to develop prototype, standard procedure, design or artworks, compose his/her studies in the form of worksheet, design specification, or art essay, and upload it in the institution website.
- 10 Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website.

Learning Outcomes : Able to Analyze the Available IT Product, Contribute to the Available IT Product, Design New IT Product, Advisability of New IT Product.

Topics of Discussion :
Analyzing the Available IT Product, Contribution to the Available IT Product, Designing of New IT Product, Advisability of New IT Product.

References :

1. Panitia Program Studi, 2013, Panduan Pelaksanaan dan pelaporan proyek, Pedoman Pelaksanaan Proyek Tingkat I, Polinema, Malang.
2. Sprague, R.H. and McNurlin, B.C. , 2009, Information Systems Management in Practice, Prentice-Hall.

Course	: Cognitive Computing
Code	: RTI174005
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 4
Graduate Learning Outcomes	<ol style="list-style-type: none"> : 1 Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC. 2 Possess good understanding on smart computing principles in logic and mathematical proof techniques in order to provide effective alternative solutions. 3 Able to apply smart computing in problem solving process based on analysis and information given in ITC products. 4 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 5 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement Bayesian Inference and Hierarchical Bayesian Models; Frameworks For Knowledge Representation: First-order Logic, Formal Grammars, Associative Networks, Taxonomic Hierarchies, Relational Schemas; Probabilistic and Causal Graphical Models; Relational Probabilistic Models; Controlling Complexity: Minimum Description Length, Bayesian Occam's Razor, Nonparametric Bayesian Models; Inductive Logic Programming; Sampling Algorithms For Inference in Complex Probabilistic Models.
Topics of Discussion	: Bayesian Inference and Hierarchical Bayesian Models; Frameworks For Knowledge Representation: First-order Logic, Formal Grammars, Associative Networks, Taxonomic Hierarchies, Relational Schemas; Probabilistic and Causal Graphical Models; Relational Probabilistic Models; Controlling Complexity: Minimum Description Length, Bayesian Occam's Razor, Nonparametric Bayesian Models; Inductive Logic Programming; Sampling Algorithms For Inference in Complex Probabilistic Models.
References	: <ol style="list-style-type: none"> 1. Dennis Wackerly, et al., 2014. Mathematical Statistics with Applications, Cengage Learning. 2. Kusbianto, Deddy, 2013, Statistika Terapan, Modul Ajar, Polinema, Malang. 3. Walpole, Ronald E. Raymond H. Myers, 2007, Probability & Statistics for Engineers & Scientists, 8th Edition, Prentice-Hall Inc. 4. David Ray Anderson, 2010, Statistics for Business and Economics, 2th Edition, Cengage Learning EMEA.

Course	: Advanced Web Programming
Code	: RTI174006
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 4
Graduate Learning Outcomes	<p>: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)</p> <p>2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.</p> <p>3 Able to show independent, excellent and measurable performance.</p>
Learning Outcomes	: Able to implement Web Front End-Back-End, JQuery, Bootstrap, Angular, REST, CI Configuration, MVC Concepts, Form and Database, CRUD, Access Rights, Report.
Topics of Discussion	: Web Front End-Back-End, JQuery, Bootstrap, Angular, REST, CI Configuration, MVC Concepts, Form and Database, CRUD, Access Rights, Report.
References	: <ol style="list-style-type: none"> 1. Jubilee Enterprise, 2017, Pemrograman AngularJS untuk Pemula, Jubilee Enterprise. 2. Joe Brinkman, 2010, jQuery for ASP.NET Developers, John Wiley & Sons. 3. Jim Webber, et al, 2010, REST in Practice: Hypermedia and Systems Architecture, O'Reilly Media, Inc. 4. Lenawati M, 2007, Macromedia Dreamweaver 8 dengan PHP, Penerbit Andi, Yogyakarta.

