Game Application & Technology

Introduction

Computer, mobile, and console games represent a multi-billion dollars global industry. Game Application and Technology (GAT) Program offers dedicated degrees in game development giving students the technical expertise they need to enter the industry confidently.

GAT Program is designed specifically by Computer Science of BINUS UNIVERSITY to provide students with knowledge and skills to develop and create a variety of applied technology in the field of game technology. BINUS UNIVERSITY found this Program in September 2012, and it became one of the best programs under the coordination of School of Computer Science. In collaboration with several renowned game industries, GAT Program always makes continuous improvement in our curriculum, human resources, and facilities. The GAT Laboratory, equipped with high specification computers and dedicated audio editing studio, will facilitate the students and lecturers to collaborate and deliver high-quality games.

GAT Program is designed to adapt the dynamically changing creative industries landscape while ensuring a solid academic foundation and aligned to industry expectations. GAT focuses on game art, game design, and game programming. Derived from Computer Science Study Program, GAT Program offers game programming and development blended with creativity and innovation in Game Technology. The program will not only focus on the game development for entertainment tools, but also for other purposes (e.g. serious games for learning and training, and gamification tool to a non-game application to enhance its user's motivations and engagements). The structure of the course allows students to gain valuable practical experience in building software systems, and also apply knowledge in creative game design. GAT Program has a strong base in computer science foundation subjects as well as offering the theoretical and critical thinking behind current digital technologies. Students will learn in a project-orientated environment that encourages collaboration with industries. This collaboration helps them discover creative solutions to contemporary design challenges. Students are encouraged to collaborate, work according to deadlines, maintain attendance levels and develop strong communication skills. As a result, graduates are internationally renowned for their expertise and confident to enter the workplace as newly skilled professionals rather than technicians.

Vision

Become a study program of choice in Computer Science, focus in creative software solutions for business and industry, recognized internationally, championing innovation and produce graduates with international qualification.

Mission

The mission of Game Application and Technology Program are to:

1. Educating student in the fundamental skills, knowledge, and practice of recent mobile technologies and architectures, wireless technologies, mobile software development, and game design;
2. Conducting research and providing game application and technology professional services with an emphasis on the application of knowledge for society's development;
3. Sharing the application of knowledge related to game application & technology with a view to Indonesians' and the international community quality of life;
4. Influencing students & lecturers to be creative, value-adding and competitive at an international level in game application & technology, by creating a suitable environment;

5. Preparing students as smart and skilled game application & technology professionals, leaders, and entrepreneurs in the global market and/ or to continue in related disciplines.

Program Objective

The objectives of the program are:

1. To provide students with a solid foundation of mathematical, algorithm principles, computer science knowledge and ethical that will be needed in IT practice;
2. To provide students with skills to apply design and development principles in the construction of software system applied in database technology, intelligence system, networking, multimedia development, game design and game technology;
3. To prepare students with abilities to keep up-to-date with the latest Information Technology specially in computer game technology trends, developments and industries;
4. To prepare students with abilities in problem solving and good communication skills to be able to work as an individual or in a team in an IT environment.

Student Outcomes

After completing the study, graduates are:

1. Able to create software application design with the implementation of database system principal design to solve structured and semi-structured data;
2. Able to design software application solution based on problem analysis which can be solved with structured approach in informatics area;
3. Able to assess information technology trend and communication to deliver alternative solution of software development;
4. Able to create game software with the implementation of multimedia, computer network, and applicative database with use of artificial intelligence algorithm to solve real industry problems;
5. Able to apply interdisciplinary knowledge and skills in developing alternative solutions for problem-solving.

Prospective Career of the Graduates

After finishing the Program, the graduate of Game Application and Technology Program is able to follow a career in:

1. Game Engineer / Developer
2. Game Designer
3. Game Artist / Technical Artist
4. Game Audio Engineer
5. Game Director / Chief Technology Officer
6. Game Content Provider
7. Gamification & Serious Games Designer
8. Game Consultant
9. Game Publisher
10. Entrepreneur

