

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 according 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 Machinery), 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** (AOL) | 4/2 | |
| | COMP6798001 | Program Design Methods* (AOL) | 2 | |
| | MOBI6074001 | Introduction to Mobile Technology & Programming*&*** (AOL) | 4 | |
| | Foreign Language Courses | | 0 | |
| 2 | MATH6031001 | Calculus | 4 | 20 |
| | COMP6048001 | Data Structures*&*** (AOL) | 4/2 | |
| | STAT6171001 | Basic Statistics | 2 | |

| Sem | Code | Course Name | SCU | Total |
|-----|---------------------------------|---|------------------------------|-------|
| | MATH6183001 | Scientific Computing (AOL) | 2/1 | |
| | MOBI6069001 | Wearable Technology*&*** | 3 | |
| | ENTR6509001 | Entrepreneurship: Ideation | 2 | |
| | Foreign Language Courses | | 0 | |
| 3 | CHAR6014001 | Character Building: Kewarganegaraan | 2 | 22 |
| | COMP6049001 | Algorithm Design and Analysis* (AOL) | 4 | |
| | SCIE6063001 | Computational Physics (AOL) | 2/1 | |
| | COMP6065001 | Artificial Intelligence** (AOL) | 4 | |
| | MOBI6026001 | Mobile Cloud Computing* | 2/2 | |
| | COMP6799001 | Database Technology** (AOL) | 2/1 | |
| | LANG6027001 | Indonesian | 2 | |
| | Foreign Language Courses | | 0 | |
| 4 | CPEN6247001 | Computer Networks (AOL) | 2/1 | 21 |
| | MOBI6006001 | Mobile Community Solution*&*** | 2/2 | |
| | COMP6100001 | Software Engineering** (AOL) | 4 | |
| | SCIE6062001 | Computational Biology | 2/1 | |
| | COMP6062001 | Compilation Techniques | 4 | |
| | COMP6800001 | Human and Computer Interaction** (AOL) | 2/1 | |
| | Foreign Language Courses | | 0 | |
| 5 | CHAR6015001 | Character Building: Agama | 2 | 17 |
| | COMP6696001 | Research Methodology in Computer Science* (AOL) | 2 | |
| | COMP6697001 | Operating System (AOL) | 2 | |
| | ENTR6511001 | Entrepreneurship: Market Validation | 2 | |
| | MOBI6009001 | Mobile Multimedia Solution** (AOL) | 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

-) (AOL) - Assurance of Learning Process System

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

Foreign Language Courses:

Students will take foreign language courses according to Beelingua Placement Test results. See foreign language courses appendix for the details. Students must pass with a minimum Grade of C.

Appendix Foreign Language Courses

| Foreign Language Courses | | SCU |
|--------------------------|-------------------------------|-----|
| ENGL6253001 | English for Frontrunners | 0 |
| ENGL6254001 | English for Independent Users | 0 |
| ENGL6255001 | English for Professionals | 0 |
| JAPN6190001 | Basic Japanese Language* | 0 |
| CHIN6163001 | Basic Chinese Language* | 0 |

*) This course is optional for students

1. Students with Beelingua Placement Test score less than 60 are required to take English for Frontrunners and English for Independent Users.
2. Students with Beelingua Placement Test score between 60 and 99 are required to take English for Independent Users and English for Professionals.
3. Students with Beelingua Placement Test score greater than 99 are required to take English for Professionals. Additionally, students may choose to take either Basic Japanese Language or Basic Chinese Language.
4. Students are required to pass the foreign language courses before they take enrichment.
5. Students can see the requirements to pass the foreign language courses at BINUSMAYA – Beelingua

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 | |
| 18 | | v | | | | | | | | | | | | v | |
| 19 | | | | | | v | | v | | | | | | | |
| 20 | | | | | | v | | | | | v | | | | |
| 21 | | | | | | v | | | | | | v | | | |

Note:

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

Description:

1. Students will take only one track in each Enrichment Program.
2. Students who failed in Enrichment Program I can retake according to the table above.
3. As for Enrichment Program II, students who failed should retake the same track, except Certified Specific Independent Study.
4. For those who failed in the Certified Study Abroad track will retake the courses from the home campus.