Course	: Database System Management
Code	: RTI174007
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 4
Graduate Learning Outcomes	<p>: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)</p> <p>2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.</p> <p>3 Able to show independent, excellent and measurable performance.</p>

Learning Outcomes	: Able to implement Backup Restore Database, Data Import Export, Authentication and Authorization, Database Roles, Audit, Automating SQL Management, Security Configuration, Monitoring, Managing Multiple Server.
Topics of Discussion	: Backup Restore Database, Data Import Export, Authentication and Authorization, Database Roles, Audit, Automating SQL Management, Security Configuration, Monitoring, Managing Multiple Server.
References	: 1. Brian Knight, dkk, 2008, Professional Microsoft SQL Server 2008 Administration, Wrox. 2. Kalen Delaney, 2009, Microsoft® SQL Server® 2008 Internals (Pro - Developer), Microsoft Press.

Course	: E-Business
Code	: RTI175001
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 5
Graduate Learning Outcomes	: Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.
Learning Outcomes	: Possess good command in Introduction to E-Business, B2C, B2B, B2G, E-Commerce Innovation.
Topics of Discussion	: E-Business, B2C, B2B, B2G, E-Commerce Innovation.
References	: 1. Gary P. Schneider , 2011., e-Business, Cengage Learning. 2. CTI Reviews, 2016, e-Business, Organizational and Technical Foundations, Cram101 Textbook Reviews. 3. Salam, A.F., and Jason R. Stevens, 2007, Semantic Web Technologies and E-Business: Toward the Integrated Virtual Organization and Business Process Automation, Idea Group Inc. 4. Ray Lester, 2008, The New Walford: Guide to Reference Resources, Volume 2, Facet Pub. 5. Soares, Carlos, and friends, 2008, Applications of Data Mining in E-Business and Finance, The authors and IOS Press.

Course	: Project 2
Code	: RTI175002
Credit / Hours	: 4 Credits (12 hours/week)
Semester	: 5
Graduate Learning Outcomes	: 1 Internalize values, norms, and academic ethics. 2 Show a sense of responsibility in his/her field of work independently.

- 3 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
- 4 Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors.
- 5 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.
- 6 Able to show independent, excellent and measurable performance.
- 7 Able to review case study on science technology application which consider and also apply humanity values based on one's field of expertise in order to develop prototype, standard procedure, design or artworks, compose his/her studies in the form of worksheet, design specification, or art essay, and upload it in the institution website.
- 8 Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website.
- 9 Able to make proper decision based on the standard procedure, design specification, security and safety requirements in performing supervision and evaluation.

Learning Outcomes

: Able to implement Project 1 IT Product Development by regarding Project 1 IT Product Development Marketing through Digital Media.

Topics of Discussion

:

Project 1 IT Product Development by regarding Project 1 IT Product Development Marketing through Digital Media.

References

:

1. Panitia Program Studi, 2013, Panduan Pelaksanaan dan pelaporan proyek, Pedoman Pelaksanaan Proyek Tingkat II, Polinema, Malang.
2. Barbara Canning McNurlin, et al , 2009, Information Systems Management in Practice, 8th edition, Prentice-Hall.

Course

: Mobile Programming

Code	: RTI175003
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 5
Graduate Learning Outcomes	<p>: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)</p> <p>2 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.</p> <p>3 Able to show independent, excellent and measurable performance.</p>
Learning Outcomes	: Able to develop Mobile Devices, Android Project Building, Android Studio, View, XML, Layout, Thread, Activity and Intent, Android Resource API (Phone, GPS, SMS, Camera, etc.), Mobile-Based Programming, Web Service Consumer-REST.
Topics of Discussion	: Mobile Devices, Android Project Building, Android Studio, View, XML, Layout, Thread, Activity and Intent, Android Resource API (Phone, GPS, SMS, Camera, etc.), Mobile-Based Programming, Web Service Consumer-REST.
References	: <ol style="list-style-type: none"> 1. Felker D.; Dobbs J, 2011, Android Application Development For Dummies, Wiley Publishing Inc., USA. 2. DiMarzio, J.F., 2008, Android A Programmer's Guide, The McGraw-Hill Companies. 3. Meier, Reto, 2009, Professional Android Application Development, Wiley Publishing, Inc. 4. Nirav Mehta, 2008, Mobile Web Development, Packt Publishing. 5. Sing Li and Jonathan Knudsen, 2009, Beginning J2ME: From Novice to Professional, Third Edition, Apress. 6. Jonathan Knudsen, 2008., Kicking Butt with MIDP and MSA: Creating Great Mobile Applications, Addison Wesley.

