หลักสูตรวิทยาศาสตรมหาบัณฑิต
สาขาวิชาความมั่นคงไซเบอร์และการประกันสารสนเทศ
(หลักสูตรนานาชาติ/หลักสูตรปรับปรุง พ.ศ. ๒๕๖๗)

MASTER OF SCIENCE PROGRAM
IN
CYBER SECURITY AND INFORMATION ASSURANCE
(INTERNATIONAL PROGRAM/ REVISED PROGRAM IN 2024)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

AND

FACULTY OF GRADUATE STUDIES

MAHIDOL UNIVERSITY

(REGULAR AND SPECIAL PROGRAM)

CONTENT

Appendix

Master of Science Program in Cyber Security and Information Assurance
(International Program/Revised Program 2024)

Name of Institution Mahidol University

Campus/Faculty/Department Faculty of Information and Communication Technology

Section 1 General Information

1. Curriculum Name

Thai หลักสูตรวิทยาศาสตรมหาบัณฑิต สาขาวิชาความมั่นคงไซเบอร์และการประกันสารสนเทศ (หลักสูตรนานาชาติ)

English Master of Science Program in Cyber Security and Information Assurance (International Program)

2. Name of Degree and Major

Full Title	Thai:	วิทยาศาสตรมหาบัณฑิต (ความมั่นคงไซเบอร์และการประกันสารสนเทศ)
Abbreviation	Thai:	วท.ม. (ความมั่นคงไซเบอร์และการประกันสารสนเทศ)
Full Title	English:	Master of Science (Cyber Security and Information Assurance)
Abbreviation	English:	M.Sc. (Cyber Security and Information Assurance)

3. Major Subjects None

4. Required Credits: not less than 36 credits

5. Curriculum Characteristics

5.1 **Curriculum type/model:** Master's Degree

5.2 **Language:** English

5.3 **Recruitment:** Both Thai and international candidates

5.4 **Collaboration with Other Universities:** None

5.5 **Graduate Degrees Offered to the Graduates:** One degree

6. Curriculum Status and Curriculum Approval

6.1 Revised Program in 2024

6.2 Starting in semester 1, academic year 2024 onwards

6.3 Curriculum committee approved the program in its meeting 9/2023 on July 31, 2023

6.4 The Mahidol University Council approved the program in its meeting the 598 meeting on November 15, 2023

7. Readiness to Implement/Promote the Curriculum

The curriculum is ready to be announced and has met the quality and standards requirements of the Thai Qualification Framework for Higher Education 2022 in academic year 2026 (2 years after the starting of the program).

8. Career of the Graduates

8.1 Security System Developer

8.2 Data Security System Administrator

8.3 Software Security System Administrator

8.4 Network and Server System Administrator

8.5 Network and Server Security System Administrator

8.6 Researcher in Cyber Security and Information Assurance

8.7 Consultant in Cyber Security and Information Assurance

8.8 Security System Audit

9. Name, ID Number, Title and Degree of the Faculty in Charge of the Program

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
1.	x-xxxx-xxxxx-xx-x Associate Professor Dr. Vasaka Visoottiviseth	Ph.D. (Computer Engineering) Nara Institute of Science and Technology, Japan M.Eng. (Computer Engineering) Tokyo University of Agriculture and Technology, Japan B.Eng. (Computer Engineering) Tokyo University of Agriculture and Technology, Japan	Faculty of Information and Communication Technology

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
2.	x-xxxx-xxxxx-xx-x Lecturer Dr. Assadarat Khurat	Dr.-Ing. (Computer Security) Hamburg University of Technology, Germany M.Sc. (Information and Communication Systems) Hamburg University of Technology, Germany B.Eng. (Telecommunication Engineering) 2nd Class Honor King Mongkut's Institute of Technology Ladkrabang	Faculty of Information and Communication Technology
3.	x-xxxx-xxxxx-xx-x Lecturer Dr. Dolvara Guna-Tilaka	Ph.D. (Computer Science) Washington University in Saint Louis, USA M.Sc. (Computer Science) Washington University in Saint Louis, USA B.Sc. (Information and Communication Technology) 1st Class Honor Mahidol University	Faculty of Information and Communication Technology
4.	x-xxxx-xxxxx-xx-x Lecturer Dr. Songpon Teerakanok	D.Eng. (Information Science and Engineering) Ritsumeikan University, Japan M.Eng. (Information Science and Engineering) Ritsumeikan University,Japan B.Eng. (Computer Engineering) Prince of Songkla University	Faculty of Information and Communication Technology

10. Venue for Instruction

Faculty of Information and Communication Technology, Mahidol University

11. External Factors to Be Considered in Curriculum Planning

11.1 Economic Situation/Development

This curriculum follows Thailand's 20-Year National Strategy, which describes a vision for improving the nation's competitiveness in economy and human quality development, with the aim of increasing income-per-capita and becoming a developed country. This curriculum supports the National Strategy in 2 different areas including

Strategy 2: Competitiveness Development, and

Strategy 3: Human Resource Development.

In addition to the 20-Year National Strategy, the Royal Thai Government proposes the Thailand 4.0 policy which focuses on innovation along with the Thirteenth National Economic and Social Development Plan (2023 – 2027), which has several strategies related to this curriculum as follows:

Strategy 1: Strategy for Strengthening and Realizing the Potential of Human Capital,

Strategy 3: Strategy for Strengthening the Economy,

Strategy 5: Strategy for Strengthening the National Security for the National Development towards Prosperity and Sustainability,

Strategy 8: Strategy for the Development of Science, Technology, Research and Innovation

The 20-Year National Strategy and the Thirteenth National Economic and Social Development Plan mention the aim of becoming a developed country by using technology to foster innovation. Therefore, it is necessary to develop organizations and staff to have the potential to use various technologies for enhancing the innovation and the development of staffs' knowledge and abilities to prevent computer crime causing economic threats from both inside and outside the country. Which requires research developments for both new knowledge creation and the application of computer and information technology blended with the strengths in Thai society. It is also corresponding to the strategic goals of the Ministry of Education and the strategic plan of Mahidol University which sets the goals of being a leading university excellence in research and making full use of information and communication technology. It is therefore necessary to have researchers and experts in Cyber Security and Information Assurance who are ready to produce quality research or innovation to Thai society, which follows the philosophy of the Master of Science Program in Cyber Security and Information Assurance.

11.2 Social and Cultural Situation/Development

The development of this curriculum takes the social and cultural situations into account. We are in the era of communication without borders. Everyone can easily and quickly connect to each other from everywhere and every time via the Internet, by using various devices, such as

desktop computers, laptops, tablets, and mobile phones. Computing technology is now being used in various kinds of business and social activities. New economic and social activities are being created. The digital economy development initiative for the country aims at creating innovative businesses and enhancing business operations. High speed networks need access to vast amounts of data, from anywhere in the country, at any time, in order to enhance business and industry. Social networking has become the norm, and people communicate with each other more conveniently than before. People can now have inexpensive and convenient access to various services and applications from the Internet. This brings changes to the way people do businesses and communicate, and this development significantly affects our behavior in business, social and cultural interactions.

At the same time, many new Computer/Internet crimes emerge constantly. In order to maintain safe social, cultural, national and personal values, this curriculum is set up with the task of educating new generations of students about how to protect, prevent and secure our organizations and networks. Our graduates will be equipped with the ethical knowledge required to appropriately choose and apply security knowledge which fits the Thai society and culture.

12. The Effects Mentioned in No.11.1 and 11.2 on Curriculum Development and Relevance to the Missions of the University/Institution

12.1 Curriculum Development

The world economy and society have changed quickly and dramatically in recent years due to the new innovation and technology. In turn, the new technology also brings new challenges to the world. For example, the Internet has changed how our society stays connected. However, cybersecurity issues such as phishing, and malware are increasing. One of the reasons for the rising cybersecurity issues in Thailand and the world is the lack of cybersecurity personnel. This curriculum aims to remedy that. In addition to its contents being up-to-date with new and advanced technology, its graduates must have sufficient knowledge and skills to develop and apply new technologies, for supporting new innovative businesses, and therefore improving the competitiveness of the society and the country. This follows the mission of Mahidol University and the Faculty of ICT, which is to provide excellence in education and research for the country. Mahidol University also aims to produce our graduates with cybersecurity professional ethics.

12.2 Relevance to the Missions of the University/ Institution

Mahidol University has a mission to develop excellence in health, science, art and innovation on the basis of morality for Thai society and the benefit of mankind. The Faculty of Information and Communication Technology (ICT) realizes the importance of creating competent personnel able to develop new knowledge and innovations through outstanding curriculums. Its ultimate goal is to produce research that

has the characteristics of integrating knowledge of many fields of science. This will result in new knowledge that is useful and able to transfer to the community and society for sustainable development of the country.

The Master of Science Program in Cybersecurity and Information Assurance is developed to be consistent with the missions of the Faculty of ICT and Mahidol University. The missions strive for excellence in teaching and research with a commitment to produce competent and specialized graduates in Cybersecurity and Information Assurance with a high level of English proficiency and be highly moral members of society. The program promotes and focuses on the use of computer technology, Cyber Security and Information Assurance on the basis of professional morals and ethics. The program also pays much attention to the impact on information recipients and society concerning Thai culture. Because information comes in many forms and is rapidly transmitted through the ubiquitous communication network, it is possible to quickly acquire cultures from foreign countries that result in change of people behavior, attitudes and values of individuals in society. This program, therefore, focuses on conducting research, both the creation of new knowledge and applying existing knowledge of cybersecurity and information assurance together with other sciences. Furthermore, the program still concerns transferable knowledge and being practical in the actual workplaces including the use of knowledge for conducting the research for further research and development.

In addition, Mahidol University has a strong policy to use information and communication technology as the basis in responding to the prevention and tracking of current cyber and social problems. This program aims to develop high quality personnel in cybersecurity and information assurance who will be the important workforce in the development of cybersecurity and information security systems in an era where society communicates and transmits information quickly through the high-speed network. This creates more opportunities for information piracy and has more channels to attack. So, to allow the operations of various agencies, both public and private sectors to be stable, safe, efficient and effective with good system protection, and also the computer network and information system of the organization be save from internal and external threats, the preparation of competent personnel able to learn on their own must be ready to cope with these changes. Because information technology is changing very rapidly, we must prepare for internationalization and be able to adapt to global changes. This program can respond to the massive shortage of personnel in this field both locally and globally.

13. Collaboration with Other Curricula of the University

none

Section 2 Information about the Curriculum

1. Philosophy, Justification, and Objectives of the Curriculum

1.1 Philosophy and Justification of the Curriculum

The MUCY curriculum focuses on producing graduates who have the knowledge and skills in cyber security and information assurance. These graduates are equipped with the abilities to apply security knowledge and principles to design, implement, and evaluate cyber security and information assurance systems for their organization, and to collect and analyze data to perform computer/digital forensics facilitating the investigation of cyber crimes.

Therefore, the MUCY graduates are expected to play an important role in this digital era in the design and development of cyber security and information assurance solutions for protecting organizations' computer systems and networks, and other digital assets from cyber threats, and for securing and increasing efficiency of the online operations and services. In addition, the program helps produce high-quality graduates to supply to both private and government organizations/agencies in response to the increased demands for expertise in the fields of cyber security and information assurance.

1.2 Objectives of the Program

After graduation from this program, graduates achieve the qualifications in accordance with the qualification standard for higher education as follows

1.2.1 Have knowledge in the principles and theory of cybersecurity and information assurance

1.2.2 Develop the ability to present, analyze and classify facts, and is capable of developing framework or information systems to address security issues using research methodology and sound knowledge of cybersecurity and information assurance

1.2.3 Adhere academic and IT professional morals and ethics

1.2.4 Have self-responsibility, social interaction, leadership, and teamwork skills

1.2 Program Learning Outcomes (PLOs)

By the end of the study, graduates will be able to:

PLO1: Apply the concepts, and the theories in cyber security and information assurance to its IT applications as well as other related disciplines to assure security of IT systems

PLO2:

PLO2.1 Create a new framework in cyber security and information assurance through original research (Plan 1)

PLO2.2 Assess and select practical solutions in cyber security and information assurance to improve computer system security against threats by using research methodology (Plan 2)

PLO3: Apply professional-and-ethical responsibility and morality in professional environments and society

PLO4: Demonstrate interpersonal skills, and the senses of responsibility and accountability, for operating in the assigned role and task within the team/organizational setting

2. Plan for Development and Improvement

Plan for Development/Revision	Strategies	Evidences/Indexes
Revising Master of Science in Cyber Security and Information Assurance program to comply with the Qualification Standards for Higher Education and AUN-QA Standard.	1. Develop curriculum by using fundamental schemes from international curriculum standards 2. Follow-up, review, evaluate, and revise the curriculum according to the curriculum revision cycle	1. Curriculum and course evaluation results 2. Meeting reports of the curriculum administrative committee
Revising the curriculum to satisfy employers' and social demand in order to cope with rapid change of computing technology	1. Revising the curriculum and course content to satisfy the expected learning outcomes of employers and society 2. Survey employers' and social demand	1. Report of employers' and social demands 2. Evaluation report of employer satisfaction for graduates
Faculty development for building research experience and capability in order to apply knowledge and experience in cyber security and information assurance to improve teaching and research work	1. Support faculty and staff research activities 2. Support faculty to provide academic service to agencies within and outside university	1. Publications by faculty in the curriculum 2. Academic services by faculty in the curriculum

Section 3 Educational Management System, Curriculum Implementation, and Structure

1. Educational Management System

1.1 **System:** Two Semester Credit system. 1 Academic Year consists of 2 Regular Semesters, each with not less than 15 weeks of study.

