

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

A world-class computer science graduate program fostering and empowering leaders and professionals in intelligent computing to excel intellectually and professionally in building and serving the nation.

Mission

The mission of Master of Computer Science are to:

1. Providing globally recognized high-quality advanced education in computer science with a focus on the development of intelligent computing to meet the evolving demands of industry and society,

2. Advancing scientific and technological innovation through high-impact, interdisciplinary research to address national and global challenges in sustainability, digital transformation, and technological resilience,
3. Fostering a culture of lifelong learning, digital leadership, and continuous self-development to strengthen excellence in research, teaching, and community engagement aligned with global standards and BINUSIAN values,
4. Empowering the society, industry, and policymaker through data-driven innovation, digital transformation initiatives, and community service programs that enhance the quality of life and contribute to sustainable national and global development.

Program Objective

The objectives of the program are:

1. Producing graduates with competitive advantages through the assignment of best practices in computer science in the field of intelligent computing, through the implementation of impactful cutting-edge technologies,
2. Producing graduates with advanced knowledge in innovation, technology, and leadership to drive efficient, effective, and high-quality business processes,
3. Producing graduates with international exposure in research and development to strengthen humanitarian values as well as fostering and empowering the society and protecting the environment.

Student Outcomes

After completing the study, graduates are:

1. Able to propose and develop innovative solutions to complex and dynamic problems by applying Computer Science in Intelligent Computing field, validated through research and development, in accordance with scientific principles and professional practice.;
2. Able to develop intelligent software solutions and manage information technology infrastructure to address complex and dynamic problems through a scientific research approach and effective IT governance;
3. Able to develop methods in Computer Science using inter and multidisciplinary research approaches to produce tested innovative work and commercialized applicative potential in the Intelligent Computing field;
4. Able to develop Computer Science solutions using data analytics methods to produce innovative products that can be applied in various fields;
5. Able to develop Computer Science solutions using governance method with security system of the infrastructure network to produce blueprint Secure Information Technology System in an organization;
6. Able to develop Computer Science solutions using artificial intelligence–based control, perception, and decision-making methods, contributing to advancement in robotics and autonomous systems.

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 MCS 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 MCS 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, MCS 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
COMP8078041 Intelligent Internet of Things	4
COMP8042041 IT Risk Management and Audit	4
RSCH8079041 IT Research Methodology	4
Stream: Data Science	
COMP8079041 Applied Machine Learning	4
Stream: Information Security Management	
CPEN8005041 Network and Cyber Security	4
Stream: Intelligent Robotics and Autonomous System	
COMP8075041 Intelligent Control of Robotic Systems	4
Total SCU	16

SEMESTER 2

Course	SCU
RSCH8124041 Pre-Thesis	2
RSCH8192041 Research Writing I	1
Stream: Data Science	
COMP8044041 Deep Learning and Its Applications	4
COMP8047041 Business Intelligence and Analytics	4
Stream: Information Security Management	
CPEN8007041 Applied Cyber Security in Digital Applications	4
CPEN8006041 Enterprise Network	4
Stream: Intelligent Robotics and Autonomous System	
COMP8076041 Robot Vision and Sensor Fusion	4
COMP8077041 Artificial Intelligence for Robotic Applications	4
Total SCU	11

SEMESTER 3

Course	SCU
RSCH8193041 Research Writing II	1
RSCH8168041 Research Publication	4
RSCH8125041 Thesis	4
Free Electives*	4
Total SCU	13
Cumulative SCU	40

*Details of the free electives are available in the Appendix: Free Electives

Appendix: Free Electives

No	Course Owner Department	Course Code	Course Name	SCU	Semester
1	Master of Computer Science	COMP8035041	Big Data Analytics	4	3
2	Master of Information Systems Management	ISYS8052042	Advanced Topics in Management Information Systems	4	3
3	Master of Information Systems Management	ISYS8050042	Digital Business and Transformation	4	3
4	Master of Industrial Engineering	ISYE8038045	Industrial Digital Transformation Strategy	4	3
5	Master of Communication	COMM8003043	Media Relation Strategy	4	3
6	Master of Communication	COMM8007043	Branding in Strategic Communication	4	3
7	Master of Communication	COMM8011043	Management of Media Convergence	4	3
8	Master of Accounting	ACCT8018044	Risk Management and Risk Decision Analytics	4	3
9	Master of Accounting	ACCT8008044	Cases on Forensic Accounting and Corporate Governance	4	3
10	Master of Design	ENTR8020067	Design Innovation in Business	4	3
11	Master of Design	DSGN8004067	Design for Sustainability	4	3
12	Master of Laws	LAWS8036058	Comparative Law in Contemporary Business Practices	4	3