Course	: Data Warehouse
Code	: RTI175004
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 5

Graduate Learning Outcomes	: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
	2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
	3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement Data Warehouse, Data Warehouse Architecture and Infrastructure, Data Design, ETL, Control Flow, Debugging and Troubleshooting, Data Extraction, Loading Data, Data Quality, Master Data, Deploying and Configuring Data, Data Consumption.
Topics of Discussion	: Data Warehouse, Data Warehouse Architecture and Infrastructure, Data Design, ETL, Control Flow, Debugging and Troubleshooting, Data Extraction, Loading Data, Data Quality, Master Data, Deploying and Configuring Data, Data Consumption.
References	: 1. Varcellis, Carlo. 2009. Business Intelligence: Data mining and optimization for decision making. John Willey & Sons Ltd. 2. Volitich, Dan, 2008, IBM Cognos 8 Business Intelligence: The Official Guide, The McGraw-Hill Companies. 3. Vincent Rainard, 2014, Building a Data Warehouse: With Examples in SQL Server.

Course	: Software Testing
Code	: RTI175005
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 5
Graduate Learning Outcomes	: Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
Learning Outcomes	: Possess good understanding on the concepts of Introduction to Software Testing, Testing Strategies, Testing Techniques, Basic Path Testing, Fungsional Testing, Integration Testing, System Testing, User Acceptance Testing, Performance Testing, Test Case Design.
Topics of Discussion	:

Introduction to Software Testing, Testing Strategies, Testing Techniques, Basic Path Testing, Fungsional Testing, Integration Testing, System Testing, User Acceptance Testing, Performance Testing, Test Case Design.

References :

1. Black, Rex., 2013, Managing The Testing Process. 2st Ed., Wiley.
2. Roger S. Pressman, Ph.D, 2015, Software Engineering itioner's Approach, 8th, Ed, McGraw-Hill.

Course	: Network Programming
Code	: RTI175006
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 5
Graduate Learning Outcomes	<p>: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)</p> <p>2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.</p> <p>3 Able to show independent, excellent and measurable performance.</p>
Learning Outcomes	: Able to implement Server Configuration, Routing Configuration, Input Stream, Output Stream, Filter Input Stream, Filter Output Steam, Object Persistence, Object Serialization, UDP, Socket For Client, Socket For Server, Secure Socket, Multicast, URL and URI, Multithread, HTTP, RMI.
Topics of Discussion	: Server Configuration, Routing Configuration, Input Stream, Output Stream, Filter Input Stream, Filter Output Steam, Object Persistence, Object Serialization, UDP, Socket For Client, Socket For Server, Secure Socket, Multicast, URL and URI, Multithread, HTTP, RMI.
References	: <ol style="list-style-type: none"> 1. Graba, Jan, 2007, An Introduction to Network Programming with Java, Springer. 2. Qing Li, et al., 2009, IPv6 Socket API Extensions: Programmer's Guide, Morgan Kaufmann.

Course	: Digital Entrepreneurship
Code	: RTI176001
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 6

Graduate Learning Outcomes	: 1 Show a sense of responsibility in his/her field of work independently.
	2 Internalize the spirit of independence, struggle, and entrepreneurship.
	3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Possess good understanding in Introduction to Entrepreneurship, Business Plan, Marketing, E-Marketing, Digital Era Marketing, E-customer, Social Media Marketing, Product Development and New Service, E-CRM, Digital Marketing Management.
Topics of Discussion	: Introduction to Entrepreneurship, Business Plan, Marketing, E-Marketing, Digital Era Marketing, E-customer, Social Media Marketing, Product Development and New Service, E-CRM, Digital Marketing Management.
References	: 1. Ariwibowo S. Adhi, 2009, Kecerdasan Entrepreneur: Memulai, Membangun, Merawat, dan Mengembangkan Bisnis Anda, Jakarta: PT. Elex Media Kompetindo. 2. Michael A. Hitt; R. Duane Ireland; David G. Sirman; and Cheryl A. Trahms, 2011, "Strategic Entrepreneurship: Creating Value for Individuals, Organizations, and society, Academy of management, pp. 57-77.