Curriculum

With an international certification from The ASEAN University Network-Quality Assurance (AUN-QA) in 2018, the program ensures that the stakeholders will have an international quality in learning experiences. The present curriculum used in the GAT Program has been developed in line with the National Curriculum. Also, the local content has been developed in line with the Computer Science Curriculum standard of ACM (Association for Computing Machinery), several local and foreign universities, national and international game industry and community (developer, publisher), up-to-date game technologies, and market trends. In addition, the students will have the opportunity to forge their Employability & Entrepreneurial Skills in the enrichment program offered by the

university to ensure the students are well prepared for their future career. In the program, the students will have the opportunity to work in the internship program offered by various global industries; experience study abroad; start their own business; involved in the world-class research project; implement their skills in the community development program. With these, our graduates are expected to be able to compete at both national and international level. Generally, the subjects of the curriculum are divided into these following groups of subjects:

Core Computer Science Group

The objective of this group is to provide a grounding in GAT Program through practice as well as the applied theory, which is required by business both now and in the future. The subjects included are programming, algorithm design and analysis, software engineering, databases, computer graphs, interactive multimedia, computer and human interaction, operation system, Game Art, Game Programming, and Game Design.

Science

The objective of this group is to provide an understanding of mathematics as one of the principal foundations of computer science. Another objective is to give an understanding of scientific methodology (data collection, hypothesis, market research, analysis) in problem-solving.

Professional Practices

The objective of this group is to develop the personal strengths of the students and to provide them with a professional character, professionalism in their field, management skills, oral and written communication skills, understanding of business ethic, ability to work as a team, and to develop a “Binusian” Character.

The Field of GAT Subject

The objective is to give the students a solid foundation of software development skills and to introduce the specific skills needed for developing game applications. The students are expected to develop their skills and master the techniques which will allow them to conduct research for both their thesis and to continue their studies.
The field of GAT subjects are as follows:

1. Game Programming and Development: to explore the various programming techniques and algorithm in-game using industry-standard software and game engine.
2. Game Art: to explore various methodologies and techniques of game art and learn how to transform your art into assets for computer games and related industries using the latest technology and industry-standard software (2D and 3D, animation, modeling, character design).
3. Game Design: to explore the various methodologies and techniques of game story design, level design, gameplay design, human and computer interaction design.

Students of GAT Program are required to follow these three fields to become our eligible graduates. The objective of these fields is to provide the students with the knowledge and skills required by business & industry and those who want to develop their own game company.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CHAR6013	Character Building: *Pancasila*	2	20
	MATH6025	Discrete Mathematics	4	
	MATH6030	Linear Algebra	2	
	COMP6047	Algorithm and Programming	4/2	

Sem	Code	Course Name	SCU	Total
	GAME6002	Game Design*&**	2	
	LANG6027	Indonesian	2	
	English University Courses I			
	ENGL6128	English in Focus	2	
	ENGL6130	English for Business Presentation	2	
2	CHAR6014	Character Building: *Kewarganegaraan*	2	20
	MATH6031	Calculus	4	
	COMP6048	Data Structures*	4/2	
	ENTR6509	Entrepreneurship: Ideation	2	
	GAME6081	2D Game Art	2	
	STAT6171	Basic Statistics	2	
	English University Courses II			
	ENGL6129	English Savvy	2	
	ENGL6131	English for Written Business Communication	2	
3	CHAR6015001	Character Building: *Agama*	2	19
	COMP6049001	Algorithm Design and Analysis*	4	
	COMP6641001	Artificial Intelligence*&***	5	
	GAME6085001	Object Oriented Game Programming*&**	2	
	COMP6056001	Program Design Methods	4	
	GAME6071001	3D Modeling for Games*&**	2	
4	CPEN6109001	Computer Networks	2/2	21
	ISYS6280001	Database Systems	4/2	
	GAME6069001	Game Programming*&**	4	
	COMP6642001	Software Engineering*&***	5	
	GAME6082001	Game Animation*&**	2	
5	COMP6697001	Operating System	2	20
	COMP6062001	Compilation Techniques	4	
	ENTR6511001	Entrepreneurship: Market Validation	2	
	COMP6696001	Research Methodology in Computer Science	2	
	GAME6086001	Game Development Capstone Project*&**	2	
	COMP6232001	Human and Computer Interaction	2/2	
	Free Electives		4	
6	**Enrichment Program I**		20	20
7	**Enrichment Program II**		20	20
8	GAME6087001	Pre-Thesis	2	6
	GAME6088001	Thesis	4	
	GAME6026001	Thesis	6	
TOTAL CREDITS 146 Credits				

*) *This course is delivered in English*
**) *Global Learning System Course*
***) *Entrepreneurship Embedded*

English University Courses:

-) For 1st Semester: English University Courses I, students with Binus University English Proficiency Test score less than 500 will take English in Focus, and student with test score greater than or equal to 500 will take English for Business Presentation.

