Mobile Application & Technology

Introduction

Mobile technology is a growing trend in technology that provides infrastructure and technology for all businesses to ride on. With mobile technology, the future is borderless. Mobile Application & Technology (MAT) program is designed to provide students with the knowledge and skills in mobile computing, communications, and entrepreneurship. The aims of Mobile Application & Technology program to provide students with an understanding of mobile/wireless technologies, wearable technologies, embedded system and internet of things (IoT), how these technologies are utilised and integrated to meet specific business needs. The course builds a solid foundation of software development skills and introduces the particular skills needed for developing mobile/wireless applications. Students will also gain the necessary understanding of current technologies and architectures that provide the network and communications infrastructure for mobile-enabled enterprise computer systems, planning, management and how to build a mobile enterprise. Students will also develop skills in the design of modern distributed software systems, using appropriate technologies, architectures, and techniques, and in the advanced network, technologies supporting the upper layers, together with their planning, management, and security. The structure of the course allows students to gain valuable practical experience in building software systems, and also apply knowledge in mobile creative design.

The MAT program was established in September 2011, under BINUS UNIVERSITY. It became one of the programs under the coordination of the School of Computer Science.

Vision

A world class study program by providing excellent educational experiences in Computer Science, which focuses on developing creative technology solutions, fostering and empowering the society in building and serving the nation.

Mission

The mission of Mobile Application and Technology is to contribute to the global community through the provision of world-class education by:

1. Educating students to effectively apply their educational experiences in developing creative solutions in computer science, to solve real-world problems.
2. Preparing graduates to develop exemplary soft skills & technical skills required as computer science professionals, leaders, and entrepreneurs in global market.
3. Promoting high impact computer science research that contributes to the nation.
4. Fostering BINUSIAN as computer science lifelong learners through self-enrichment.
5. Empowering BINUSIAN to continuously improve society's quality of life through knowledge in computer science.

Program Objective

The objectives of the program are:

1. Graduates will become successful professionals in ICT fields;
2. Graduates will obtain employment in global companies or become entrepreneurs;
3. Graduates will obtain professional certification or continue their study to the postgraduate;

4. To prepare students with skills in problem solving to apply design and development principles in the construction of recent mobile technologies with good communication skills and ethics 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 analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions;
2. Able to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of computer science;
3. Able to communicate effectively in a variety of professional contexts;
4. Able to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles;
5. Able to function effectively as a member or leader of a team engaged in activities appropriate to computer science;
6. Able to apply computer science theory and software development fundamentals to produce computing-based solutions;
7. Able to analyze mobile solution acording to recent mobile solution trend.

Prospective Career of the Graduates

After finishing the Program, the graduate of Mobile Application & Technology Program could follow a career as:

- Mobile Software Engineer/Developer
- Mobile Games Designer & Mobile Games Developer
- Mobile Business Application Developer
- Mobile User Experience Designers
- Mobile User Interface Architect
- Information Analyst in Decentralized Businesses
- IT Support/Consultant
- Lecturer/Trainer

Curriculum

The present curriculum used in the Mobile Application & Technology 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 Machineries), several local and foreign universities, mobile technologies and market trends, so that the graduates of the Mobile Application & Technology Program are expected to be able to face competition at both a national and international level.

Generally, the subjects of the curriculum 2019 are divided into these following groups of subjects:

Mathematics Group (Science)

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

Character Building Group (Professional Practices)

The objective of this group is to develop the personal strengths of the student and to provide him or her with a professional character, professionalism in their field, management skills, oral and written communication skills, understanding of business ethics, ability to work as a team, and to develop a "Binusian" Character.

Core Group

The objective of this group is to provide grounding in the Mobile Application Technology Program through practice as well as an applied theory which is required by business both now and in the future. The subjects that are included in this group are programming, algorithm design and analysis, software engineering, databases, computer graphs, multimedia, computer and human interaction, operation system, mobile device architecture, and mobile network.

The Field of MAT Subject

The objective of builds the field of the subject in Mobile Application Technology is to give the students a solid foundation of software development skills and to introduce the specific skills needed for developing mobile/wireless applications. Students will also gain the necessary understanding of current technologies and architectures such as wearable technologies, embedded system and internet of things (IoT) that provide the network and communications infrastructure for mobile-enabled enterprise computer systems, also to give students the opportunity to obtain a deep understanding of a range of disciplines in Mobile Application Technology.
The students are expected to develop their skills and master the techniques which will allow them to research both their thesis and to continue their studies.

The field of MAT subjects:

1. Mobile Programming: to explore the various methodologies and mobile software engineering equipment.
2. Mobile Entrepreneurship: to explore the various techniques of planning, management skills, and building a mobile application & technology company.
3. Current Mobile Technology: to explore several of the trend technology in mobile application & device also research on the internet of thing, embedded system technology, virtual reality and augmented reality.

All students of MAT Program must follow these three fields to become Mobile Application Technology graduates. The objective of these three fields is to provide the students with the knowledge and skills required by business & industry and who wants to develop their own mobile application company.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CHAR6013001	Character Building: Pancasila	2	20
	MATH6025001	Discrete Mathematics	4	
	MATH6030001	Linear Algebra	2	
	COMP6047001	Algorithm and Programming**	4/2	
	COMP6798001	Program Design Methods*	2	
	MOBI6071001	Introduction to Mobile Technology & Programming*&**	2	
	LANG6027001	Indonesian	2	
2	MATH6031001	Calculus	4	20
	COMP6048001	Data Structures*&**	4/2	
	STAT6171001	Basic Statistics	2	