1.2 **Summer Session** The program does not offer a summer session.

1.3 **Credit Equivalence to Semester System** None.

2. Curriculum Implementation

2.1 Teaching Schedule

Weekdays evening (6:00 – 9:00 pm.) and weekends (9:00 am. – 9:00 pm.).

Semester 1 August – December

Semester 2 January – May

2.2 Qualifications of Prospective Students

2.2.1 Holding a Bachelor's degree or equivalent in Computer Science, Computer Engineering, Information Technology, Electrical Engineering, or computer-related fields or holding a Bachelor's degree with at least 15 credits of computer-related courses or holding a Bachelor's degree with working experiences at least one year in computer-related field.

2.2.2 Other requirements shall follow those that specified by the Faculty of Graduate Studies

2.2.3 Qualifications different from 2.2.2 may be considered by the Program Administrative Committee and the Dean of the Faculty of Graduate Studies.

2.3 Problems Encountered by New Students

New students need to improve learning skills for studying in graduate programs, especially the ability to self-study, analyze problems, and research. They need to practice using English in real life scenarios, such as communication with friends and faculty members. In addition, time management is very important for students who are also working while studying for a graduate degree within the study plan of the program.

2.4 Strategies for Problem Solving/Limited Requirements in No. 2.3

Problems of New Students	Strategies for Problem Solving
Student adaptation for studying in master's degree and time management.	Providing guidance on learning skills during the new student orientation meeting and providing academic advisor to students to help guide students on a suitable study plan and other aspects.
English skills	Providing extra English courses to students who have elementary and intermediate English skills level by covering English communication skills: listening, speaking, reading, writing and presentation.
Research and problem solving skills	Providing an academic advisor to students to help guide students on research methodology and research writing.

2.5 Five-Year-Plan for Recruitment and Graduation of Students

Plan 1 Academic

Academic Year	2024	2025	2026	2027	2028
1st	2	2	2	2	2
2nd	-	2	2	2	2
Cumulative numbers	2	4	4	4	4
Expected number of students graduated	-	2	2	2	2

Plan 2 Profession

Academic Year	2024	2025	2026	2027	2028
1st	5	5	5	5	5
2nd	-	5	5	5	5
Cumulative numbers	5	10	10	10	10
Expected number of students graduated	-	5	5	5	5

2.6 Budget based on the plan

Plan 1 Academic

Registration fee	credits	Fee per credit	Amount (Baht)
Tuition fee	24	9,000	
Thesis registration fee	12		
Research supplies fee			
Equipment and facilities maintenance fee			
Total income per student			

Estimated expenses

Variable expenses per student	**Amount (Baht)**
College/university allocation	
Position allowance of thesis advisor and committee	
Durable articles, Materials, Living Expenses, and Research Scholarship	
Total variable expenses per student	
Fixed expenses	
Teaching payment ● Lecture course 7 course x 15 times x 3 Hrs. ● Lecture course 1 courses x 15 times x 2 Hrs. ● Lecture course 1 courses x 15 times x 1 Hrs.	
Building cost, Utility fee (Electricity etc.)	92,500
Total Fixed expenses	**452,500**

Number of students at break-even point	2	persons
Cost of students at break-even point	898,900	Baht
Cost per student at break-even point	449,450	Baht

Plan 2 Profession

Registration fee	**credits**	**Fee per credit**	**Amount (Baht)**
Tuition fee	30	9,000	
Thesis registration fee	6		
Research supplies fee			
Equipment and facilities maintenance fee			
Total income per student			

Estimated expenses

Variable expenses per student	**Amount (Baht)**
College/university allocation	
Position allowance of thesis advisor and committee	
Durable articles, Materials, Living Expenses, and Research Scholarship	
Total variable expenses per student	
Fixed expenses	
Teaching payment ● Lecture course 9 course x 15 times x 3 Hrs. ● Lecture course 1 courses x 15 times x 2 Hrs.	

● Lecture course 1 courses x 15 times x 1 Hrs.	
Building cost, Utility fee (Electricity etc.)	115,600
Total Fixed expenses	**565,600**

Number of students at break-even point	3	persons
Cost of students at break-even point	997,600	Baht
Cost per student at break-even point	332,533.33	Baht

2.7 Educational System: Classroom Mode and Online Mode

2.8 Transfer of Credits, Courses and Cross University Registration

Transfer of credits is in compliance with Mahidol University's regulations on Graduate Studies. Should you need more information, please visit the Faculty of Graduate Studies website: www.grad.mahidol.ac.th.

3. Curriculum and Instructors

3.1 Curriculum

3.1.1 Number of credits (not less than) 36 credits

3.1.2 Curriculum Structure

The curriculum structure is set in compliance with the Announcement of The Commission on Higher Education Standard on the subject of Criteria and Standards of Graduate Studies B.E. 2565. The curriculum structure for this Master of Science degree, Plan 1 and Plan 2 are as follows:

	Plan 1 Academic (credits)	**Plan 2 Profession (credits)**
1. Required courses	18	18
2. Elective courses not less than	6	12
3. Thesis	12	-
4. Independent Study	-	6
Total not less than	**36**	**36**

3.1.3 Courses in the curriculum

1) Required Courses 18 credits

			Credits (lecture – practice – self-study)
ITCY	511	Computer and Network Security	3 (3-0-6)
ทสคม	๕๑๑	ความมั่นคงทางคอมพิวเตอร์และเครือข่าย	
ITCY	512	Information Security Management	3 (3-0-6)
ทสคม	๕๑๒	การจัดการความมั่นคงสารสนเทศ	
ITCY	513	Cyber Ethics and Law	2 (2-0-4)
ทสคม	๕๑๓	จริยธรรมและกฎหมายไซเบอร์	
ITCY	516	Research Methodology and Seminar	1 (1-0-2)
ทสคม	๕๑๖	วิทยาระเบียบวิธีวิจัยและสัมมนา	
ITCY	531	System Hardening and Penetration Testing	3 (3-0-6)
ทสคม	๕๓๑	การทำให้ระบบแข็งแกร่งและการทดสอบเจาะระบบ	
ITCY	541	Digital Forensics Technologies and Techniques	3 (3-0-6)
ทสคม	๕๔๑	เทคโนโลยีและเทคนิคทางนิติดิจิทัล	
ITCY	571	Information Assurance and Risk Management	3 (3-0-6)
ทสคม	๕๗๑	การประกันสารสนเทศและการจัดการความเสี่ยง	

2) Elective Courses

Students in Plan 1 (Academic) can choose to take the following courses at least 6 credits. Students in Plan 2 (Profession) can choose to take the following courses at least 12 credits:

			Credits (lecture – practice – self-study)
ITCY	514	Fraud Analysis and Detection	3 (3-0-6)
ทสคม	๕๑๔	การวิเคราะห์และการตรวจจับกลฉ้อฉล	
ITCY	535	Reverse Engineering and Malware Analysis	3 (3-0-6)
ทสคม	๕๓๕	วิศวกรรมผันกลับและการวิเคราะห์มัลแวร์	
ITCY	543	Network Forensics	3 (3-0-6)
ทสคม	๕๔๓	นิติเครือข่าย	
ITCY	545	Cloud Security	3 (3-0-6)
ทสคม	๕๔๕	ความมั่นคงของระบบคลาวด์	
ITCY	546	Mobile and IoT Security	3 (3-0-6)
ทสคม	๕๔๖	ความมั่นคงของระบบเคลื่อนที่และอินเตอร์เน็ตสรรพสิ่ง	
ITCY	552	Authentication Technology Management	3 (3-0-6)
ทสคม	๕๕๒	การจัดการเทคโนโลยีการยืนยันตัวตน	

			Credits (lecture – practice – self-study)
ITCY	553	Secure Software Design	3 (3-0-6)
ทสคม	๕๕๓	การออกแบบซอฟต์แวร์อย่างมั่นคง	
ITCY	562	Intrusion Detection and Prevention	3 (3-0-6)
ทสคม	๕๖๒	การตรวจจับและป้องกันการบุกรุก	
ITCY	581	Incident Response Management	3 (3-0-6)
ทสคม	๕๘๑	การจัดการโต้ตอบเหตุการณ์	
* ITCY	582	Blockchain Technology	3 (3-0-6)
ทสคม	๕๘๒	เทคโนโลยีบล็อกเชน	
* ITCY	583	Data Science for Cyber Security	3 (3-0-6)
ทสคม	๕๘๓	วิทยาการข้อมูลสำหรับความมั่นคงไซเบอร์	
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ทสคม	๕๙๑	หัวข้อพิเศษทางความมั่นคงและนิติไซเบอร์	
ITCY	592	Special Topics in Information Assurance	3 (3-0-6)
ทสคม	๕๙๒	หัวข้อพิเศษทางการประกันสารสนเทศ	

* new course

In addition to the elective courses mentioned above, a student may register for other graduate level courses from international programs offered by other faculties, both of Mahidol University and of other universities, according to the student's interest, with the approval of the curriculum committee and the advisor.

3) Thesis (12 credits)

			Credits (lecture – practice – self-study)
ITCY	698	Thesis	12 (0-36-0)
ทสคม	๖๙๘	วิทยานิพนธ์	

4) Independent Study (6 credits)

			Credits (lecture – practice – self-study)
* ITCY	696	Independent Study	6 (0-18-0)
ทสคม	๖๙๖	การค้นคว้าอิสระ	

* new course

3.1.4 Research Project (for Plan 1 / Plan 2)

(1) Research project in cyber security
(2) Research project in information security
(3) Research project in network system
(4) Research project in cryptography
(5) Research project in security engineering
(6) Research project in secure software design
(7) Research project in information assurance
(8) Research project in security management
(9) Research project in computer forensics
(10) Research project in network forensics
(11) Research project in intrusion detection and prevention
(12) Research project in ethical attacks

3.1.5 Definition of Course Codes

Course codes are defined as follows:

- The first two characters abbreviate the faculty offering the course.
- ทส (IT) is the abbreviation of the Faculty of Information and Communication Technology
- The latter two characters are an abbreviation of the department or the major offering the course.
- คม (CY) is the abbreviation of the Cyber Security and Information Assurance major.
- The 3 digit course number of form 5XX and 6XX indicates that the course is graduate level.

3.1.6 Study Plan

Plan 1 Academic

Year	Semester 1	
1	ITCY 511 Computer and Network Security	3 (3-0-6)
	ITCY 512 Information Security Management	3 (3-0-6)
	ITCY 513 Cyber Ethics and Law	2 (2-0-4)
	ITCY 516 Research Methodology and Seminar	1 (1-0-2)
	ITCY 541 Digital Forensics Technologies and Techniques	3 (3-0-6)
	Total 12 credits	
	Semester 2	
	ITCY 571 Information Assurance and Risk Management	3 (3-0-6)
	ITCY 531 System Hardening and Penetration Testing	3 (3-0-6)
	Elective Courses not less than	3 credits
	ITCY 698 Thesis	3 (0-9-0)
	(Developing the research topic, Reviewing literature and preparing for data collection)	
	Total 12 credits	
2	**Semester 1**	
	Elective Courses not less than	3 credits
	ITCY 698 Thesis	3 (0-9-0)
	(Conducting preliminary experiments, writing the proposal, and Proposing the thesis proposal)	
	Total 6 credits	
	Semester 2	
	ITCY 698 Thesis	6 (0-18-0)
	(Conducting experiments, Writing the thesis and thesis defense)	
	Total 6 credits	

Plan 2 Profession

Year	Semester 1	
1	ITCY 511 Computer and Network Security	3 (3-0-6)
	ITCY 512 Information Security Management	3 (3-0-6)
	ITCY 513 Cyber Ethics and Law	2 (2-0-4)
	ITCY 516 Research Methodology and Seminar	1 (1-0-2)
	ITCY 541 Digital Forensics Technologies and Techniques	3 (3-0-6)
	Total 12 credits	
	Semester 2	
	ITCY 571 Information Assurance and Risk Management	3 (3-0-6)
	ITCY 531 System Hardening and Penetration Testing	3 (3-0-6)
	Elective Courses not less than	6 credits
	Total 12 credits	
2	**Semester 1**	
	Comprehensive Examination	
	Elective Courses not less than	6 credits
	ITCY 696 Independent Study	3 (0-9-0)
	(Developing the independent study topic, Reviewing existing solutions and security threats, Assessing existing solutions, writing the proposal, and Proposing the independent study)	
	Total 9 credits	
	Semester 2	
	ITCY 696 Independent Study	3 (0-9-0)
	(Implementing and evaluating solutions, Preparing for defense, and defense)	
	Total 3 credits	

3.1.7 Course Description

Please see Appendix A.