-) For 2nd Semester: English University Courses II, students with Binus University English Proficiency Test score less than 500 will take English Savvy, and students with test score greater than or equal to 500 will take English for Written Business Communication.

-) Student must pass English Savvy with a minimum Grade of C.

Pre-thesis (2 SCU) & Thesis (4 SCU) *can be taken in the 6th and/or 7th semester by the students who meet the requirements from the program.*

Appendix: Free Electives (5th Semester)

No	Course Owner Department	Course Code	Course Name	SCU	Semester
1	Business Creation	ENTR6494005	Managing Growing Business	2	5
2	Business Management	MGMT6362005	Global Supply Chain Services	2	5
3	Business Management	MGMT6365005	Current Issue in Service Business and Technology	2	5
4	Business Management	MGMT6400005	Supply Chain Strategy	2	5
5	Global Business Marketing	MKTG6237005	Global Strategic Marketing: Asia Pacific Perspective	4	5
6	International Business Management	BUSS7009005	Export-Import Cost Management	2	5
7	International Business Management	MGMT6370005	E-Business for International Business	2	5
8	International Business Management	MGMT7169005	Global Supply Chain Management	2	5
9	Management	BUSS6069005	Business Simulation	2	5
10	Management	BUSS6163005	Organization Development Strategy	2	5
11	Management	BUSS6194005	Business Negotiation Strategy	2	5
12	Management	MGMT6029005	Knowledge Management	2	5
13	Management	MGMT6063005	Strategic Management	2	5
14	Management	MGMT6145005	Compensation and Performance Management	2	5
15	Management	MGMT6297005	Operations Management	4	5
16	Management	MGMT6341005	Strategic Management	4	5
17	Management	MGMT6412005	Customer Relationship Management	2	5
18	Accounting Bekasi	ACCT6389020	Big Data Analytics in Accounting & Finance	2	5
19	Marketing Communication	COMM6514019	Editing for Creative Program	2/2	5
20	Marketing Communication	COMM6523019	Corporate Event Management	2/2	5
21	Marketing Communication	COMM6538019	Media Promotion & Marketing in Creative Broadcasting	2	5
22	Marketing Communication	COMM6539019	Media Convergence in Creative Broadcasting	2	5
23	Marketing Communication	COMM6541019	Digital Corporate Communication	2/2	5
24	Marketing Communication	COMM6542019	Event Management for Brand	2/2	5
25	Marketing Communication	COMM6543019	Digital Brand Communicaton	2/2	5
26	Tourism	TRSM6141022	Tourism Destination and Planning Management	4	5

No	Course Owner Department	Course Code	Course Name	SCU	Semester
27	Tourism	TRSM6160022	Tourism Transportation	2	5
28	Tourism	TRSM6208022	Tourism Innovation and Product Development	4	5
29	Tourism	TRSM6196022	Tourism Community Empowerment	2	5
30	Architecture	ARCH6128014	Multimedia in Design Presentation	4	5
31	Architecture	ARCH6129014	Urban Housing	4	5
32	Architecture	ARCH6130014	Architecture & Social Culture	4	5
33	Civil Engineering	COMP6046013	Computer Applications in Construction Management	2	5
34	Computer Engineering	CPEN6098010	Computer Networks	2/2	5
35	Computer Engineering	CPEN6126010	Cross Platform Application Development	4	5
36	Computer Engineering	CPEN6225010	Telco Network & Switching System	2	5
37	Computer Engineering	CPEN6232010	Cloud Technology Practice	2	5
38	Industrial Engineering	ISYE6067011	Global Supply Chain	2	5
39	Industrial Engineering	ISYE6115011	Transportation Modeling	2	5
40	Industrial Engineering	ISYE6130011	Project Management	2	5
41	Business Law	LAWS6052028	Bankruptcy Law	2	5
42	Business Law	LAWS6056028	Legal Research Methods	2	5
43	Business Law	LAWS6167028	Legal Philosophy & Professional Ethics	2	5
44	Business Law	LAWS6172028	Environmental and Natural Resources Law	2	5
45	Business Law	LAWS6174028	Contract & Legislative Drafting	2	5
46	Business Law	LAWS6176028	Tax Law	2	5
47	Chinese Literature	CHIN6157026	Chinese Business for Etiquette (Beginner)	4	5
48	Chinese Literature	CHIN6158026	Chinese Business in Daily Communication	4	5
49	Chinese Literature	CHIN6159026	Character Writing	2	5
50	English Literature	ENGL6158024	Writing for Children and Young Adults	2	5
51	English Literature	ENGL6244024	Social Media Broadcasting	4	5
52	International Relations	INTR6151029	Regional Integration in Europe	2	5
53	International Relations	INTR6152029	Regional Integration in America	2	5
54	International Relations	INTR6153029	Regional Integration in East Asia	2	5
55	International Relations	INTR6154029	Regional Integration in Africa and Middle East	2	5
56	International Relations	INTR6161029	Political Economy of Global Media	2	5
57	International Relations	INTR6162029	Multiculturalism and Digital Society	2	5
58	International Relations	INTR6167029	International Political Economy of Multinational Corporations	2	5
59	International Relations	INTR6169029	International Migration: Governance and Rights	2	5
60	International Relations	INTR8049029	Global Economic Architecture	2	5