Course	: Decision Making System
Code	: RTI176002
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 6
Graduate Learning Outcomes	: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
	2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
	3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement Decision Making System, System Model, Development Steps, Decision Making System Classification, Linear Method Programming, AHP Method, GAP Method, Fuzzy Modeling, Decision Making System and Model.
Topics of Discussion	: Decision Making System, System Model, Development Steps, Decision Making System Classification, Linear Method Programming, AHP Method, GAP Method, Fuzzy Modeling, Decision Making System and Model.
References	:

1. Eta S. Berner, 2016, Clinical Decision Support Systems: Theory and Practice, Springer.
2. Frada Burstein, et al., 2007, Handbook on Decision Support Systems 1: Basic Themes, Springer Science & Business Media.
3. Yao, JingTao, 2010, Web-based Support Systems, Springer-Verlag London Limited.
Jason Papathanasiou, et al., 2016, Real-World Decision Support Systems: Case Studies, Springer.

Course	: Database Technology
Code	: RTI176003
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 6
Graduate Learning Outcomes	<ol style="list-style-type: none"> 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement BI, Big Data, Reporting, Tabular Data Model, BI Analysis, Data Mining Implementation, Personal, Group and BI Enterprise.
Topics of Discussion	: BI, Big Data, Reporting, Tabular Data Model, BI Analysis, Data Mining Implementation, Personal, Group and BI Enterprise.
References	: <ol style="list-style-type: none"> 1. Tan, Pang-Ning, Steinbach, M., Kumar, V., 2014, Introduction to Data Mining, Pearson International Edition. 2. Bernard Marr, 2016, Big Data in Practice, John Wiley & Sons.

Course	: Multimedia Computing
Code	: RTI176004
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 6
Graduate Learning Outcomes	<ol style="list-style-type: none"> 1 Possess ample understanding on the concepts of Applied Mathematics, ITC Fundamentals (Programming Algorithm, Database, Computer Networking, etc.), Engineering, and Engineering Principles in ITC.

Learning Outcomes	: Possess good command in the concepts of Multimedia Representation (Sound, Video, Animation, Movie) in Digital Format, Multimedia Concept, Audio Fundamentals, Audio Coding and Standard, Video Fundamentals, Image/Video Coding, MPEG Coding, Media Protection, Media Retrieval, Media distribution.
Topics of Discussion	: Multimedia Representation (Sound, Video, Animation, Movie) in Digital Format, Multimedia Concept, Audio Fundamentals, Audio Coding and Standard, Video Fundamentals, Image/Video Coding, MPEG Coding, Media Protection, Media Retrieval, Media distribution.
References	: 1. Borko Furht, 2012, Multimedia Systems and Techniques, Springer Science & Business Media. 2. Multimedia Networking, From Theory to Practice, Cambridge University Press, 2009.

Course	: Internet Of Things
Code	: RTI176005
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 6
Graduate Learning Outcomes	: 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to use and implement IoT, Electronics for IoT, Software for IoT, Sensors and its Devices, Web Servers, Signal and System, Transfer Function, Filters, Mobile Development Cross Platform, Web Service, Phonegap, Programming With Streams, Analog Sensor Connection, LCD Connection, Digital Sensor.
Topics of Discussion	: IoT, Electronics for IoT, Software for IoT, Sensor and its Devices, Web Servers, Signal and System, Transfer Function, Filters, Mobile Development Cross Platform, Web Service, Phonegap, Programming With Streams, Analog Sensor Connection, LCD Connection, Digital Sensor.
References	: 1. Holler, Jan. Et All, 2014, From Machine to Machine to the Internet Of Things. Introduction to a New Age of Intelligence.

2. Obaidat, Mohammad, 2016, Smart Cities and Homes Internet of Things Survey, Elsevier.

Course	: Image Processing And Com. Vision
Code	: RTI176006
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 6
Graduate Learning Outcomes	<ol style="list-style-type: none"> : 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 2 Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned. 3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to process various Types of Digital Image, Color Level and its Conversion, Image Editing using Tool, VB.net for Image Processing, Open CV for Image Processing, Histogram, Color Transformation, Brightness Contrasts, Histogram Equalization, Filtering, Morphology, Point, Line, Edge Detection, Compression and Image Thresholding.
Topics of Discussion	: Types of Digital Image, Color Level and its Conversion, Image Editing using Tool, VB.net for Image Processing, Open CV for Image Processing, Histogram, Color Transformation, Brightness Contrasts, Histogram Equalization, Filtering, Morphology, Point, Line, Edge Detection, Compression and Image Thresholding.
References	: <ol style="list-style-type: none"> 1. Rafael C Gonzales, 2008, Digital image processing second edition, Addison Wesley publishing company. 2. Putra Darma, Pengolahan Citra Digital, Andi Offset