3.2 Name, I.D. Number, Title and Degree of Instructors

3.2.1 Full time instructors of the curriculum (Please see Appendix B)

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
1.	x-xxxx-xxxxx-xx-x Associate Professor Dr. Vasaka Visoottiviseth	Ph.D. (Computer Engineering) Nara Institute of Science and Technology, Japan M.Eng. (Computer Engineering) Tokyo University of Agriculture and Technology, Japan B.Eng. (Computer Engineering) Tokyo University of Agriculture and Technology, Japan	Faculty of Information and Communication Technology
2.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Morakot Choetkiertikul	Ph.D. (Computer Science) University of Wollongong, Australia M.Sc. (Computer Science) Mahidol University B.Sc. (Information and Communication Technology) Mahidol University	Faculty of Information and Communication Technology
3.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Srisupa Palakvangsa Na Ayudhya	Ph.D. (Computation) University of Manchester, United Kingdom M.S. (Advanced Computing) Imperial College of Science, Technology and Medicine, United Kingdom B.Sc. (Computer Science) 1st Class Honor Thammasat University	Faculty of Information and Communication Technology
4.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Thanwadee Sunetnanta	Ph.D. (Distributed Software Engineering) Imperial College, United Kingdom M.Sc. (Foundation of Advanced Information Technology) Imperial College, United Kingdom B.Sc. (Computer Science) 2nd Class Honor Thammasat University	Faculty of Information and Communication Technology

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
5.	x-xxxx-xxxxx-xx-x Lecturer Dr. Assadarat Khurat	Dr.-Ing. (Computer Security) Hamburg University of Technology, Germany M.Sc. (Information and Communication Systems) Hamburg University of Technology, Germany B.Eng. (Telecommunication Engineering) 2nd Class Honor King Mongkut's Institute of Technology Ladkrabang	Faculty of Information and Communication Technology
6.	x-xxxx-xxxxx-xx-x Lecturer Dr. Chaiyong Ragkhitwetsagul	Ph.D. (Computer Science) University College London, United Kingdom M.S. (Information Technology) Carnegie Mellon University, USA B.Eng. (Computer Engineering) Kasetsart University	Faculty of Information and Communication Technology
7.	x-xxxx-xxxxx-xx-x Lecturer Dr. Dolvara Guna-Tilaka	Ph.D. (Computer Science) Washington University in Saint Louis, USA M.Sc. (Computer Science) Washington University in Saint Louis, USA B.Sc. (Information and Communication Technology) 1st Class Honor Mahidol University	Faculty of Information and Communication Technology
8.	x-xxxx-xxxxx-xx-x Lecturer Dr. Ittipon Rassameeroj	Ph.D. (Computer Science) University of California, Davis, USA M.Sc. (Computer Science) Mahidol University B.Sc. (Computer Science) Mahidol University	Faculty of Information and Communication Technology

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
9.	x-xxxx-xxxxx-xx-x Lecturer Dr. Songpon Teerakanok	D.Eng. (Information Science and Engineering) Ritsumeikan University, Japan M.Eng. (Information Science and Engineering) Ritsumeikan University, Japan B.Eng. (Computer Engineering) Prince of Songkla University	Faculty of Information and Communication Technology
10.	x-xxxx-xxxxx-xx-x Lecturer Dr. Thanapon Noraset	Ph.D. (Computer Science) Northwestern University, USA M.S. (Computer Science) Northwestern University, USA B.Sc. (Information and Communication Technology) 1st Class Honor Mahidol University	Faculty of Information and Communication Technology

3.2.2 Full time instructors

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
1.	x-xxxx-xxxxx-xx-x Associate Professor Dr. Suppawong Tuarob	Ph.D. (Computer Science and Engineering) Pennsylvania State University, USA : 2015 M.S. (Industrial Engineering) Pennsylvania State University, USA : 2015 M.SE. (Computer Science and Engineering) University of Michigan, Ann Arbor, USA : 2010 B.SE. (Computer Science) University of Michigan, Ann Arbor, USA : 2009	Faculty of Information and Communication Technology
2.	x-xxxx-xxxxx-xx-x Associate Professor Dr. Worapan Kusakunniran	Ph.D. (Computer Science and Engineering) University of New South Wales, Australia : 2013 B.Eng. (Computer Engineering) 1st Class Honor University of New South Wales, Australia : 2008	Faculty of Information and Communication Technology

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
3.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Boonsit Yimwadsana	Ph.D. (Electrical Engineering) Columbia University, USA : 2007 M.S. (Electrical Engineering) Columbia University, USA : 2001 B.S. (Electrical Engineering) Columbia University, USA : 2000	Faculty of Information and Communication Technology
4.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Charnyote Pluempitiwiriyawej	Ph.D. (Computer Engineering-CISE) University of Florida, USA : 2001 M.S. (Computer Science) University of Maryland, USA : 1997 B.Eng. (Computer Engineering) 2nd Class Honor King Mongkut's institute of Technology Thonburi : 1994	Faculty of Information and Communication Technology
5.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Mores Prachyabrued	Ph.D. (Computer Science) University of Louisiana at Lafayette, USA. : 2013 M.S. (Computer Science) University of Louisiana at Lafayette, USA. : 2007 M.Eng. (Computer Engineering) Kasetsart University : 2002 B.Eng. (Computer Engineering) Kasetsart University : 1998	Faculty of Information and Communication Technology
6.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Preecha Tangworakitthaworn	Ph.D. (Computer Science) University of Southampton, United Kingdom : 2014 M.Sc. (Computer Science) Mahidol University : 2006 B.Sc. (Computer Science) Mahidol University : 1998	Faculty of Information and Communication Technology

No.	Identification Card Number Academic position - Name - Surname	Degree (Field of Study) University: Year of graduate	Department
7.	x-xxxx-xxxxx-xx-x Assistant Professor Dr. Thitinan Tantidham	Ph.D. (Computer Science) RWTH Aachen University, Germany : 2010 M.Sc. (Computer Science) Mahidol University : 1997 B.Eng. (Computer Engineering) Kasetsart University : 1993	Faculty of Information and Communication Technology
8.	x-xxxx-xxxxx-xx-x Lecturer Dr. Pattanasak Mongkolwat	Ph.D. (Computer Science) Illinois Institute of Technology, USA. : 1996 M.Sc. (Computer Science) McNeese State University, USA. : 1991 B.Sc. (Computer Science) University of the Thai Chamber of Commerce : 1988	Faculty of Information and Communication Technology
9.	x-xxxx-xxxxx-xx-x Lecturer Dr. Pawitra Liamruk	Ph.D. (Computer Science) University of Bath, United Kingdom : 2015 M.Sc. (Software Systems Engineering) University College London, United Kingdom : 2010 B.Sc. (Information and Communication Technology) 1st Class Honor Mahidol University : 2008	Faculty of Information and Communication Technology
10.	x-xxxx-xxxxx-xx-x Lecturer Dr. Siripen Pongpaichet	Ph.D. (Computer Science) University of California, Irvine, USA : 2016 M.S. (Computer Science) University of California, Irvine, USA : 2011 B.Sc. (Information and Communication Technology) 1st Class Honor Mahidol University : 2008	Faculty of Information and Communication Technology
11.	x-xxxx-xxxxx-xx-x Lecturer Dr. Wudhichart Sawangphol	Ph.D. (Information Technology) Monash University, Australia : 2017 MIT Honours (Software Engineering and Data Management) Monash University, Australia : 2012 B.Sc. (Information and Communication Technology) 1st Class Honor Mahidol University : 2009	Faculty of Information and Communication Technology

4. Details of Practicum

None

5. Thesis requirement (Plan 1 Academic)

5.1 Short Description

To complete the thesis required by this curriculum, a student must identify a research topic in an area of Cyber Security and Information Assurance according to the list of research projects in 3.1.4, develop a relevant research proposal, conduct research using methodology appropriate for the topic (including, but not limited to, experiment design, data collection, and data analysis), present the findings through a thesis report, present and publish at an academic conference or publish in an academic journal. The dissertation report must be submitted to the Faculty of Graduate Studies, within the submission deadline as the format designated by the Faculty of Graduate Studies.

5.2 Standard Learning Outcomes

Students can work as a team. They will be specialized in planning, designing, developing and managing cybersecurity and information assurance systems. These include being able to develop and know how to use tools to help develop programs and tools in cybersecurity and information assurance, having the ability to analyze and understand standard analysis methods. The thesis, they have done, can be a model for further development or can be prepared as a research document as well. Students will also have writing and presentation skills in English.

5.3 Thesis duration:

From the second semester of the first year of study onwards.

5.4 Number of credits: 12 credits

5.5 Preparation

In preparation for their thesis, students should first enroll in all the required courses to explore different topics in the field. This can help students gain more knowledge, and better identify the topic they are interested in. Then, students should consult with their advisor to select the most suitable topic. To ensure the thesis process is conducted effectively, students should schedule meetings with their advisors on a regular basis. The program also specifies the timeline indicating when the students must submit their progress report, when they must propose and defend their work, and when to submit the final copy of their thesis. Up-to-date

information regarding the requirements and guidelines for conducting the Master's thesis are offered on the Faculty of ICT and the Faculty of Graduate Study websites.

5.6 Evaluation process

The research progress shall be evaluated by the advisor for the student's thesis. Evaluation occurs at the end of each semester during the period of research. The final oral examination is systematically evaluated by at least three thesis committees, following the standards of the Faculty of Graduate Studies, Mahidol University. In addition, part or all of the student's thesis must be published in an academic journal, or presented at a national or international conference with published proceedings.

6. Independent study requirements (Plan 2 Profession)

Independent study topics are related to application of techniques in game technology and gamification according to the list of research projects in 3.1.4. The curriculum requires one student to conduct one independent study and submit the independent study within the submission deadline as the format designated by the curriculum.

6.1 Short Description

Students can do the Master's independent study in Cyber Security and Information Assurance areas that they are interested in by applying knowledge and theory to conduct useful research project. After graduation, students can apply their knowledge for their further study in higher education and their future work. The independent study has an obvious scope and timeline so that the students can complete their independent study within the submission deadline.

6.2 Standard Learning Outcomes

Students will be able to work as a team, specialize in programming related to Cyber Security and Information Assurance, use appropriate tools for programming, analyze and understand analytical methodology. Independent study will be used as a role model for further development, or used as a research paper. Students will have writing and English presentation skills.

6.3 Independent study duration

From the first semester of the second year of study to the second semester of the second year of study

6.4 Number of credits: 6 credits

6.5 Preparation

The Faculty of ICT and the Faculty of Graduate Studies provide independent study information via the websites which are continually revised and up-to-date. The information consists of independent study topics recommended by advisors, advisory time, progress report submission, proposal defense schedule, independent study examples, and completed independent study.

6.6 Evaluation process

Independent study progress will be evaluated by progress report within the timeline as well as research result presentation. The said independent study must be able to proceed practically, especially the main program. The independent study defense will be evaluated by the independent study defense committee which consists of at least 3 instructors. In addition, English instructors can give advice and revise English writing for students.

Section 4 Learning Outcome, Teaching Strategies and Evaluation

1. Development of Students' Specific Qualifications

Key characteristics for students according to the objectives of the program

Special Characteristics	Teaching Strategies or Student Activities
Have a trustworthy personality and professional. Able to present academic ideas clearly and to communicate well in English.	Seminar presented the research progress of current students at least 1 time per academic year
	Study visit or attend academic seminar 1 time per academic year
Have the academic and professional ethics in Cyber Security by learning how to cite published research works.	Study visit or attend academic seminar 1 time per academic year
Enhance working and social life skills (Soft Skills).	Encourage students to attend the professional skill development training organized by the faculty / university at least 4 skills as follows: 1. Language and communication skills 2. Leaderships and management skills 3. Creative and innovative skills 4. Information technology skills 1 time throughout the study

2. Development of Learning Outcome in Each Objective

Expected Outcome	Teaching Strategies	Evaluation Strategies
1. Knowledge 1.1 Have knowledge and understanding of principles and theories in the field of cyber security and information assurance. 1.2 Have the ability to understand and explain research problems. 1.3 Keep up with current knowledge in cyber security and information assurance.	1) Interaction-based lectures, case studies, discussion, seminar 2) Train students to analyze and synthesize problems systematically from the real situations or simulated situations via projects and assignments. 3) Assign problems and projects to solve by using various methods and select the most appropriate method. 4) Present the assignments by using related information and communication technology tools.	1) Assessment from quiz, examination and seminar 2) Assessment from in-class problem presentation and discussion. 3) Assessment from the problem solving methodology from class project reports and project presentation. 3) Evaluation of research project or independent study. 4) Assessment from IT-related technique and tool selection for solving each problem 5) Assessment from the efficiency of student oral presentations.
2. Skills 2.1 Be able to communicate clearly, and to explain and present information effectively using English. 2.2 Able to review related literature, analyze and summarize issues and problems systematically. 2.3 Able to apply knowledge and tools to develop solutions to problems in cyber security and information assurance. 2.4 Can synthesize existing knowledge to create new knowledge in cyber security and information assurance.	1) Lectures, case studies, and discussions. 2) Observing student behaviors, decision making and class participation. 3) Assignments to practice writing reports or articles with appropriate citations.	1) Assessment from participation in class discussions and from references to other works. 2) Assessment on students capabilities to express their idea and demonstrate understanding of professional ethical practices. 3) Assessment of plagiarism and appropriateness of citations in written reports and assignments.