No	Course Owner Department	Course Code	Course Name	SCU	Semester
61	Japanese Literature	JAPN6116025	Japanese Corporate Culture and Management (Nihon No Kigyou Bunka to Manejimento)	2	5
62	Primary Teacher Education	EDUC6032030	Art & Craft	2	5
63	Primary Teacher Education	EDUC6037030	Teaching English for Young Learners	2	5
64	Primary Teacher Education	EDUC6061030	ICT for Distance Learning	2	5
65	Primary Teacher Education	EDUC8004030	School Based Management	2	5
66	Psychology	PSYC6123027	Educational Psychology	2	5
67	Psychology	PSYC6127027	Indigenous Psychology	4	5
68	Cyber Security	COMP6646001	Computer Forensic	2	5
69	Mobile Application & Technology	MOBI6057001	Wearable Technology	2	5
70	Statistics	STAT6158001	Data Management and Organization	2	5
71	Computer Science	COMP6578001	Information Visualization	2	5
72	Computer Science	COMP6586001	Embedded Systems	2	5
73	Computer Science	ISYS6197001	Business Application Development	2/2	5
74	Animation	DSGN6689007	Concept Art & Production Design	2	5
75	Animation	DSGN6690007	Animation Storytelling	2	5
76	Creative Advertising	DSGN6661007	Photography	4	5
77	Creative Advertising	DSGN6732007	Photography	4	5
78	Film	FILM6119009	Audiences & Fan Culture	4	5
79	Business Information Technology	ISYS6579003	Knowledge-Based AI: Cognitive Systems	4	5
80	Information Systems	ISYS6196003	Business Analytics	2	5
81	Information Systems	ISYS6199003	Data & Text Mining	4	5
82	Information Systems	ISYS6202003	Social Informatics	4	5
83	Information Systems	ISYS6289003	Collaborative Computing	4	5
84	Information Systems	ISYS6402003	Business Analytics	2/2	5
85	Information Systems	ISYS8066003	Business Process Management	4	5
86	Information Systems	RSCH6466003	Research Methodology	4	5
87	Information Systems Accounting & Auditing	ISYS6608003	IT Service & Risk Management	2	5
88	Information Systems Accounting & Auditing	ISYS6050003	Information System Audit Fundamental	4	5

Enrichment Program I (6th Semester) & Enrichment Program II (7th Semester):
-) *Student will take one of enrichment program tracks (off campus). See enrichment appendix for the tracks detail.*

Enrichment Track Scheme

Track	Semester 6							Semester 7						
	IN	RS	EN	CD	SA	IS	etc	IN	RS	EN	CD	SA	FS	etc
1	v							v						
2		v							v					
3			v							v				
4				v				v						
5				v							v			
6				v								v		
7					v			v						
8					v						v			
9					v							v		
10						v		v						
11						v			v					
12	v												v	
13		v											v	
14							v	v						
15							v				v			
16							v					v		

Note:

IN : Certified Internship
RS : Certified Research
EN : Certified Entrepreneurship
CD : Certified Community Development
SA : Certified Study Abroad
IS : Certified Specific Independent Study
FS : Further Study
etc : Study Program Special Purposes

Description:
Student will take one of enrichment program tracks

Students who failed in Enrichment Program I can retake with the same track or change into another track. As for Enrichment Program II, student who failed with Internship, Research, Community Development, and Study Abroad track on Enrichment Program II, can retake with the same track or change into another track. However students who take **Entrepreneurship** track on Enrichment Program II, should **retake with another track**.