Course	: Framework-Based Programming
Code	: RTI176007
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 6

Graduate Learning Outcomes	: 1	Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
	2	Able to apply logical thinking, critical, innovative, qualified, and measurable in doing specific works in one's field of expertise in accordance with the competency standard in the field concerned.
	3	Able to show independent, excellent and measurable performance.
Learning Outcomes	:	Able to use and implement .net MVC, Web Service Based On Service Stack, ORM Based On Servicestack's ORMLite, net MVC Core, Entity Framework Core, Core JS Framework(Angular, React) On Net Core Framework, Grunt Task Runner, Hype, Microservice, NoSQL.
Topics of Discussion	:	.net MVC, Web Service Based On Service Stack, ORM Based On Servicestack's ORMLite, net MVC Core, Entity Framework Core, Core JS Framework(Angular, React) On Net Core Framework, Grunt Task Runner, Hype, Microservice, NoSQL.
References	:	<ol style="list-style-type: none"> 1. Antonius Nugraha WP. 2010. CodeIgniter: cara mudah membangun Aplikasi PHP. Mediakita. Jakarta. 2. Riyanto, 2011, Membuat sendiri aplikasi e-commerce dengan PHP &MySQL menggunakan CodeIgniter &jQuery, Penerbit Andi, Yogyakarta.

Course	: Special Topics
Code	: RTI177001
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 7
Graduate Learning Outcomes	: 1 Possess good knowledge on ITC-related technology development and recent issues (ethics, social, legal, and economy).
Learning Outcomes	: Possess good command in the concepts of Recent IT Topics, IT Development Issues, Recent IT Research.
Topics of Discussion	: Recent IT Topics, IT Development Issues, Recent IT Research.
References	: <ol style="list-style-type: none"> 1. Jurnal TIK (Lokal,regional, nasional, atau internasional). 2. Buku-buku sesuai topik terpilih.

Course	: Project 3
Code	: RTI177002
Credit / Hours	: 4 Credits (12 hours/week)

Semester	: 7
Graduate Learning Outcomes	<ul style="list-style-type: none"> : 1 Internalize values, norms, and academic ethics. 2 Show a sense of responsibility in his/her field of work independently. 3 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 4 Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors. 5 Able to perform documentation and quality assurance to every development process, utilization, modification, maintenance and security of ITC products based on the given standard. 6 Able to use the advanced technology and to analyze computing impact to an individual, organization, and society. 7 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned. 8 Able to show independent, excellent and measurable performance. 9 Able to review case study on science technology application which consider and also apply humanity values based on one's field of expertise in order to develop prototype, standard procedure, design or artworks, compose his/her studies in the form of worksheet, design specification, or art essay, and upload it in the institution website. 10 Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website. 11 Able to make proper decision based on the standard procedure, design specification, security and safety requirements in performing supervision and evaluation. 12 Able to document, store, secure, and restore the data to guarantee the validity and also prevent plagiarism.
Learning Outcomes	: Able to implement Blackbox & Whitebox Testing Based on SDA, Documentation, Application Repository.
Topics of Discussion	:
	Blackbox & Whitebox Testing Based on SDA, Documentation, Application Repository.
References	:
	<ul style="list-style-type: none"> 1. Panitia Program Studi, 2013, Panduan Pelaksanaan dan pelaporan proyek, Pedoman Pelaksanaan Proyek Tingkat III, Polinema, Malang. 2. Carroll, Brian J., 2008, Lean Performance ERP Project Management: Implementing the Virtual Lean Enterprise Second Edition, Auerbach Publications.