Expected Outcome	Teaching Strategies	Evaluation Strategies
3. Ethics 3.1 Possesses morality, ethics and honesty. 3.2 Have professional integrity. 3.3 Respect the rights and opinions of others, as well as not violating the rights and intellectual property of others.	1) Specify group working in various subjects and have interviews or working with other people or companies. 2) Divide and allocate the assignment responsibilities clearly. 3) Conduct group activities to demonstrate the role of a good leader and group member.	1) Assessment on the quality of group work, and student's interpersonal communication skills by the instructor, and group members. 2) Evaluation of student's participation and performance as a leader, or a follower, based on opinions of advisors and peers. 3) Student's behavioral assessment by their peers.
4. Character 4.1 Able to work with others, have skills in building relationships and interacting with others. 4.2 Demonstrate responsibility for their own actions, being responsible for work in the group, display leadership, be able to work as a team.	1) Train students to analyze and synthesize problems systematically from the real situations or simulated situations via projects and assignments. 2) Assign problems and projects to solve by using various methods and select the most appropriate method. 3) Present the assignments by using related information and communication technology tools.	1) Assessment from in-class problem presentation and discussion. 2) Assessment from the problem solving methodology from class project reports and project presentation. 3) Evaluation of research project or independent study. 4) Assessment from IT-related technique and tool selection for solving each problem 5) Assessment from the efficiency of student presentations.

3. Curriculum Mapping

See Appendix C**.**

Section 5 Criteria for Student Evaluation

1. Grading System

The system for grading and graduation shall comply with the criteria stated in the Regulations of Mahidol University on Graduate studies (for more information, please visit the Faculty of Graduate Studies website: www.grad.mahidol.ac.th).

2. Evaluation Process for the Learning Outcome of Students

2.1 Evaluation for the learning outcome of students during study.

2.1.1 The students are evaluated the comprehensive knowledge in cyber security during the thesis proposal for a student in plan A, or the comprehensive examination for a student in plan B.

2.1.2 Course evaluation by students and the evaluation of students' learning outcomes by curriculum committee.

2.1.3 The curriculum committee will monitor the progress of students as they conduct research for their thesis or independent study.

2.1.4 Student's PLOs achievement assessment are evaluated at the end of the year's of study based on yearly the expected learning outcome

2.2 Evaluation for the learning outcome of students after graduation

2.2.1 Survey of the employment situations of graduates, evaluation by alumni in terms of time to find jobs, and opinions on the knowledge and skills graduates gained from the curriculum for careers in computing.

2.2.2 Survey of employer satisfaction with graduates by interview and questionnaires.

2.2.3 Survey of career advancement of graduates.

2.2.4 Student works that are publicly announced, such as the developed software system, innovation awards received from external organizations or guest speakers.

2.2.5 Survey of graduate preparedness and knowledge from external experts evaluating the curriculum or external instructors.

2.2.6 Survey of PLOs achievement assessment

3. Graduation Requirement

3.1 Plan 1 Academic

3.1.1 Students must complete their courses as stated in the curriculum with a minimum CUM-GPA of 3.00.

3.1.2 Propose thesis to the committee appointed by the Faculty of Graduate Studies and to the public and pass oral thesis examination as the final stage and the examination is an open system for those interested to listen.

3.1.3 The complete or part of the thesis has to be published as a review article, accepted as an innovation, acknowledged as a creative product, or accepted as an academic article that can be searched.

3.1.4 Other requirements shall follow those that specified by the Faculty of Graduate Studies.

3.2 Plan 2 Profession

3.2.1 Students must complete their courses as stated in the curriculum with a minimum CUM-GPA of 3.00.

3.2.2 Students must pass the Comprehensive Examination following Regulations of Mahidol University on Graduate Studies.

3.2.3 Students must present their Independent Study and pass the defense examination by following Regulations of Mahidol University on Faculty Graduate Studies and the examination is an open system for those interested to listen.

3.2.4 Other requirements shall follow those that specified by the Faculty of Graduate Studies.

Section 6 Faculty Development

1. The Orientation for New Faculty Members

1.1 Have an orientation for new lecturers to introduce how to be professional lecturer and provide information about the policies of Mahidol University and the Faculty.

1.2 Support new lecturers to actively expand their knowledge and experience in teaching and research in Computer Science and/or Cyber Security and Information Assurance.

1.3 Arrange the teaching load in which new lecturers will be co-teaching with experienced lecturers. So that, senior lecturers can support and advise new lecturers about teaching method in a particular course.

2. Skill and Knowledge Development for New Faculty Members

2.1 Skills Development in Teaching and Evaluation.

Provide workshops to develop skills on teaching and learning methods.

2.2 Other Academic and Professional Skill Development.

2.2.1 Encourage academic staff to participate in academic services such as developing a service and passing on their knowledge to the society.

2.2.2 Encourage academic staff to conduct more research in Cyber Security and Information Assurance.

2.2.3 Support academic staff to participate in several events such as academic services, conference both national and international.

Section 7 Quality Assurance

1. Regulatory Standard

1.1. The program follows the regulations of Thailand's Ministry of Higher Education, Science and Innovation relevant to the development and management of postgraduate academic programs such as

- The Permanent Secretary, Ministry of Higher Education, Science and Innovation' s Postgraduate Curriculum Standard Criterion B.E. 2565.
- Mahidol University Regulations for Postgraduate Studies B.E. 2563.

The quality of the program is assured by identifying performance indicators for evaluating effectiveness and efficiency in accordance with the regulations mentioned above.

The quality of the program is managed, assessed and monitored according to the Permanent Secretary, Ministry of Higher Education, Science and Innovation's Postgraduate Curriculum Standard Criterion B.E. 2565, Internal Quality Assurance B.E. 2557, and ASEAN University Network-Quality Assurance (AUN-QA).

1.2. The planning development and evaluation of the program according to the time duration specified in the regulations of the Ministry of Education. Each year, the program submits an annual program evaluation report, TQF 7, to Mahidol University and Ministry of Education. The program is also updated every 5 years.

1.3. The program follows the Internal Quality Assurance regulations of the Office of the Higher Education Commission as follows

1.3.1. At least 80 percent of the program's responsible faculty members are involved in meetings for planning, follow-up and review of the operation of the program.

1.3.2. The program produces TQF 2 document (this document) in accordance to Office of the Higher Education Commission's Thai Qualifications Framework for Higher Education.

1.3.3. The program produces TQF 3 and TQF 4 documents describing the details of each course prior to the start of each semester.

1.3.4. The program reports the results of the operations of each course in the form of TQF 5 and TQF 6 after the end of each semester.

1.3.5. The program submits the reports describing the performance evaluation of all courses and the entire program in the form of TQF7 after the end of each academic year.

2. Graduates

To produce quality graduates, the program follows the regulations of Thailand's Ministry of Higher Education, Science and Innovation relevant to the development and management of postgraduate academic programs such as

- The Permanent Secretary, Ministry of Higher Education, Science and Innovation' s Postgraduate Curriculum Standard Criterion B.E. 2565.
- Mahidol University Regulations for Postgraduate Studies B.E. 2563.

The program measures graduate quality with respect to the program's expected learning outcomes in order to align graduates' competencies with the demands of employers. The quality of the graduates is managed, assessed and monitored according to the Permanent Secretary, Ministry of Higher Education, Science and Innovation's Postgraduate Curriculum Standard Criterion B.E. 2565, Internal Quality Assurance B.E. 2557, Baldrige's Education Performance Excellence (EdPEx) and ASEAN University Network-Quality Assurance (AUN-QA) via performance indicators of each regulatory standard. In addition, the program includes employability-related performance indicators such as employer's satisfaction level and ability of graduates evaluated by employers and graduates themselves.

3. Students

To manage the quality of graduate students, the MUCY program follows the EdPEx, and the AUN-QA frameworks and guidelines. The program considers the following aspects:

- Student Admission: Program advertisement and student intake process are conducted through the channels and the system provided by the Faculty of Graduate Study along with the supervision of the MUCY program committees.
- Preparation for Newly Admitted Students: The Faculty of Graduate Study together with the MUCY program offers orientations, which allow students to familiarize themselves with the program, and to be well-prepared for their graduate study.
- Relationship Development: Students are assigned an academic advisor, and a program support staff to guide and assist them throughout their study. In addition, students are invited to participate in other activities, e.g., academic talk, etc., to promote their relationship with their peers.
- Academic Advice: To help students improve their learning ability and achieve their learning outcomes effectively, advisors regularly monitor student progress, and offer educational guidance.
- Student Performance Assessment: The MUCY program utilizes the indicators and the assessment methods that reflect the student's learning outcomes, and are in accordance with the Internal Quality Assurance (B.E. 2557) by the Office of Higher Education Commission's Thai Qualifications Framework for Higher Education, and the guidelines offered by EdPEx, and AUN-QA.

4. Academic Staff

The program defines the processes related to academic staff as follows:

a. Intake and selection of academic staff

The program ensures that there is the systematic selection and recruitment of academic staff with clear policies and criteria. The academic staff must have the qualifications in accordance with

- The Permanent Secretary, Ministry of Higher Education, Science and Innovation's Postgraduate Curriculum Standard Criterion B.E. 2565.
- Mahidol University Regulations for Postgraduate Studies B.E. 2563.

b. The development of academic staff

Training and development for new and current academic staff are systematically identified, and appropriate training and development activities are promoted to fulfil the identified needs. The faculty members are encouraged to participate in various activities such as the academic staff development project organized by Mahidol University and the Faculty of ICT, academic training, and conferences.

c. Support for the Production of Academic Outputs

Mahidol University, the Faculty of Graduate Studies, and the Faculty of ICT support research activities conducted by academic staff. Mahidol University encourages the enhancement of academic positions and research funding. The Faculty of Graduate Studies, and the Faculty of ICT support the academic presentations.

d. Career development

Mahidol University and the Faculty of ICT support career development of academic staff by providing academic promotion ladders, research grants, conference travel grants, academic training, and curriculum management.

e. Engagement Development

Mahidol University and Faculty of ICT encourage academic staff to participate in university and faculty activities in order to engage academic staff in university mission and plan.

f. Special Faculty Appointment

The program recognizes the importance of education diversification especially from governmental organizations, private and industry sectors. Occasionally, the program invites experts and technicians from public and private sectors to provide knowledge and skills used in industry and other areas. The qualifications of the external experts are not less than a doctoral degree or recognized reputation.

5. Curriculum, Teaching and Learning, and Learner's evaluation

5.1. Curriculum

The program designs the curriculum based on the Outcome Based Education (OBE) principles which focuses on the development of graduates to meet the demands of employers according to the present and future market based on stakeholder surveys and trends of technology, economy, social, and culture. The stakeholders include faculty members, employers, alumni, current students, and recent graduates. The demand of employers is converted into expected learning outcomes that graduates must achieve.

5.2. Teaching and Learning

The program director designs the study plans of students in each academic year and plans the courses that will be offered, including course instructors and facilities, in order to ensure students achieve the expected learning outcomes. Students can freely choose elective courses under the guidance of an academic advisor and the program director in order to pursue individual academic interests. The teaching methods and learning facility are regularly reviewed in program committee meetings.

5.3. Learner's Evaluation

Students' performance in courses is measured as grades. Students' academic advisors and the program committee regularly review students' performance every semester and advise students to achieve expected learning outcomes and graduate within the plan of study. An employer satisfaction survey is also conducted after each student graduated for one year. The program director reports the students' performance to the faculty committee and the Faculty of Graduate Studies for faculty-wide and university-wide review of students' performance.

6. Learning Support

The learning supports of our program appear from four sources, the program, the Faculty of ICT, the Faculty of Graduate Studies and Mahidol University. In combination we offer quality learning spaces,

classrooms, equipment, materials and information technology to support student learning and development. The support also extends to teacher and research development with the hope to better the learning experience and quality of graduates. These supporting resources are regularly updated and monitored to ensure their availability and their relevance to the objective of the program.

Our program with support from the Faculty of ICT provides the latest Information technology systems including hardware, software and network. We install a cybersecurity computer lab which contains at least one computer machine per student. The machines are installed with necessary cybersecurity related software, hardware, and network access. The students can use them for their studies, class work, and research. These machines are constantly updated to have the up-to-date technology, as they are key to the quality learning of the program. We review our hardware yearly and our software semesterly. With support from the Faculty of ICT and Mahidol University, we monitor the network regularly. Key support systems such as the student information system, learning management system, computing and networking tools are provided to students by the Faculty of ICT and the Faculty of Graduate Studies. In order to ensure that students effectively achieve the learning outcomes, teachers are also provided tools and resources for preparing and conducting teaching, research, services and administration effectively. Besides the mentioned systems and hardwares, every sources of supports from our program to Mahidol university also provide cybersecurity related books, access to digital resources, and databases of full-text access.