Certified Internship Track

| Code | Course Name | SCU | Total |
|------------------------------|---|-----|-------|
| Enrichment Program I | | | |
| MOBI6048001 | Industrial Experience | 8 | 20 |
| MOBI6066001 | Mobile Application & Technology Practice in Industrial Experience | 8 | |
| MOBI6038001 | EES in Mobile Industry | 4 | |
| Enrichment Program II | | | |
| MOBI6051001 | Professional Experience | 8 | 20 |
| 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 | | | |
| ENTR6645001 | New Venture Initiation in Mobile Application | 8 | 20 |
| ENTR6646001 | Product Development Process in Mobile Application Project | 8 | |
| ENTR6541001 | EES in New Mobile Application and Technology Business | 4 | |
| Enrichment Program II | | | |
| ENTR6647001 | Product Launching in Mobile Application | 8 | 20 |
| 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 | | | |
| RSCH6245001 | Research Experience I | 8 | 20 |
| 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 | | | |
| RSCH6260001 | Research Experience II | 8 | 20 |
| 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 | 20 |
| 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 | |
| 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 | 20 |
| 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 credit.

Certified Specific Independent Study

| Code | Course Name | SCU | Total |
|--|--|-----|-------|
| Elective courses list for certified specific independent study* | | | |
| CSIS6001001 | Course Certification | 3 | 20 |
| CSIS6002001 | Technical Skill Enrichment | 4 | |
| CSIS6003001 | Industrial Project | 9 | |
| CSIS6004001 | Soft Skill Enrichment | 4 | |
| CSIS6005001 | Elective Course for Specific Independent Study 1 | 8 | |
| CSIS6006001 | Elective Course for Specific Independent Study 2 | 8 | |
| CSIS6007001 | Elective Course for Specific Independent Study 3 | 6 | |

| Code | Course Name | SCU | Total |
|-------------|---|-----|-------|
| CSIS6008001 | Elective Course for Specific Independent Study 4 | 6 | |
| CSIS6009001 | Elective Course for Specific Independent Study 5 | 6 | |
| CSIS6010001 | Elective Course for Specific Independent Study 6 | 5 | |
| CSIS6011001 | Elective Course for Specific Independent Study 7 | 5 | |
| CSIS6012001 | Elective Course for Specific Independent Study 8 | 5 | |
| CSIS6013001 | Elective Course for Specific Independent Study 9 | 5 | |
| CSIS6014001 | Elective Course for Specific Independent Study 10 | 4 | |
| CSIS6015001 | Elective Course for Specific Independent Study 11 | 4 | |
| CSIS6016001 | Elective Course for Specific Independent Study 12 | 4 | |
| CSIS6017001 | Elective Course for Specific Independent Study 13 | 4 | |
| CSIS6018001 | Elective Course for Specific Independent Study 14 | 4 | |
| CSIS6019001 | Elective Course for Specific Independent Study 15 | 3 | |
| CSIS6020001 | Elective Course for Specific Independent Study 16 | 3 | |
| CSIS6021001 | Elective Course for Specific Independent Study 17 | 3 | |
| CSIS6022001 | Elective Course for Specific Independent Study 18 | 3 | |
| CSIS6023001 | Elective Course for Specific Independent Study 19 | 3 | |
| CSIS6024001 | Elective Course for Specific Independent Study 20 | 3 | |
| CSIS6025001 | Elective Course for Specific Independent Study 21 | 2 | |
| CSIS6026001 | Elective Course for Specific Independent Study 22 | 2 | |
| CSIS6027001 | Elective Course for Specific Independent Study 23 | 2 | |
| CSIS6028001 | Elective Course for Specific Independent Study 24 | 2 | |
| CSIS6029001 | Elective Course for Specific Independent Study 25 | 2 | |
| CSIS6030001 | Elective Course for Specific Independent Study 26 | 2 | |
| CSIS6031001 | Elective Course for Specific Independent Study 27 | 2 | |
| CSIS6032001 | Elective Course for Specific Independent Study 28 | 2 | |
| CSIS6033001 | Elective Course for Specific Independent Study 29 | 1 | |
| CSIS6034001 | Elective Course for Specific Independent Study 30 | 1 | |
| CSIS6035001 | Elective Course for Specific Independent Study 31 | 1 | |
| CSIS6036001 | 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 | | | 20 |
| COMP6815001 | IT Disaster Recovery | 4 | |
| COMP6816001 | Wireless and Cloud Computing Technologies | 4 | |
| COMP6817001 | Internet Tools and Services | 4 | |
| COMP6818001 | Cyber Risk Management | 4 | |
| COMP6819001 | Knowledge Engineering | 4 | |

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. | COMP6047001 | Algorithm and Programming* | C |
| 3. | COMP6798001 | Program Design Methods* | C |
| 4. | COMP6048001 | Data Structures* | C |
| 5. | COMP6799001 | Database Technology | C |
| 6. | COMP6100001 | Software Engineering* | C |
| 7. | COMP6697001 | Operating System | C |
| 8. | ENTR6511001 | Entrepreneurship: Market Validation | C |

*) Tutorial & Multipaper