Course	: Thesis Proposal
Code	: RTI177003
Credit / Hours	: 2 Credits (6 hours/week)
Semester	: 7
Graduate Learning Outcomes	<p>: 1 Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors.</p> <p>2 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.</p> <p>3 Able to show independent, excellent and measurable performance.</p> <p>4 Able to review case study on science technology application which consider and also apply humanity values based on one's field of expertise in order to develop prototype, standard procedure, design or artworks, compose his/her studies in the form of worksheet, design specification, or art essay, and upload it in the institution website.</p>
Learning Outcomes	: Able to find Global Issue from the Previous Studies' Facts and Suggestions, Read Journal and Article References from the latest Research, Research Proposal Composition (Introduction, Literature Review, Analysis Model and Design).
Topics of Discussion	: Global Issue from the Previous Studies' Facts and Suggestions, Read Journal and Article References from the latest Research, Research Proposal Composition (Introduction, Literature Review, Analysis Model and Design).
References	: <ol style="list-style-type: none"> 1. Panitia Program Studi, 2013, Panduan Laporan Akhir, Polinema, Malang. 2. Santoso, Nurudin, 2007, Manajemen Proyek, Modul Ajar, Polinema, Malang. 3. Santoso, Nurudin, 2007, Praktikum Manajemen Proyek, Modul Ajar, Polinema, Malang.

Course	: Distributed System
---------------	-----------------------------

Code	: RTI177004
Credit / Hours	: 3 Credits (6 hours/week)
Semester	: 7
Graduate Learning Outcomes	<ul style="list-style-type: none"> : 1 Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.) 2 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned. 3 Able to show independent, excellent and measurable performance.
Learning Outcomes	: Able to implement the concept of Introduction to Distributed System, Communication, Process, Distributed Operating System, File Service, Time & Coordination, Share Data & Transaction, Distributed Data Management, Parallel Processing, Security.
Topics of Discussion	: The concept of Introduction to Distributed System, Communication, Process, Distributed Operating System, File Service, Time & Coordination, Share Data & Transaction, Distributed Data Management, Parallel Processing, Security.
References	: <ul style="list-style-type: none"> 1. Maurice Herlihy, et all. 2012, The Art of Multiprocessor Programming, Elsevier. 2. Arora, Sanjeev; Barak, Boaz (2009), Computational Complexity – A Modern Approach, Cambridge, ISBN 978-0-521-42426-4. 3. Rajkumar Buyya, 2014, Intelligent Distributed Computing, Springer.

Course	: Research Methodology
Code	: RTI177005
Credit / Hours	: 2 Credits (4 hours/week)
Semester	: 7
Graduate Learning Outcomes	<ul style="list-style-type: none"> : 1 Internalize values, norms, and academic ethics. 2 Possess good command in communication techniques both in written and orally using Bahasa Indonesia and English. 3 Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website. 4 Able to document, store, secure, and restore the data to guarantee the validity and also prevent plagiarism.
Learning Outcomes	: Possess good command in the concept of Introduction to Research, Selecting Research Topic, Background Study, Research Problem, Hypothesis, Selecting proper Approach, Selecting Variable, Determining Source Data, Determining the Instrument, Collecting the Data, Data Analysis, Drawing Summary, Composing a Report.

Topics of Discussion :
Introduction to Research, Selecting Research Topic, Background Study, Research Problem, Hypothesis, Selecting proper Approach, Selecting Variable, Determining Source Data, Determining the Instrument, Collecting the Data, Data Analysis, Drawing Summary, Composing a Report.

References :

1. Ekojono, 2013, Metodologi Penelitian, Modul Ajar, Polinema, Malang.
2. Kusbianto, Deddy, 2007, Metode Penelitian, Modul Ajar, Polinema, Malang.
3. Kusbianto, Deddy, 2007, Metode Penelitian Praktek, Modul Ajar, Polinema, Malang.

Course : Game Programming
Code : RTI177006
Credit / Hours : 3 Credits (6 hours/week)
Semester : 7
Graduate Learning Outcomes :

1. Able to implement knowledge on Applied Mathematics, Computing Science (Algorithm, Programming and Database), Engineering, and Software Engineering Principles (desktop, web or mobile), computer networking and other ITC field of work (vision - graphics, embedded, Information System, Smart System, Business Intelligent, etc.)
2. Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.
3. Able to show independent, excellent and measurable performance.

Learning Outcomes : Able to implement Core UI, Inventory GUI, 2D Animation, Maps and Material, Camera, Lighting and Effect, 3D Control Animation, Sound Manipulation.