The quality of the learning support follows the Office of the Permanent Secretary, Ministry of Higher Education, Science and Innovation's Postgraduate Curriculum Standard Criterion B.E. 2565, Internal Quality Assurance B.E. 2557, and ASEAN University Network-Quality Assurance (AUN-QA). To ensure that our learning support is adequate to our students' needs, we also survey our students semesterly to evaluate the learning environment.

7. Key Performance Indicators

The Master of Science in Cyber Security and Information Assurance program, Faculty of Information and Communication Technology, uses key performance indicators based for the curriculum according to the standards of the Thai Qualifications Framework. These are subject to the following conditions: (1) the compulsory performance indicators (numbers 1-5) must meet or exceed expectations for at least two consecutive years, and (2) at least 80% of all performance indicators must meet expectations or exceed each year. The Key Performance Indicators are as follows:

Key Performance Indicators	Academic Year				
	2024	2025	2026	2027	2028
1. At least 80% of faculty members responsible for the curriculum participate in a curriculum meeting in order to plan, follow-up and review the operation of the curriculum.	✓	✓	✓	✓	✓
2. The program has the details of the curriculum according to TQF2, which is associated with the Thai Qualifications Framework.	✓	✓	✓	✓	✓
3. The program has course specifications and field experience specifications (if any) according to TQF3 and TQF4 before the beginning of each trimester.	✓	✓	✓	✓	✓
4. Instructors must produce course reports and file experience reports (if any) according to TQF5 and TQF6 within 30 days after the end of each semester.	✓	✓	✓	✓	✓
5. Instructors must produce program reports according to TQF7 within 60 days after the end of each academic year.	✓	✓	✓	✓	✓
6. Instructors revise the grading of students according to the learning standards indicated in TQF3 and TQF4 (if any) for at least 25 percent of courses that are offered each academic year.	✓	✓	✓	✓	✓
7. Instructors must assess the development and/or improvement of teaching methods, teaching techniques or the grading system from the evaluation results in TQF 7 of the previous year.	✓	✓	✓	✓	✓
8. Every new instructor (if any) participates in orientation or otherwise receives adequate information on the college's teaching requirements.	✓	✓	✓	✓	✓
9. Full-time instructors in the curriculum receive academic and/or profession development at least once a year.	✓	✓	✓	✓	✓
10. At least 50 percent of supporting staff (if any) receive academic and/or professional development each year.	✓	✓	✓	✓	✓
11. The average satisfaction score for curriculum quality from the previous year's students and new graduates is at least 3.5 out of 5.	–	✓	✓	✓	✓
12. The average satisfaction score from employers of new graduates is at least 3.5 out of 5.	–	–	✓	✓	✓

Section 8 Evaluation and Improvement of the Curriculum Implementation

1. Evaluation on the Teaching Efficiency

1.1 Evaluation of Teaching Strategies

(1) It requires instructors to make report after teaching each semester (TQF 5) for information on teaching development

(2) In organizing a training or seminar in teaching, instructors will be assigned to evaluate the training results and to follow up on the use of knowledge from the training for the later development of teaching.

(3) An analysis of the results of the assessment of the teaching and learning management of all courses of the students;

(4) It requires to specify issues related to the development of teaching and learning of instructors in the meeting of the curriculum administrative committee or the annual instructor's seminar.

1.2 Evaluation of Instructors' Skills in Using Teaching Strategies

1.2.1 Analysis of student's evaluation of courses and instructors.

1.2.2 Analysis of TQF5 evaluated by course instructors.

2. Overall Evaluation of the Curriculum

2.1 Survey instructors' opinions toward students and vice versa. Analyze the survey of graduates on applying knowledge in practice to monitor and assess their working ability and responsibilities.

2.2 Survey on employer satisfaction with graduates.

2.3 Meetings and seminars of the Curriculum Administrative Committee; by inviting external experts and employers to participate and comment on course content to improve the curriculum to meet the needs of society and keep up with the changes in the world society

2.4 All information is collected for curriculum improvement and development as well as improving teaching and learning processes, both in overall and in each course.

3. Evaluation of Curriculum Implementation in Accordance with the Curriculum

3.1 Evaluation is made annually by the program chair according to the key performance indicators as follows:

(1) The percentage of students who can graduate within two years is not less than 80% of the total number of students who are in the second year.

(2) The percentage of students who drop out is not more than 5% of the total number of students who are in the second year.

(3) The average satisfaction score from students toward the teaching quality, advisory, academic assistant, and facility is at least 3.5 out of 5.

(4) The average satisfaction score from employers of new graduates is at least 3.5 out of 5.

(5) The percentage of employability or further study within 1 year after graduation is at least 80 percent.

(6) The percentage of graduates, who receive a salary with an amount not less than the one specified by the Office of the Civil Service Commission (OCSC), is not less than 80%.

(7) The percentage of academic staff in the curriculum receiving training about teaching and evaluation is at least 75 percent.

(8) The percentage of supporting staff receiving academic and/or professional development is at least 50 percent.

3.2 The curriculum management is reviewed by at least one external consultant, who is an expert in the area, along with at least three committee members.

3.3 The self-evaluation is performed yearly. We follow Mahidol University protocol according to the key indicators specified in Section 7. The evaluation must be carried out by at least one external consultant, who is an expert in the area, and assigned by the university, along with at least three committee members.

Mahidol University requires that all curricula update their standard and educational quality every three years, and have a full evaluation to improve the quality of the curriculum every five years.

4. Review of the Evaluation and Plans for Improvement

4.1 There is an analysis and report on the results of the student's course evaluation every semester. From this report, the course instructors will be informed in order to develop teaching and learning. The information is also used by the head of the curriculum administrative committee for planning the development of instructors.

4.2 There is an analysis and report of the instructor's teaching evaluation results to the curriculum administrative committee in order to provide information to develop students to have knowledge and qualifications as specified by the course as well as to use in planning for the next generation.

4.3 There is a meeting of the curriculum administrative committee to monitor the problems in teaching and learning and to be able to consider and rectify them in a timely manner.

4.4 There is an education committee of the faculty of ICT to oversee the education plan.

Appendix A

Course Description

Appendix A
Course Description

1. Required Courses

Credits (lecture – practice – self-study)

ITCY 511 Computer and Network Security 3 (3-0-6)

ทสคม ๕๑๑ ความมั่นคงทางคอมพิวเตอร์และเครือข่าย

Principles of security; Principles of software security; Security models; Protection and security in operating systems; Protection and security in database systems; Network security; Vulnerabilities; Threats and protection; Privacy; Practical cryptography; Authentication; Malware; Information assurance; Management of security

หลักการความมั่นคง หลักการความมั่นคงด้านซอฟต์แวร์ รูปแบบความมั่นคง การป้องกันและความมั่นคงในระบบปฏิบัติการ การป้องกันและความมั่นคงในระบบฐานข้อมูล ความมั่นคงของเครือข่ายสื่อสาร จุดอ่อน การคุกคาม และการป้องกัน ความเป็นส่วนตัว การเข้ารหัสที่ใช้ได้ การพิสูจน์ตัวตน ซอฟต์แวร์ที่ไม่พึงประสงค์ การประกันสารสนเทศ การจัดการความมั่งคง

ITCY 512 Information Security Management 3 (3-0-6)

ทสคม ๕๑๒ การจัดการความมั่นคงสารสนเทศ

Contemporary security and information assurance issues; Security management processes; Architecture and models of information security; Risk analysis and management; Security planning; Analysis and safeguards; Security policies development and administration; Contingency planning; Incidence handling and response; Security standards and certification processes; Security Framework

ประเด็นด้านความมั่งคงและการประกันสารสนเทศร่วมสมัย กระบวนการจัดการความมั่นคง สถาปัตยกรรมและรูปแบบความมั่นคงสารสนเทศ การวิเคราะห์และการจัดการความเสี่ยง การวางแผนความมั่นคง การวิเคราะห์และปกป้องความมั่นคง การพัฒนานโยบายและบริหารความมั่นคง การวางแผนรองรับเหตุการณ์ผิดปกติ การจัดการและตอบสนองต่อเหตุการณ์ มาตรฐานความมั่นคงและกระบวนการการรับรอง กรอบความปลอดภัย

ITCY 513 Cyber Ethics and Law 2 (2-0-4)

ทสคม ๕๑๓ จริยธรรมและกฎหมายไซเบอร์

Intellectual property; Digital right management; Software patenting and copyrights; Monopolies; Net neutrality; Digital privacy; Digital divide; Electronic voting; Thai and international laws related to computer crime and privacy protection; Electronic commerce; Electronic banking; Private data collection; Freedom of information; Censorship; Codes of ethics

ทรัพย์สินทางปัญญา การจัดการสิทธิ์ทางดิจิทัล การจดสิทธิบัตรและลิขสิทธิ์ซอฟต์แวร์ การผูกขาดทางการค้า ความเสมอภาคในการใช้ระบบสื่อสาร ความเป็นส่วนตัวแบบดิจิทัล การแบ่งแยกทางด้านดิจิทัล การออกเสียงทางอิเล็กทรอนิกส์ กฎหมายไทยและกฎหมายนานาชาติที่เกี่ยวกับอาชญากรรมคอมพิวเตอร์และการคุ้มครองข้อมูลส่วนบุคคล การค้าทางอิเล็กทรอนิกส์ ธนาคารอิเล็กทรอนิกส์ การเก็บสะสมข้อมูลส่วนตัว เสรีภาพของข้อมูล การกรอง ประมวลจริยธรรม

Credits (lecture – practice – self-study)

ITCY 516 Research Methodology and Seminar 1 (1-0-2)

ทสคม ๕๑๖ วิทยาระเบียบวิธีวิจัยและสัมมนา

Research development process and methodology; Research design and planning; Data gathering; Data management and analysis; Literature review; Writing research proposal; Research analysis; Qualitative and quantitative research methodology; Writing conclusion; Research Reporting and presentation; Research Ethics; Seminar

กระบวนการพัฒนางานวิจัยและระเบียบวิธีวิจัย การวางแผนและออกแบบงานวิจัย การรวบรวมข้อมูล การจัดการและวิเคราะห์ข้อมูล การทบทวนงานวิจัย การเขียนโครงร่างงานวิจัย การวิเคราะห์งานวิจัย วิธีวิจัยเชิงปริมาณและเชิงคุณภาพ การเขียนสรุป การรายงานและนำเสนองานวิจัย จริยธรรมในการวิจัย สัมมนา

ITCY 531 System Hardening and Penetration Testing 3 (3-0-6)

ทสคม ๕๓๑ การทำให้ระบบแข็งแกร่งและการทดสอบเจาะระบบ

Security update management; File systems security management; Console and shell access security management; System logging; System auditing; Network services security management; Application security management; Penetration testing; Vulnerability assessment

การจัดการการปรับปรุงความมั่นคง การจัดการความมั่นคงของระบบแฟ้มข้อมูล การจัดการความมั่นคงของการเข้าถึงหน้าจอและเชลล์ การบันทึกระบบ การตรวจสอบความมั่นคงของระบบ การจัดการความมั่นคงของบริการเครือข่าย การจัดการความมั่นคงของแอพพลิเคชั่น การทดสอบการเจาะระบบ การประเมินช่องโหว่

ITCY 541 Digital Forensics Technologies and Techniques 3 (3-0-6)

ทสคม ๕๔๑ เทคโนโลยีและเทคนิคทางนิติดิจิทัล

Principles of digital forensics; Hard drives and storage media; Computer forensics in law enforcement; Process models and evidence handling; Investigation of Windows and Unix hosts; File-systems and file analysis; Data hiding and fraud investigation; Passwords analysis; Network forensic fundamentals; Investigating networks

หลักการของนิติดิจิทัล อุปกรณ์และสื่อการเก็บข้อมูล นิติคอมพิวเตอร์ในการบังคับใช้กฎหมาย รูปแบบกระบวนการและการจัดการหลักฐาน การตรวจสอบเครื่องที่ติดตั้งระบบปฏิบัติการวินโดว์และยูนิกซ์ ระบบการจัดเก็บแฟ้มข้อมูลและการวิเคราะห์แฟ้มข้อมูล การซ่อนข้อมูลและการสอบสวนกลอ้อฉล การวิเคราะห์รหัสผ่าน พื้นฐานของนิติเครือข่าย การสอบสวนระบบเครือข่าย

ITCY 571 Information Assurance and Risk Management 3 (3-0-6)

ทสคม ๕๗๑ การประกันสารสนเทศและการจัดการความเสี่ยง

Principle of information assurance; Information security and risk management; Information security assessments and evaluations; ISO27001 standard; Business information security;

Business operation security; Business continuity and disaster recovery; Incident Response; Physical security and access control; Security policies and IT Governance; IT Audit

