

# Master of Computer Science

## Introduction

It is expected that the graduates Master of Computer Science Study Program have competency as a leader with vision and future insight, able to design and apply information technology that will improve the work performance of the organization.

It emphasizes on following aspects:

1. Advise  
Able to provide input about products, services, strategy and structure organization, particularly regarding technical competency of Information and Communication Technology (ICT).
2. Value/Assess  
Doing research on products, copyrights, facilities and human resources in the context of organization business and the possibility of new potential business.
3. Vision  
Building a vision about possible technology and its impact on the organization's business area, and how to use the benefit with its changes.
4. Communicate  
Communicating the organization's vision to the staff in supporting the change and increasing the organization's profit.
5. Manage  
Managing the development and operation of the ICT division to support the utilization of technology for the organization and preparing the expert for new technology.
6. Innovate  
Get involved in research and product development director, especially for the creative process and its utility evaluation.

Supplies for the Post-Graduate Study Program consist of two aspects: information technology and business knowledge where it is expected that the graduates will have a commanding view of the process and performance of business corporate. The supply focuses on information technology referring to research, management and the latest technology update.

Technical infrastructure and security aspects of Information Technology is the core of the subject given, including IT Risk Management and Audit, Network and Cyber Security, and Enterprise Network. The technical aspect which has become a new trend, such as the Internet of Things (IoT), Big data analytics, Deep Learning and Its Applications, and Business Intelligence and Analytics turn into varieties in delivering the materials.

## Vision

An ICT graduate program that fosters a world class environment for ICT leaders to thrive intellectually and professionally in building and serving the nation.

## Mission

The mission of Master of Computer Science are to:

1. Educating BINUSIAN through ICT curriculum that meets global standards and industrial needs to promote continuous improvement of science and technology;
2. Generating innovative ICT technologies through high impact research to resolve the nation's issues;
3. Fostering BINUSIAN as lifelong learners through self-enrichment to stay abreast with advancement in ICT technology by leveraging on available resources;
4. Empowering BINUSIAN with knowledge and skills in ICT technology to contribute in improving society's quality of life.

## Program Objective

The objectives of the program are:

1. To provide students with ICT best practices in order to increase their competitive advantage by applying the leading technologies;
2. To provide students with advanced knowledge in innovation, technology, and leadership in order to pursue efficient as well as effective business processes;
3. To provide students with international experience in research and development in order to improve humanity as well as environmental aspects.

## Student Outcomes

After completing the study, graduates are:

1. Able to propose solutions to the problems by implementing Information Technology in a dynamic and complex environment in the form of innovative work tested through the research and development of information technology in accordance with scientific study and professional practice;
2. Able to develop software applications to solve the problems with Information Technology in the complex and dynamic environment using scientific research approach;
3. Able to develop methods and Information Technology using inter and multidisciplinary research approaches to produce tested innovative work and commercialized applicative potential in the information technology field;
4. Able to manage Information Technology Infrastructure effectively in an Enterprise based on good governance;
5. Able to develop science and Information and Communication Technology using artificial intelligence method to produce innovative products that can be applied in various fields;
6. Able to develop science and Information and Communication Technologies using governance method with security system of the infrastructure network to produce blueprint Secure System and Technology Information in an organization.

## Prospective career of the graduates

Master of Computer Science graduates have the opportunity to fill positions at prestigious firms such as IT specialist, IT Lecturer, Data analyst, Data scientist, Data Architect, Data Engineer, Computer network architect, IT security analyst, IT Business Creator, IT Consultant, IT Solution and System Integrator.

## Curriculum

To achieve the vision of a "world-class graduate program", it is necessary to provide subjects with conceptual and fundamental content as well as practical that refers to an International standard curriculum, as well as courses that are filled with Information Technology applications. In addition, to achieve continuous development, the curriculum

is revised regularly primarily to anticipate the development of the labour market and the rapidly expanding knowledge in information technology. Some references are used in the determination of current technology trends, such as Gartner, Inc. on Top 12 Strategic Technology Trends for 2022 and IEEE-CS Top Technology Trends 2022. The two studies suggest that Cloud Computing, Big Data, the Internet of Things, and Cybersecurity are the four main technological trends by 2022. Therefore, the MTI Study Program has developed a curriculum to follow the trend of this technology. In addition to the government regulations that require publication for every graduate of the S2 program, the MTI Study Program has developed a curriculum to ensure that each student can create and has scientific publications before graduating with a research enrichment approach for each course. In addition, based on the results of focus group discussions with students it is found that the potential of new students coming from an industry that quite a lot come from various areas spread. They are constrained by time and place because they have to work during study time, so it is less flexible if they have to come to campus every day. Therefore, MTI Study Program develops a curriculum with a more flexible learning system which does not reduce the quality of learning by using a blended learning system.

## Course Structure

### SEMESTER 1

Course	SCU
COMP8041041 Internet of Things (IoT)	4
COMP8042041 IT Risk Management and Audit	4
RSCH8079041 IT Research Methodology	4
<b>Stream: Data Science</b>	
COMP8043041 Machine Learning	4
<b>Stream: Information Security Management</b>	
CPEN8005041 Network and Cyber Security	4
<b>Total SCU</b>	<b>16</b>

### SEMESTER 2

Course	SCU
RSCH8124041 Pre-Thesis	2
RSCH8132041 Seminar 1	1
COMP8035041 Big Data Analytics	4
<b>Stream: Data Science</b>	
COMP8044041 Deep Learning and Its Applications	4
COMP8047041 Business Intelligence and Analytics	4
<b>Stream: Information Security Management</b>	
CPEN8006041 Enterprise Network	4
COMP8046041 Fundamental of Cyber Security	4
<b>Total SCU</b>	<b>15</b>

**SEMESTER 3**

<b>Course</b>		<b>SCU</b>
RSCH8133041	Seminar 2	1
RSCH8125041	Thesis	4
<b>Total SCU</b>		<b>5</b>
<b>Cumulative SCU</b>		<b>36</b>