Topics of Discussion :
Core UI, Inventory GUI, 2D Animation, Maps and Material, Camera, Lighting and Effect, 3D Control Animation, Sound Manipulation.

References :

1. Dille, Flint & John Zuur Platten, 2007, The Ultimate Guide to VideoGame Writing and Design, First Edition Lone Eagle Publishing Company.
2. Rabin, Steve, 2014. AI Game Programming Wisdom, Charles River Media, Inc.
3. Schwalbe, Kathy, 2009, Information Technology Project Management, 6th Edition, Course Technology.
4. Carter, Chad, 2007, Microsoft XNA Unleashed, SAMS Publishing.
5. Nitschke, Benjamin, 2007, Professional XNA Game Programming, Wiley Publishing, Inc.

Course : English For Work Preparation
Code : RTI178001
Credit / Hours : 2 Credits (3 hours/week)
Semester : 8

Graduate Learning Outcomes	: 1 Possess good command in communication techniques both in written and orally using Bahasa Indonesia and English. 2 Able to communicate both orally and in written using English as the international language.
Learning Outcomes	: Possess good command in Identification Self and Others, Expressing Like and dislike, Jobs/Occupation, Preposition, Reporting Past Event, Describing Objects, Numbers and Symbols in Mathematics, Giving Instructions, Giving and Asking For Help, Reading Simple English Texts About Computing.
Topics of Discussion	: Possess good command in Identification Self and Others, Expressing Like and dislike, Jobs/Occupation, Preposition, Reporting Past Event, Describing Objects, Numbers and Symbols in Mathematics, Giving Instructions, Giving and Asking For Help, Reading Simple English Texts About Computing.
References	: 1. Demetriades, Dinos, 2008. Information Technology Workshop, Oxford: Oxford University Press. 2. Azar, Betty Schramper. 1999. Understanding and Using English Grammar. Prentice- Hall, Inc. New Jersey. 3. Boeckner, Keith and Brown, P Charles. 1993. Oxford English for Computing. Oxford University Press. 4. Glendinning, Eric H and Mc Ewan, John. 1993. Oxford English for Electronics. Oxford University Press.

Course	: IT Work Ethics
Code	: RTI178002
Credit / Hours	: 2 Credits (3 hours/week)
Semester	: 8
Graduate Learning Outcomes	: 1 Uphold the humanity values in performing his/her role based on religion, moral, and ethics. 2 Respect the diversity in cultures, views, religions and beliefs, and also point of views or inventions. 3 Abide the law and have great discipline as a member of the society and citizen. 4 Internalize values, norms, and academic ethics. 5 Show a sense of responsibility in his/her field of work independently. 6 Possess good knowledge on ITC-related technology development and recent issues (ethics, social, legal, and economy).
Learning Outcomes	: Possess good understanding in IT Legal Development, Copyright Law, Brand and Domain Name Law, Media Law, Cyberjurisdiction, E-commerce Law, Privacy, Data Protection, Cybercrimes and the Measures, Proof and Digital Evidence.
Topics of Discussion	:

Possess good understanding in IT Legal Development, Copyright Law, Brand and Domain Name Law, Media Law, Cyberjurisdiction, E-commerce Law, Privacy, Data Protection, Cybercrimes and the Measures, Proof and Digital Evidence.

References :

1. Undang-undang Republik Indonesia No. 19 Th. 2002 tentang Hak Cipta.
2. Undang-undang Republik Indonesia No. 14 Th. 2001 tentang paten.
3. Undang-undang Republik Indonesia No. 14 Th. 2008 tentang Kebebasan Informasi Publik.
4. Undang-undang Republik Indonesia No. 11 Th. 2008 tentang Informasi dan Transaksi Elektronik.