หลักการของการประกันสารสนเทศ ความมั่นคงสารสนเทศและการจัดการความเสี่ยง การประเมินและวัดผลความปลอดภัยสารสนเทศ มาตรฐานไอเอสโอ 27001 ความมั่นคงสารสนเทศทางธุรกิจ ความมั่นคงของการดำเนินการทางธุรกิจ ความต่อเนื่องของธุรกิจและการกอบกู้ความเสียหาย การตอบสนองต่อภัยคุกคาม ความมั่นคงเชิงกายภาพและการควบคุมการเข้าถึงนโยบายความมั่นคงและธรรมาภิบาลด้านเทคโนโลยีสารสนเทศ การตรวจสอบระบบสารสนเทศ

2. Elective Courses

Credits (lecture – practice – self-study)

ITCY 514 Fraud Analysis and Detection 3 (3-0-6)

ทสคม ๕๑๔ การวิเคราะห์และการตรวจจับกลฉ้อฉล

Data analysis for fraud and anomaly detection; Forensics and security; Forecasting and trend analysis; Data visualization and interactive dashboard design; Time series analysis; Predictive modelling and data mining; Statistical analysis tools; Predictive fraud detection; Multivariate outlier detection; Association rules; Social network analysis; Big data analysis

การวิเคราะห์ข้อมูลสำหรับการตรวจจับกลฉ้อฉลและและความผิดปกติ นิติเวชและความมั่นคง การวิเคราะห์การพยากรณ์และแนวโน้ม การออกแบบการแสดงภาพข้อมูลและกระดานโต้ตอบ การวิเคราะห์ข้อมูลอนุกรมเวลา รูปแบบการทำนายและเหมืองข้อมูล เครื่องมือวิเคราะห์ทางสถิติ การตรวจจับกลฉ้อฉลแบบคาดคะเน การตรวจจับเชิงขอบแบบหลายตัวแปร กฎการเชื่อมโยง การวิเคราะห์เครือข่ายสังคม การวิเคราะห์ข้อมูลขนาดใหญ่

ITCY 535 Reverse Engineering and Malware Analysis 3 (3-0-6)

ทสคม ๕๓๕ วิศวกรรมผันกลับและการวิเคราะห์มัลแวร์

Reverse engineering process; Malware analysis; Static and Dynamic Analysis; Malware Packing Technique; Software code analysis; Malware Debugging and Disassembling; Anti- Reverse Engineering and Evasion Techniques

กระบวนการวิศวกรรมผันกลับ การวิเคราะห์มัลแวร์ การวิเคราะห์เชิงสถิตและพลวัต เทคนิคการบีบอัดไฟล์มัลแวร์ การวิเคราะห์รหัสของซอฟต์แวร์ การตรวจสอบการทำงานของมัลแวร์ เทคนิคการป้องกันและหลบเลี่ยงวิศวกรรมผันกลับ

ITCY 543 Network Forensics 3 (3-0-6)

ทสคม ๕๔๓ นิติเครือข่าย

Network environment; Forensic protocol control; Network analysis; Network forensics report; Network protocol and malware forensics; Web forensics; Email forensics; Network intrusion detection and incident response; Mobile and wireless network forensics

สภาพแวดล้อมของเครือข่าย การควบคุมให้เป็นไปตามวิธีการทางนิติ การวิเคราะห์เครือข่าย การรายงานนิติเครือข่าย กติกาทางเครือข่ายและการทำนิติของมัลแวร์ นิติของเว็บ นิติของอีเมล การตรวจจับ การบุกรุกเครือข่ายและการตอบสนองต่อเหตุการณ์ นิติของเครือข่ายเคลื่อนที่และเครือข่ายไร้สาย

Credits (lecture – practice – self-study)

ITCY 545 Cloud Security 3 (3-0-6)

ทสคม ๕๔๕ ความมั่นคงของระบบคลาวด์

Cloud system architecture; Infrastructure security for Cloud; Managing cloud Security and risks; Responsibility in cloud; Data security for Cloud; Securing cloud applications, user, and related technologies; Cloud security Operation; Legal and compliance

สถาปัตยกรรมของระบบคลาวด์ โครงสร้างความมั่นคงปลอดภัยของคลาวด์ การบริหารจัดการความมั่นคงปลอดภัยและความเสี่ยงของคลาวด์ ความรับผิดชอบบนคลาวด์ การทำให้แอปพลิเคชันผู้ใช้และเทคโนโลยีที่เกี่ยวข้องบนคลาวด์มีความมั่นคงปลอดภัย การดำเนินการด้านความมั่นคงปลอดภัยของคลาวด์ กฎหมายและการปฏิบัติตาม

ITCY 546 Mobile and IoT Security 3 (3-0-6)

ทสคม ๕๔๖ ความมั่นคงของระบบเคลื่อนที่และอินเตอร์เน็ตสรรพสิ่ง

Mobile and wireless system architecture; IoT architecture; Cellular network security; Wireless security; IoT security; Vulnerabilities and attacks in wireless and IoT systems; Secure mobile solution; Mobile application security; Mobile forensics

สถาปัตยกรรมของระบบเครือข่ายเคลื่อนที่และระบบไร้สาย สถาปัตยกรรมระบบอินเทอร์เน็ตของสรรพสิ่ง ความมั่นคงปลอดภัยของระบบเครือข่ายโทรศัพท์เคลื่อนที่ ความมั่นคงปลอดภัยของระบบสื่อสารไร้สาย ความมั่นคงปลอดภัยของระบบอินเทอร์เน็ตของสรรพสิ่ง จุดอ่อนของความมั่นคงและการโจมตีระบบเครือข่ายไร้สายและระบบอินเทอร์เน็ตของสรรพสิ่ง โซลูชันเพื่อความมั่นคงปลอดภัยของระบบอุปกรณ์เคลื่อนที่ ความมั่นคงปลอดภัยของแอพพลิเคชั่นบนอุปกรณ์เคลื่อนที่ นิติอุปกรณ์เคลื่อนที่

ITCY 552 Authentication Technology Management 3 (3-0-6)

ทสคม ๕๕๒ การจัดการเทคโนโลยีการยืนยันตัวตน

Principle of authentication; User authentication for information assurance; Message authentication; Digital signature; Zero knowledge proof and provable security; Public key infrastructure; Key management; Biometric authentication and applications; User management; Authentication management; Authentication, Authorization, and Accounting (AAA); Identity Management (IdM)

หลักการการยืนยันตัวตนเพื่อการประกันสารสนเทศ การยืนยันตัวตนผู้ใช้งาน การยืนยันตัวตนของข้อความ ลายเซ็นดิจิทัล การพิสูจน์โดยไม่เปิดเผยข้อมูลและความมั่นคงที่พิสูจน์ได้ โครงสร้างพื้นฐานคีย์สาธารณะ การจัดการคีย์ การยืนยันตัวตนทางชีวภาพและการประยุกต์ การจัดการผู้ใช้ การจัดการการยืนยันตัวตน การพิสูจน์ตัวจริง การอนุญาตและการบันทึกบัญชีการใช้งาน การจัดการเอกลักษณ์

Credits (lecture – practice – self-study)

ITCY 553 Secure Software Design 3 (3-0-6)

ทสคม ๕๕๓ การออกแบบซอฟต์แวร์อย่างมั่นคง

Principles of secure software design for information assurance; Memory safety; Techniques and tools for vulnerability detection and defense; Security principles; Sandboxing; isolation and least privileges; Web security; secure coding; software testing

หลักการการออกแบบซอฟต์แวร์อย่างปลอดภัยเพื่อการประกันสารสนเทศ ความปลอดภัยหน่วยความจำ เทคนิคและเครื่องมือในการตรวจจับและป้องกันจุดอ่อน หลักการความมั่นคง การจำกัดขอบเขต การแยกตัวออกและการจัดสิทธิ์ให้น้อยที่สุด ความมั่นคงของเว็บ การโปรแกรมอย่างปลอดภัย การทดสอบซอฟต์แวร์

ITCY 562 Intrusion Detection and Prevention 3 (3-0-6)

ทสคม ๕๖๒ การตรวจจับและป้องกันการบุกรุก

Attack categories and attackers; Threats; Problems of common computer and network security systems; Intrusion detection and prevention models and rules; Anomaly detection; Signature-based detection; Behavior-based detection

ประเภทการโจมตีและผู้โจมตี ภัยคุกคาม ปัญหาของระบบความมั่นคงคอมพิวเตอร์และเครือข่ายที่แพร่หลาย รูปแบบและกฎของระบบการตรวจจับและการป้องกันการบุกรุก การตรวจจับแบบเชิงผิดปกติ การตรวจจับโดยลายเซ็น การตรวจจับโดยพฤติกรรม

ITCY 581 Incident Response Management 3 (3-0-6)

ทสคม ๕๘๑ การจัดการโต้ตอบเหตุการณ์

Cyber security incidents and statistics; Vulnerability and risks; Cyber warfare; Incident classification; Incident prioritization; Incident response and forensics; Incident handling in networks and applications; Incident reporting; Incident recovery; Economy of incident and response; Incident Response Team and Organization

เหตุการณ์และสถิติทางด้านความมั่นคง จุดอ่อนและความเสี่ยง สงครามทางไซเบอร์ การแบ่งประเภทเหตุการณ์ การจัดลำดับความสำคัญเหตุการณ์ การตอบสนองและการทำนิติเวชเหตุการณ์ การจัดการเหตุการณ์บุกรุกในเครือข่ายและในแอพพลิเคชั่น การรายงานเหตุการณ์ การกู้เหตุการณ์ เศรษฐกิจของเหตุการณ์และการตอบโต้ ทีมและองค์กรตอบโต้เหตุการณ์

ITCY 582 Blockchain Technology 3 (3-0-6)

ทสคม ๕๘๒ เทคโนโลยีบล็อกเชน

Blockchain and web3 architecture; introduction to cryptography for blockchain; cryptocurrency such as Bitcoin; Ethereum; smart contract; decentralization; decentralized application

(Dapps); Solidity; blockchain platforms; enterprise blockchain; consensus algorithms, tokenization; blockchain security audit; real-world blockchain application

สถาปัตยกรรมของบล็อกเชนและเวป 3 การแนะนำวิทยาการการเข้ารหัสลับที่สำคัญสำหรับบล็อกเชน สกุลเงินดิจิทัลเช่นบิตคอย บล็อคเชน อีเธอเรียม สัญญาอัจฉริยะ ระบบการกระจายอำนาจ แอพพลิเคชั่นแบบกระจายอำนาจ แพลตฟอร์มบล็อกเชน บล็อกเชนสำหรับองค์กร อัลกอรึทึมฉันทามติ โทเค็น การตรวจสอบความมั่นคงปลอดภัยของบล็อคเชน บล็อคเชนแอพพลิเคชั่นระบบจริง

Credits (lecture – practice – self-study)

ITCY 583 Data Science for Cyber Security 3 (3-0-6)

ทสคม ๕๘๓ วิทยาการข้อมูลสำหรับความมั่นคงไซเบอร์

Introduction to data science and its process; Machine learning techniques, Statistics and data analytics; Types of data; Data science techniques and tools for solving cyber security related problems; Recent research and case studies in data science for cyber security.

วิทยาการข้อมูลและกระบวนการแก้ปัญหาโดยใช้วิทยาการข้อมูล การเรียนรู้ของเครื่อง สถิติและการวิเคราะห์ข้อมูล ลักษณะของข้อมูล เทคนิคและเครื่องมือสำหรับการแก้ปัญหาทางความมั่นคงไซเบอร์โดยใช้วิทยาการข้อมูล ตัวอย่างการแก้ปัญหาทางความมั่นคงไซเบอร์โดยใช้วิทยาการข้อมูลและงานวิจัยที่เกี่ยวข้อง

ITCY 591 Special Topics in Cyber Security and Forensics 3 (3-0-6)

ทสคม ๕๙๑ หัวข้อพิเศษทางความมั่นคงและนิติไซเบอร์

Topics in cyber security and forensics in many aspects according to new technologies; Recent changes and trends in cyber security and forensics; New approaches of managing cyber security and forensics; Security planning; Performance evaluation

หัวข้อด้านความมั่นคงและนิติไซเบอร์ในหลายมุมมองตามเทคโนโลยีใหม่ การเปลี่ยนแปลงและแนวโน้มด้านความมั่นคงและนิติไซเบอร์ วิธีการใหม่ของการจัดการความมั่นคงและนิติไซเบอร์ การวางแผนความมั่นคง การประเมินประสิทธิภาพ

ITCY 592 Special Topics in Information Assurance 3 (3-0-6)

ทสคม ๕๙๒ หัวข้อพิเศษทางการประกันสารสนเทศ

Topics in information assurance in many aspects according to new technologies; Recent changes and trends in information assurance; New approaches of managing information assurance; Security planning; Performance evaluation

หัวข้อด้านการประกันสารสนเทศในหลายมุมมองตามเทคโนโลยีใหม่ การเปลี่ยนแปลงและแนวโน้มด้านการประกันสารสนเทศ วิธีการใหม่ของการจัดการการประกันสารสนเทศ การวางแผนความมั่นคง การประเมินประสิทธิภาพ

3. Thesis

Credits (lecture – practice – self-study)

ITCY 698 Thesis 12 (0-36-0)