Certified Internship Track

Code	Course Name	SCU	Total
Enrichment Program I			20
GAME6061001	Game Industry Experience	8	
GAME6089001	Game Production in Industry	8	
GAME6052001	EES in Game Industry	4	
Enrichment Program II			20
GAME6062001	Game Development Practice in Industry	8	
GAME6090001	Game Research in Industry	8	
GAME6063001	EES in Game Development Experience	4	

Certified Entrepreneurship Track

Code	Course Name	SCU	Total
Enrichment Program I			20
ENTR6653001	New Venture Initiation in Game Technology & Industry	8	
ENTR6655001	Product Development Process in Game Technology & Industry	8	
ENTR6657001	EES in Game Technology & Industry I	4	
Enrichment Program II			20
ENTR6654001	Product Launching in Game Technology & Industry	8	
ENTR6656001	Business Development in Game Technology & Industry	8	
ENTR6658001	EES in Game Technology & Industry II	4	

Certified Research Track

Code	Course Name	SCU	Total
Enrichment Program I			20
RSCH6244001	Research Experience I	8	
RSCH6532001	Scientific Writing I in Game Technology	8	
RSCH6033001	Global EES I (Team Work, Communication, Problem Solving & Decision Making)	4	
Enrichment Program II			20
RSCH6259001	Research Experience II	8	
RSCH6533001	Scientific Writing II in Game Technology	8	
RSCH6267001	Global EES II (Self-Management, Planning & Organizing, Initiative & Enterprise)	4	

Certified Community Development Track

Code	Course Name	SCU	Total
Enrichment Program I			20
CMDV6160001	Community Outreach Project Implementation	8	
CMDV6314001	Community Outreach Project Design in Game Technology	8	
CMDV6265001	Employability and Entrepreneurial Skills in Game Application and Technology Community	4	
Enrichment Program II			20
CMDV6185001	Community Development Project Implementation	8	
CMDV6315001	Community Development Project Design in Game Technology	8	
CMDV6194001	Employability and Entrepreneurial Skills in Game Application and Technology Community Development	4	

Certified Study Abroad Track

Code	Course Name	SCU	Total
Elective courses list for study abroad*			20
Enrichment Program I			
GLOB6005001	Elective Course for Study Abroad 1	4	
GLOB6006001	Elective Course for Study Abroad 2	4	
GLOB6007001	Elective Course for Study Abroad 3	4	

Code	Course Name	SCU	Total
GLOB6008001	Elective Course for Study Abroad 4	4	
GLOB6009001	Elective Course for Study Abroad 5	2	
GLOB6010001	Elective Course for Study Abroad 6	2	
GLOB6011001	Elective Course for Study Abroad 7	2	
GLOB6012001	Elective Course for Study Abroad 8	2	
GLOB6013001	Elective Course for Study Abroad 9	2	
GLOB6014001	Elective Course for Study Abroad 10	2	
GLOB6015001	Elective Course for Study Abroad 11	2	
GLOB6016001	Elective Course for Study Abroad 12	2	
GLOB6251001	Elective Course for Study Abroad 29	4	
Enrichment Program II			20
GLOB6017001	Elective Course for Study Abroad 13	4	
GLOB6018001	Elective Course for Study Abroad 14	4	
GLOB6019001	Elective Course for Study Abroad 15	4	
GLOB6020001	Elective Course for Study Abroad 16	4	
GLOB6021001	Elective Course for Study Abroad 17	2	
GLOB6022001	Elective Course for Study Abroad 18	2	
GLOB6023001	Elective Course for Study Abroad 19	2	
GLOB6024001	Elective Course for Study Abroad 20	2	
GLOB6025001	Elective Course for Study Abroad 21	2	
GLOB6026001	Elective Course for Study Abroad 22	2	
GLOB6027001	Elective Course for Study Abroad 23	2	
GLOB6028001	Elective Course for Study Abroad 24	2	
GLOB6253001	Elective Course for Study Abroad 31	4	