Sem	Code	Course Name	SCU	Total
	MATH6183001	Scientific Computing	2/1	
	MOBI6069001	Wearable Technology*&**	3	
	ENTR6509001	Entrepreneurship: Ideation	2	
3	CHAR6014001	Character Building: Kewarganegaraan	2	22
	COMP6049001	Algorithm Design and Analysis*	4	
	SCIE6063001	Computational Physics	2/1	
	COMP6065001	Artificial Intelligence**	4	
	MOBI6026001	Mobile Cloud Computing*	2/2	
	COMP6799001	Database Technology**	2/1	
	English University Courses			
	ENGL6129001	English Savvy	2	
	ENGL6131001	English for Written Business Communication	2	
4	CPEN6247001	Computer Networks	2/1	21
	MOBI6006001	Mobile Community Solution*&**	2/2	
	COMP6100001	Software Engineering**	4	
	SCIE6062001	Computational Biology	2/1	
	COMP6062001	Compilation Techniques	4	
	COMP6800001	Human and Computer Interaction**	2/1	
5	CHAR6015001	Character Building: Agama	2	17
	COMP6696001	Research Methodology in Computer Science*	2	
	COMP6697001	Operating System	2	
	ENTR6511001	Entrepreneurship: Market Validation	2	
	MOBI6009001	Mobile Multimedia Solution**	2/2	
	MOBI6068001	Web Design*&**	2	
	MOBI6070001	Embedded System and Internet of Things*&**	3	
6	**Enrichment Program I**		20	20
7	**Enrichment Program II**		20	20
8	MOBI6064001	Pre-Thesis	2	6
	MOBI6065001	Thesis	4	
	MOBI6024001	Thesis	6	
				Total Credits 146 SCU

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

English University Courses:
-) *For English University Courses, students with Binus University English Proficiency Test scores less than 500 will take English Savvy, and students with test scores greater than or equal to 500 will take English for Written Business Communication.*
-) Students 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 Study Program/Program*

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	IS	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				
17						v						v			

Note:

IN : Internship
RS : Research
EN : Entrepreneurship
CD : Community Development
SA : Study Abroad
FS : Further Study
IS : Certified Specific Independent 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 Certified Internship, Certified Research, Certified Community Development, and Certified 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
MOBI6048001	Industrial Experience	8	
MOBI6066001	Mobile Application & Technology Practice in Industrial Experience	8	
MOBI6038001	EES in Mobile Industry	4	
Enrichment Program II			20
MOBI6051001	Professional Experience	8	
MOBI6067001	Mobile Application & Technology Practice in Professional Experience	8	
MOBI6053001	Professional Development in Mobile Industry	4	

Certified Entrepreneurship Track

Code	Course Name	SCU	Total
Enrichment Program I			20
ENTR6645001	New Venture Initiation in Mobile Application	8	
ENTR6646001	Product Development Process in Mobile Application Project	8	
ENTR6541001	EES in New Mobile Application and Technology Business	4	
Enrichment Program II			20
ENTR6647001	Product Launching in Mobile Application	8	
ENTR6648001	Business Development in Mobile Application Project	8	
ENTR6369001	EES in Mobile Application and Technology Business Experience	4	

Certified Research Track

Code	Course Name	SCU	Total
Enrichment Program I			20
RSCH6245001	Research Experience I	8	
RSCH6526001	Scientific Writing in Mobile Apps and Technology Research Area I	8	
RSCH6459001	Global EES I (Team Work, Communication, Problem Solving & Decision Making)	4	
Enrichment Program II			20
RSCH6260001	Research Experience II	8	
RSCH6527001	Scientific Writing in Mobile Apps and Technology Research Area II	8	
RSCH6268001	Global EES II (Self-Management, Planning & Organizing, Initiative & Enterprise)	4	

Certified Community Development Track

Code	Course Name	SCU	Total
Enrichment Program I			20
CMDV6161001	Community Outreach Project Implementation	8	
CMDV6308001	Community Outreach Project Design in Mobile Applications Project	8	
CMDV6258001	Employability and Entrepreneurial Skills in Mobile Application and Technology Community	4	
Enrichment Program II			20
CMDV6186001	Community Development Project Implementation	8	
CMDV6309001	Community Development Project Design in Mobile Application Project	8	
CMDV6195001	Employability and Entrepreneurial Skills in Mobile Application and Technology Community Development	4	

Certified Study Abroad Track

Code	Course Name	SCU	Total
Elective courses list for study abroad*			
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	
GLOB6008001	Elective Course for Study Abroad 4	4	
GLOB6009001	Elective Course for Study Abroad 5	2	
GLOB6010001	Elective Course for Study Abroad 6	2	20
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			
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	20
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 credit*.

Certified Specific Independent Study

Code	Course Name	SCU	Total
Elective courses list for certified specific independent study*			
Enrichment Program I			
MICR6033001	Course Certification I	3	
MICR6034001	Technical Skill Enrichment I	4	
MICR6035001	Industrial Project I	9	20
MICR6036001	Soft Skill Enrichment I	4	
MICR6001001	Elective Course for Specific Independent Study 1	8	
MICR6002001	Elective Course for Specific Independent Study 2	8	

Code	Course Name	SCU	Total
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	
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)			
ISYS6829001	Digital Technology and Transformation	4	20
ISYS6830001	Data Analytics for Business	6	
ISYS6831001	Applied Technology in Information Systems*	4	
ISYS6806001	Strategic Planning for Information Systems	6	

Code	Course Name	SCU	Total
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)			
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.	CHAR6013001	Character Building: Pancasila	B
2.	ENTR6511001	Entrepreneurship: Market Validation	C
3.	COMP6047001	Algorithm and Programming*	C
4.	COMP6048001	Data Structures*	C
5.	COMP6798001	Program Design Methods*	C
6.	COMP6100001	Software Engineering*	C
7.	COMP6799001	Database Technology	C
8.	COMP6697001	Operating System	C

*) Tutorial & Multipaper