ทสคม ๖๙๘ วิทยานิพนธ์

Identifying research project title; Submitting research proposal; Conducting research study with concern of ethics; Data collection, analysis, synthesis and critics of research results; Reporting the research results in terms of thesis; Thesis presentation; Publishing the research results in academic printing materials or journal or presenting it in academic conference; Ethics in dissemination of the research results

การกำหนดหัวข้อโครงการวิจัย การเสนอโครงร่างการวิจัย การดำเนินการวิจัย อย่างมีจริยธรรม การรวบรวมข้อมูล การวิเคราะห์ สังเคราะห์และวิพากษ์ข้อมูลผลการวิจัย การนำผลการวิจัยมาเรียบเรียงเป็นวิทยานิพนธ์ การนำเสนอวิทยานิพนธ์ การเผยแพร่ผลงานวิจัยในวารสารหรือสิ่งพิมพ์ทางวิชาการ หรือเสนอต่อที่ประชุมวิชาการ จริยธรรมในการเผยแพร่ผลงานวิจัย

4. Independent Study

Credits (lecture – practice – self-study)

ITCY 696 Independent Study 6 (0-18-0)

ทสคม ๖๙๖ การค้นคว้าอิสระ

In- depth topics in Cybersecurity and Information Assurance specific to individual student' s interest. Identifying independent study title; Submitting proposal; Conducting independent study with concern of ethics; Data collection, analysis, synthesis and critics of results; Reporting the results; Independent study presentation

หัวข้อเชิงลึกเฉพาะทางด้านความมั่นคงไซเบอร์และการประกันสารสนเทศที่นักศึกษาสนใจ การกำหนดหัวข้อการค้นคว้าอิสระ การเสนอหัวข้อการค้นคว้าอิสระ การดำเนินการค้นคว้าอิสระอย่างมีจริยธรรม การรวบรวมข้อมูล การวิเคราะห์ สังเคราะห์และวิพากษ์ข้อมูล การนำผลการค้นคว้ามาเรียบเรียงเป็นรายงาน การนำเสนอผลการค้นคว้าอิสระ

Appendix B

Curriculum Vitae of the Faculty in Charge of the Program

Appendix B

Curriculum Vitae of the Faculty

Full time instructors of the curriculum

1. Name Associate Professor Dr. Vasaka Visoottiviseth

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Engineering	Nara Institute of Science and Technology, Japan	2003
M.Eng.	Computer Engineering	Tokyo University of Agriculture and Technology, Japan	1999
B.Eng.	Computer Engineering	Tokyo University of Agriculture and Technology, Japan	1997

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Multicast, Routing, IPv6, Traffic Measurement and Network Monitoring, Network Security, Internet Architecture

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Visoottiviseth V**, Moonkhaen V. A centralized system for detecting attacks from Windows Event Logs. In: the 2023 International Electrical Engineering Congress (iEECON); 2023 Mar 8-10; Krabi, Thailand; 2023. pp. 367-371.	11/0.4	2023

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Teerakanok S, Rassameeroj I, Khurat A, **Visoottiviseth V**. Lessons learned from penetration testing hands-on training during COVID-19 pandemic. In: the 2022 6th International Conference on Information Technology (InCIT); 2022 Nov 10-11; Nonthaburi, Thailand; 2022. pp. 368-373.	11/0.4	2022
Published research work	Katsura Y, Sakarin P, Yamai N, Kimiyama H, **Visoottiviseth V**. Quick blocking operation of firewall system cooperating with IDS and SDN. In: the 2022 24th International Conference on Advanced Communication Technology (ICACT); 2022 Feb 13-16; Pyeongchang, Korea; 2022. pp. 393-398.	11/0.4	2022
Published research work	Min NM, **Visoottiviseth V**, Teerakanok S, Yamai N. OWASP IoT top 10 based attack dataset for machine learning. In: the 2022 24th International Conference on Advanced Communication Technology (ICACT); 2022 Feb 13-16; Pyeongchang, Korea; 2022. pp. 317-322.	11/0.4	2022
Published research work	**Visoottiviseth V**, Khengthong T, Kesorn K, PatcharadechathornJ. ASPAHI: application for security and privacy awareness education for home IoT devices. In: the 2021 25th International Computer Science and Engineering Conference (ICSEC); 2021 Nov 18-20; Chiang Rai, Thailand; 2021. pp. 388-393.	11/0.4	2021
Published research work	**Visoottiviseth V**, Jongjariyangkul T, Khambanguay P, Toranathumkul C. ICNET: an edutainment web application for learning computer networks. In: the 2021 25th International Computer Science and Engineering Conference (ICSEC); 2021 Nov 18-20; Chiang Rai, Thailand; 2021. pp. 206-211.	11/0.4	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Visoottiviseth V**, Sakarin P, Thongwilai J, Choobanjong T. Signature-based and behavior-based attack detection with machine learning for home IoT devices. In: the 2020 IEEE Region 10 Conference (TENCON); 2020 Nov 16-19; Osaka, Japan. pp. 829-834.	11/0.4	2020
Published research work	**Visoottiviseth V**, Chutaporn G, Kungvanruttana S, Paisarnduangjan J. PITI: Protecting internet of things via intrusion detection system on raspberry Pi. In: the 2020 International Conference on Information and Communication Technology Convergence (ICTC); 2020 Oct 21-23; Jeju, South Korea. pp. 75-80.	11/0.4	2020
Published research work	Pojsomphong N, **Visoottiviseth V**, Sawangphol W, Khurat A, Falls D. Investigation of drone vulnerability and its countermeasure. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 251-255.	11/0.4	2020
Published research work	Prinyavitit S, **Visoottiviseth V**, Haga J, Takano R. Digital poster management system on SAGE2. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 64-67.	11/0.4	2020
Published research work	Puakalong C, Takano R, **Visoottiviseth V**, Khurat A, Sawangphol W. A network bandwidth limitation with the DEMU network emulator. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 151-154.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Reantongcome V, **Visoottiviseth V**, Sawangphol W, Khurat A, Falls D. Securing and trustworthy blockchain-based multi-tenant cloud computing. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Penang, Malaysia. pp. 256-261.	11/0.4	2020
Published research work	Phan-udom P, **Visoottiviseth V**, Ryousei T. Intercontinental Disk-to-Disk data transfer experiment with a lightweight DTN software stack. In: the 2020 22nd International Conference on Advanced Communication Technology (ICACT); 2020 Feb 16-19; Phoenix Park, South Korea. pp. 485-490.	11/0.4	2020

Current Teaching Load

ITCY	515	Research Methodology and Seminar in Cybersecurity and Information Assurance	1 (1-0-2)
ITCY	541	Digital Forensics Technologies and Techniques	3 (3-0-6)
ITCY	543	Network Forensics	3 (3-0-6)
ITCY	544	Mobile Security	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	592	Special Topics in Information Assurance	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)
ITCY	541	Digital Forensics Technologies and Techniques	3 (3-0-6)
ITCY	543	Network Forensics	3 (3-0-6)
ITCY	546	Mobile and IoT Security	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	592	Special Topics in Information Assurance	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

2. Name Assistant Professor Dr. Morakot Choetkiertikul

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University of Wollongong, Australia	2018
M.Sc.	Computer Science	Mahidol University	2012
B.Sc.	Information and Communication Technology	Mahidol University	2007

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Artificial Intelligence for Software Engineering, Software Engineering Analytics, Software Maintenance and Evolution, Software Process Improvement, Distributed Software Development

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Ragkhitwetsagul C, **Choetkiertikul M**, Hoonlor A, Prachyabrued M. Virtual reality for software engineering presentations. In: the 2022 29th Asia-Pacific Software Engineering Conference (APSEC); 2022 Dec 6-9; Japan; 2022. pp. 507-516.	11/0.4	2022
Published research work	Assavakamhaenghan N, Tanaphantaruk W, Suwanworaboon P, **Choetkiertikul M**, Tuarob S. Quantifying effectiveness of team recommendation for collaborative software development. Automated Software Engineering Aug 2022;29(51):1-48.	12/1.0	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Kangwanwisit P, **Choetkiertikul M**, Ragkhitwetsagul C, Sunetnanta T, Maipradit R, Hata H, Matsumoto K. A component recommendation model for issues in software projects. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-6.	11/0.4	2022
Published research work	Ragkhitwetsagul C, Krinke J, **Choetkiertikul M**, Sunetnanta T, Sarro F. Identifying software engineering challenges in software SMEs: a case study in Thailand. In: the 2022 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER); 2022 Mar 15-18; Honolulu, USA; 2022. pp. 218-222.	11/0.4	2022
Published research work	Phaithoon S, Wongnil S, Pussawong P, **Choetkiertikul M**, Ragkhitwetsagul C, Sunetnanta T, Maipradit R, Hata H, Matsumoto K. FixMe: a GitHub bot for detecting and monitoring on-hold self-admitted technical debt. In: the 2021 36th IEEE/ACM International Conference on Automated Software Engineering (ASE); 2021 Nov 15-19; Melbourne, Australia; 2021. pp. 1257-1261.	11/0.4	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Tuarob S, Assavakamhaenghan N, Tanaphantaruk W, Suwanworaboon P, Ul Hassan S, **Choetkiertikul M**. Automatic team recommendation for collaborative software development. Empirical Software Engineering May 2021;26(64). https://doi.org/10.1007/s10664-021-09966-4.	12/1.0	2021
Published research work	**Choetkiertikul M**, Dam HK, Tran T, Pham T, Ragkhitwetsagul C, Ghose A. Automatically recommending components for issue reports using deep learning. Empirical Software Engineering Feb 2021;26(14):1-39.	12/1.0	2021
Published research work	Assavakamhaenghan N, Suwanworaboon P, Tanaphantaruk W, Tuarob S, **Choetkiertikul M**. Towards team formation in software development: a case study of moodle. In: the 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2020 Jun 24-27; Phuket, Thailand; 2020. pp. 157–160.	11/0.4	2020
Published research work	Phan-udom P, Wattanakul N, Sakulniwat T, Ragkhitwetsagul C, Sunetnanta T, **Choetkiertikul M**, Kula R. Teddy: automatic recommendation of pythonic idiom usage for pull-based software projects. In: the 2020 IEEE International Conference on Software Maintenance and Evolution (ICSME); 2020 Sep 28 – Oct 2; Adelaide, SA, Australia; 2020. pp. 806-809.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Khanan C, Luewichana W, Pruktharathikoon K, Jiarpakdee J, Tantithamthavorn C, **Choetkiertikul M**, Ragkhitwetsagul C, Sunetnanta T. JITBot: an explainable just-in-time defect prediction bot. In: the 2020 35th IEEE/ACM International Conference on Automated Software Engineering (ASE); 2020 Sep 21-25; Melbourne, VIC, Australia; 2020. pp. 1336-1339.	11/0.4	2020

Current Teaching Load

ITCY	553	Secure Software Design	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	553	Secure Software Design	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

3. Name Assistant Professor Dr. Srisupa Palakvangsa Na Ayudhya

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computation	University of Manchester, United Kingdom	2006
M.S.	Advanced Computing	Imperial College of Science, Technology and Medicine, United Kingdom	2000
B.Sc. (1st Class Honor)	Computer Science	Thammasat University	1998

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Data and Knowledge Management

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Kriangsakdachai S, **Palakvangsa-Na-Ayudhya S**, Kusakunniran W, Devakula-Na-Ayudhya W, Chantrasagul C, Manasboonpermpool R, Sathianvichitr K, Sangsre P, Surachatkumtonekul T. Anomaly detection in red reflex images using deep learning approaches. In: the 2022 IEEE Region 10 Conference (TENCON); 2022 Nov 1-4; Hong Kong; 2022. pp. 1-6.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Palakvangsa-Na-Ayudhya S**, Sapthamrong T, Sunthornwutthikrai K, Sakiyalak D. GlaucoVIZ: Assisting system for early glaucoma detection using mask R-CNN. In: the 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2020 Jun 24-27; Phuket, Thailand; 2020. pp. 364-367.	11/0.4	2020
Other types of academic work	**ศรีสุภา ปาลกะวงศ์ ณ อยุธยา**, ดารินทร์ สากิยลักษณ์, ฐานันท์ ทรัพย์ธำรงค์, กฤษดา สุนทรวุฒิไกร, เสฏฐนิพัทธ์ เกรียงศักดาชัย, มนัสนันท์ สิริกุลสุนทร. เกลาโควิช : ระบบช่วยเหลือการวินิจฉัยโรคต้อหินเบื้องต้นสำหรับจักษุแพทย์ทั่วไป (GlaucoVIZ : System for Assisting Glaucoma Diagnosis for Generate Ophthalmologists). รางวัลสภาวิจัยแห่งชาติ : รางวัลผลงานประดิษฐ์คิดค้น (สาขาเทคโนโลยีสารสนเทศและนิเทศศาสตร์) ประจำปีงบประมาณ 2563.	2/0.6	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	592	Special Topics in Information Assurance	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

4. Name Assistant Professor Dr. Thanwadee Sunetnanta

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Distributed Software Engineering	Imperial College, United Kingdom	1999
M.Sc.	Foundation of Advanced Information Technology	Imperial College, United Kingdom	1993
B.Sc. (2^{nd} Class Honor)	Computer Science	Thammasat University	1991