*) *Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits*

Certified Specific Independent Study

Code	Course Name	SCU	Total
Elective courses list for certified specific independent study*			20
Enrichment Program I			
MICR6033001	Course Certification I	3	
MICR6034001	Technical Skill Enrichment I	4	
MICR6035001	Industrial Project I	9	
MICR6036001	Soft Skill Enrichment I	4	
MICR6001001	Elective Course for Specific Independent Study 1	8	
MICR6002001	Elective Course for Specific Independent Study 2	8	
MICR6003001	Elective Course for Specific Independent Study 3	6	
MICR6004001	Elective Course for Specific Independent Study 4	6	
MICR6005001	Elective Course for Specific Independent Study 5	6	
MICR6006001	Elective Course for Specific Independent Study 6	5	
MICR6007001	Elective Course for Specific Independent Study 7	5	
MICR6008001	Elective Course for Specific Independent Study 8	5	
MICR6009001	Elective Course for Specific Independent Study 9	5	
MICR6010001	Elective Course for Specific Independent Study 10	4	
MICR6011001	Elective Course for Specific Independent Study 11	4	
MICR6012001	Elective Course for Specific Independent Study 12	4	

Code	Course Name	SCU	Total
MICR6013001	Elective Course for Specific Independent Study 13	4	
MICR6014001	Elective Course for Specific Independent Study 14	4	
MICR6015001	Elective Course for Specific Independent Study 15	3	
MICR6016001	Elective Course for Specific Independent Study 16	3	
MICR6017001	Elective Course for Specific Independent Study 17	3	
MICR6018001	Elective Course for Specific Independent Study 18	3	
MICR6019001	Elective Course for Specific Independent Study 19	3	
MICR6020001	Elective Course for Specific Independent Study 20	3	
MICR6021001	Elective Course for Specific Independent Study 21	2	
MICR6022001	Elective Course for Specific Independent Study 22	2	
MICR6023001	Elective Course for Specific Independent Study 23	2	
MICR6024001	Elective Course for Specific Independent Study 24	2	
MICR6025001	Elective Course for Specific Independent Study 25	2	
MICR6026001	Elective Course for Specific Independent Study 26	2	
MICR6027001	Elective Course for Specific Independent Study 27	2	
MICR6028001	Elective Course for Specific Independent Study 28	2	
MICR6029001	Elective Course for Specific Independent Study 29	1	
MICR6030001	Elective Course for Specific Independent Study 30	1	
MICR6031001	Elective Course for Specific Independent Study 31	1	
MICR6032001	Elective Course for Specific Independent Study 32	1	

**) For students who take BINUS certified specific independent study courses, they should take the first 4 courses on the list above (20 credits). Meanwhile, electives courses 1 to 32 are transferred courses for students who take certified specific independent study outside BINUS University. Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits.*

Further Study Track

Code	Course Name	SCU	Total
Enrichment Program II (Master of Management Information Systems: Information Systems Strategic Management Stream)			20
ISYS6829001	Digital Technology and Transformation	4	
ISYS6830001	Data Analytics for Business	6	
ISYS6831001	Applied Technology in Information Systems*	4	
ISYS6806001	Strategic Planning for Information Systems	6	
Enrichment Program II (Master of Management Information Systems: Digitalpreneurship Stream)			
ISYS6829001	Digital Technology and Transformation	4	
ISYS6830001	Data Analytics for Business	6	
ISYS6831001	Applied Technology in Information Systems*	4	
ISYS6848001	New Media Ventures and Innovation	6	
Enrichment Program II (Master of Computer Science: Data Science Stream)			20
COMP6816001	Wireless and Cloud Computing Technologies	4	
COMP6997001	IT Disaster Recovery	6	
COMP6981001	Applied Technology in Computer Science*	4	
COMP6998001	Knowledge Engineering	6	
Enrichment Program II (Master of Computer Science: Information Security Management)			

Code	Course Name	SCU	Total
COMP6816001	Wireless and Cloud Computing Technologies	4	
COMP6997001	IT Disaster Recovery	6	
COMP6981001	Applied Technology in Computer Science*	4	
COMP6980001	Networking and Security Concepts	6	

*) *Students are required to obtain certification no later than the end of the first semester of the master's (S2) program, as outlined in the university's official guidelines. This certification will be transferred as an undergraduate (S1) course and reported in the seventh semester of the undergraduate program.*

Student should pass all of these quality controlled courses as listed below:

No	Course Code	Course Name	Minimal Grade
1	CHAR6013	Character Building: *Pancasila*	B
2	ENTR6511001	Entrepreneurship: Market Validation	C
3	COMP6047	Algorithm and Programming*	C
4	COMP6048	Data Structures*	C
5	COMP6056001	Program Design Methods*	C
6	COMP6642001	Software Engineering*	C
7	GAME6002	Game Design	C
8	GAME6069001	Game Programming	C

*) Tutorial & Multipaper

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