Course	: Internship
Code	: RTI178003
Credit / Hours	: 4 Credits (18 hours/week)
Semester	: 8
Graduate Learning Outcomes	<div><div>1</div>Internalizing the values, norms, and academic ethics.</div> <div><div>2</div>Show a sense of responsibility in his/her field of work independently.</div> <div><div>3</div>Internalize the spirit of independence, struggle, and entrepreneurship.</div> <div><div>4</div>Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors.</div> <div><div>5</div>Able to perform documentation and quality assurance to every development process, utilization, modification, maintenance and security of ITC products based on the given standard.</div> <div><div>6</div>Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned.</div> <div><div>7</div>Able to show independent, excellent, and measurable performance.</div> <div><div>8</div>Able to review case study on science technology application which consider and also apply humanity values based on one's field of expertise in order to develop prototype, standard procedure, design or artworks, compose his/her studies in the form of worksheet, design specification, or art essay, and upload it in the institution website.</div> <div><div>9</div>Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website.</div> <div><div>10</div>Able to make proper decision based on the standard procedure, design specification, security and safety requirements in performing supervision and evaluation.</div>

	11	Able to maintain and expand professional network and cooperation results outside the institution.
	12	Able to show a sense of responsibility on one's group performance and both supervise and evaluate on the work assigned to his/her subordinate.
	13	Able to perform self-evaluation to the supervised-group, and able to manage independent learning.
	14	Able to document, store, secure, and restore the data to guarantee the validity and also prevent plagiarism.
Learning Outcomes	:	Able to perform Planning, Implementation, Project Result, Internship Report, Implementation of Work in the Field.
Topics of Discussion	:	Planning, Implementation, Project Result, Internship Report, Implementation of Work in the Field.
References	:	
	1.	Panitia Program Studi, 2007, Panduan Pelaksanaan dan pelaporan praktek kerja, Polinema, Malang.
	2.	Santoso, Nurudin, 2007, Manajemen Proyek, Modul Ajar, Polinema, Malang.
	3.	Santoso, Nurudin, 2007, Praktikum Manajemen Proyek, Modul Ajar, Polinema, Malang.

Course	:	Thesis
Code	:	RTI178004
Credit / Hours	:	6 Credits (14 hours/week)
Semester	:	8
Graduate Learning Outcomes	:	<ol style="list-style-type: none"> 1 Internalizing the values, norms, and academic ethics. 2 Show a sense of responsibility in his/her field of work independently. 3 Internalize the spirit of independence, struggle, and entrepreneurship. 4 Able to identify and to analyze needs, develop, to realize and test innovative and applicative ITC products based on the given standard by considering ethics, social, legal, and economics factors. 5 Able to perform documentation and quality assurance to every development process, utilization, modification, maintenance and security of ITC products based on the given standard. 6 Able to use the advanced technology and to analyze computing impact to an individual, organization, and society. 7 Able to implement logical, critical, innovative, excellent, and measured in performing specific tasks in one's field of expertise based on the given competency standard in the field concerned. 8 Able to show independent, excellent and measurable performance.

	<p>9 Able to review case study on science technology application which consider and also apply humanity values based on one's field of expertise in order to develop prototype, standard procedure, design or artworks, compose his/her studies in the form of worksheet, design specification, or art essay, and upload it in the institution website.</p> <p>10 Able to compose case study results in the application of one's field of expertise in the form of worksheet, design specification, or art essay, and upload it in the institution website.</p> <p>11 Able to make proper decision based on the standard procedure, design specification, security and safety requirements in performing supervision and evaluation.</p> <p>12 Able to maintain and expand professional network and cooperation results outside the institution.</p> <p>13 Able to show a sense of responsibility on one's group performance and both supervise and evaluate on the work assigned to his/her subordinate.</p> <p>14 Able to document, store, secure, and restore the data to guarantee the validity and also prevent plagiarism.</p> <p>15 Able to analyze needs, to adapt, and to demonstrate one's ability in self-upgrading (life-long learning).</p>
Learning Outcomes	: Possess good command in the application of Report Writing (Introduction, Literature Review, Model Analysis and Design, Implementation, Testing and Quality Assurance, Conclusion and Suggestion), Results Testing, Scientific Journal Writing from the
Topics of Discussion	: Report Writing (Introduction, Literature Review, Model Analysis and Design, Implementation, Testing and Quality Assurance, Conclusion and Suggestion), Results Testing, Scientific Journal Writing from the Research.
References	: <ol style="list-style-type: none"> 1. Panitia Program Studi, 2013, Panduan Laporan Akhir, Polinema, Malang. 2. Santoso, Nurudin, 2007, Manajemen Proyek, Modul Ajar, Polinema, Malang. 3. Santoso, Nurudin, 2007, Praktikum Manajemen Proyek, Modul Ajar, Polinema, Malang.