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Software Engineering (in particular, requirement engineering, software process improvement, qualitative software quality), Knowledge Engineering, Internet Technology, Software Engineering Education

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Kangwanwisit P, Choetkiertikul M, Ragkhitwetsagul C, **Sunetnanta T**, Maipradit R, Hata H, Matsumoto K. A component recommendation model for issues in software projects. In: the 2022 19^{th} International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-6.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Ragkhitwetsagul C, Krinke J, Choetkiertikul M, **Sunetnanta T**, Sarro F. Identifying software engineering challenges in software SMEs: a case study in Thailand. In: the 2022 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER); 2022 Mar 15-18; Honolulu, USA; 2022. pp. 218-222.	11/0.4	2022
Published research work	Phaithoon S, Wongnil S, Pussawong P, Choetkiertikul M, Ragkhitwetsagul C, **Sunetnanta T**, Maipradit R, Hata H, Matsumoto K. FixMe: a GitHub bot for detecting and monitoring on-hold self-admitted technical debt. In: the 2021 36th IEEE/ACM International Conference on Automated Software Engineering (ASE); 2021 Nov 15-19; Melbourne, Australia; 2021. pp. 1257-1261.	11/0.4	2021
Published research work	Srisuphab A, Kaakkurivaara N, Silapachote P, Tangkit K, Meunpong P, **Sunetnanta T**. Illegal logging listeners using IoT networks. In: the 2020 IEEE Region 10 Conference (TENCON); 2020 Nov 16-19; Osaka, Japan; 2020. pp. 1277-1282.	11/0.4	2020
Published research work	Phan-udom P, Wattanakul N, Sakulniwat T, Ragkhitwetsagul C, **Sunetnanta T**, Choetkiertikul M, Kula R. Teddy: automatic recommendation of pythonic idiom usage for pull-based software projects. In: the 2020 IEEE International Conference on Software Maintenance and Evolution (ICSME); 2020 Sep 28 – Oct 2; Adelaide, SA, Australia; 2020. pp. 806-809.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Khanan C, Luewichana W, Pruktharathikoon K, Jiarpakdee J, Tantithamthavorn C, Choetkiertikul M, Ragkhitwetsagul C, **Sunetnanta T**. JITBot: an explainable just-in-time defect prediction bot. In: the 2020 35th IEEE/ACM International Conference on Automated Software Engineering (ASE); 2020 Sep 21-25; Melbourne, VIC, Australia; 2020. pp. 1336-1339.	11/0.4	2020

Current Teaching Load

ITCY	553	Secure Software Design	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	553	Secure Software Design	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

5. Name Lecturer Dr. Assadarat Khurat

Education

Degree	Degree Name	Institute	Year of Graduation
Dr.-Ing.	Computer Security	Hamburg University of Technology, Germany	2014
M.Sc.	Information and Communication Systems	Hamburg University of Technology, Germany	2005
B.Eng. (2nd Class Honor)	Telecommunication Engineering	King Mongkut's Institute of Technology Ladkrabang	2001

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Privacy Policy Languages, Access Control, Ontology, Intrusion Detection System, Risk Analysis

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Teerakanok S, Rassameeroj I, **Khurat A**, Visoottiviseth V. Lessons learned from penetration testing hands-on training during COVID-19 pandemic. In: the 2022 6th International Conference on Information Technology (InCIT); 2022 Nov 10-11; Nonthaburi, Thailand; 2022. pp. 368-373.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Khurat A**, Sangkhachantharanan P. An automatic networking device auditing tool based on CIS benchmark. In: the 2021 18th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2021 May 19-22; Chiang Mai, Thailand; 2021. pp. 409-412.	11/0.4	2021
Published research work	Noiprasong P, **Khurat A**. An IDS rule redundancy verification. In: the 2020 17th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2020 Nov 4-6; Bangkok, Thailand; 2020. pp. 110-115.	11/0.4	2020
Published research work	Pojsomphong N, Visoottiviseth V, Sawangphol W, **Khurat A**, Falls D. Investigation of drone vulnerability and its countermeasure. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 251-255.	11/0.4	2020
Published research work	Puakalong C, Takano R, Visoottiviseth V, **Khurat A**, Sawangphol W. A network bandwidth limitation with the DEMU network emulator. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 151-154.	11/0.4	2020
Published research work	Reantongcome V, Visoottiviseth V, Sawangphol W, **Khurat A**, Falls D. Securing and trustworthy blockchain-based multi-tenant cloud computing. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Penang, Malaysia. pp. 256-261.	11/0.4	2020

Current Teaching Load

ITCY	512	Information Security Management	3 (3-0-6)
ITCY	571	Information Assurance and Risk Management	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	512	Information Security Management	3 (3-0-6)
ITCY	571	Information Assurance and Risk Management	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

6. Name Lecturer Dr. Chaiyong Ragkhitwetsagul

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University College London, United Kingdom	2018
M.S.	Information Technology	Carnegie Mellon University, USA	2008
B.Eng.	Computer Engineering	Kasetsart University	2005

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Software Engineering: Code search, Clone detection, Mining of software repository

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Ragkhitwetsagul C**, Choetkiertikul M, Hoonlor A, Prachyabrued M. Virtual reality for software engineering presentations. In: the 2022 29th Asia-Pacific Software Engineering Conference (APSEC); 2022 Dec 6-9; Japan; 2022. pp. 507-516.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Kangwanwisit P, Choetkiertikul M, **Ragkhitwetsagul C**, Sunetnanta T, Maipradit R, Hata H, Matsumoto K. A component recommendation model for issues in software projects. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-6.	11/0.4	2022
Published research work	**Ragkhitwetsagul C**, Paixao M. Recommending code improvements based on stack overflow answer edits. In: the 19th International Conference on Mining Software Repositories (MSR); 2022 May 23-24; Pittsburgh, USA; 2022. https://doi.org/10.1145/1122445.1122456.	11/0.4	2022
Published research work	Robles G, Kula RG, **Ragkhitwetsagul C**, Sakulniwat T, Matsumoto K, Gonzalez-Barahona JM. pycefr: python competency level through code analysis. In: the 2022 IEEE/ACM 30th International Conference on Program Comprehension (ICPC); 2022 May 16-17; Pittsburgh, USA; 2022. pp. 173-177.	11/0.4	2022
Published research work	**Ragkhitwetsagul C**, Krinke J, Choetkiertikul M, Sunetnanta T, Sarro F. Identifying software engineering challenges in software SMEs: a case study in Thailand. In: the 2022 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER); 2022 Mar 15-18; Honolulu, USA; 2022. pp. 218-222.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Phaithoon S, Wongnil S, Pussawong P, Choetkiertikul M, **Ragkhitwetsagul C**, Sunetnanta T, Maipradit R, Hata H, Matsumoto K. FixMe: a GitHub bot for detecting and monitoring on-hold self-admitted technical debt. In: the 2021 36th IEEE/ACM International Conference on Automated Software Engineering (ASE); 2021 Nov 15-19; Melbourne, Australia; 2021. pp. 1257-1261.	11/0.4	2021
Published research work	White R, Krinke J, Barr ET, Sarro F, **Ragkhitwetsagul C**. Artefact relation graphs for unit test reuse recommendation. In: the 2021 14th IEEE Conference on Software Testing, Verification and Validation (ICST); 2021 Apr 12-16; Porto de Galinhas, Brazil; 2021. pp. 137-147.	11/0.4	2021
Published research work	Choetkiertikul M, Dam HK, Tran T, Pham T, **Ragkhitwetsagul C**, Ghose A. Automatically recommending components for issue reports using deep learning. Empirical Software Engineering Feb 2021;26(14):1-39.	12/1.0	2021
Published research work	Han D, **Ragkhitwetsagul C**, Krinke J, Paixao M, Rosa G. Does code review really remove coding convention violations? In: the 2020 IEEE 20th International Working Conference on Source Code Analysis and Manipulation (SCAM); 2020 Sep 28 – Oct 2; Adelaide, SA, Australia; 2020. pp. 43-53.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Phan-udom P, Wattanakul N, Sakulniwat T, **Ragkhitwetsagul C**, Sunetnanta T, Choetkiertikul M, Kula R. Teddy: automatic recommendation of pythonic idiom usage for pull-based software projects. In: the 2020 IEEE International Conference on Software Maintenance and Evolution (ICSME); 2020 Sep 28 – Oct 2; Adelaide, SA, Australia; 2020. pp. 806-809.	11/0.4	2020
Published research work	Khanan C, Luewichana W, Pruktharathikoon K, Jiarpakdee J, Tantithamthavorn C, Choetkiertikul M, **Ragkhitwetsagul C**, Sunetnanta T. JITBot: an explainable just-in-time defect prediction bot. In: the 2020 35th IEEE/ACM International Conference on Automated Software Engineering (ASE); 2020 Sep 21-25; Melbourne, VIC, Australia; 2020. pp. 1336-1339.	11/0.4	2020

Current Teaching Load

ITCY	553	Secure Software Design	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	553	Secure Software Design	3 (3-0-6)
ITCY	591	Special Topics in Cyber Security and Forensics	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

7. Name Lecturer Dr. Dolvara Guna-Tilaka

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	Washington University in Saint Louis, USA	2019
M.Sc.	Computer Science	Washington University in Saint Louis, USA	2013
B.Sc. (1st Class Honor)	Information and Communication Technology	Mahidol University	2010

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Wireless Networks, Internet of Things, Cyber-Physical Systems

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Gunatilaka D,** Sanbundit P, Puengchim S, Boontham C. AiRadar: a sensing platform for indoor air quality monitoring. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-6.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Gunatilaka D**. An IoT-enabled acoustic sensing platform for noise pollution monitoring. In: the 2021 IEEE 12th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON); 2021 Dec 1-4; New York, NY, USA; 2021. pp. 0383-0389.	11/0.4	2021
Published research work	**Gunatilaka D**, Lu C. REACT: an agile control plane for industrial wireless sensor-actuator networks. In: the 2020 IEEE/ACM Fifth International Conference on Internet-of-Things Design and Implementation (IoTDI); 2020 Apr 21-24; Sydney, NSW, Australia; 2020. pp. 53-65.	11/0.4	2020

Current Teaching Load

ITCY	515	Research Methodology and Seminar in Cyber Security and Information Assurance	1 (1-0-2)
ITCY	544	Mobile Security	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)
ITCY	546	Mobile and IoT Security	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

8. Name Lecturer Dr. Ittipon Rassameeroj

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University of California, Davis, USA	2019
M.Sc.	Computer Science	Mahidol University	2008
B.Sc.	Computer Science	Mahidol University	2005

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Cyber security, Big data, data analytics and engineering; Internet architecture, protocol, and measurement; Social computing, network theory/science

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Rassameeroj I**, Khajohn-udomrith N, Ngamjaruskotchakorn M, Kirdsaeng T, Khongchuay P. ML-Based System Failure Prediction Using Resource Utilization. Lecture Notes in Networks and Systems Mar 2023;611:40–50. doi: https://doi.org/10.1007/978-3-031-27470-1_5.	12/1.0	2023
Published research work	Teerakanok S, **Rassameeroj I**, Khurat A, Visoottiviseth V. Lessons learned from penetration testing hands-on training during COVID-19 pandemic. In: the 2022 6th International Conference on Information Technology (InCIT); 2022 Nov 10-11; Nonthaburi, Thailand; 2022. pp. 368-373.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Rassameeroj I**, Jomkhamsri P, Thaithaweewattana N. Student request system prototype using low-code development platform. In: the 2022 International Conference on Algorithms, Data Mining, and Information Technology (ADMIT); 2022 Sep 23-25; Xi'an, China; 2022. pp. 190-194.	11/0.4	2022
Published research work	**Rassameeroj I**, Wu SF. Effect of social algorithms on media source publishers in social media ecosystems. Communications in Computer and Information Science May 2021;1410:362–375.	12/1.0	2021
Published research work	**Rassameeroj I**, Wu SF. How do fake news propagators exploit social algorithms to promote their contents? In: the 17th International Conference on Web Based Communities and Social Media; 2020 Jul 21-23; Zagreb, Croatia; 2020. pp. 157-164.	11/0.4	2020

Current Teaching Load

ITCY	511	Computer and Network Security	3 (3-0-6)
ITCY	531	System Hardening and Penetration Testing	3 (3-0-6)
ITCY	545	Cloud Security	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	511	Computer and Network Security	3 (3-0-6)
ITCY	531	System Hardening and Penetration Testing	3 (3-0-6)
ITCY	545	Cloud Security	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

9. Name Lecturer Dr. Songpon Teerakanok

Education

Degree	Degree Name	Institute	Year of Graduation
D.Eng.	Information Science and Engineering	Ritsumeikan University, Japan	2019
M.Eng.	Information Science and Engineering	Ritsumeikan University, Japan	2016
B.Eng.	Computer Engineering	Prince of Songkla Unversity	2013

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Cybersecurity, Digital Forensics

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Phiayura P, **Teerakanok S**. A comprehensive framework for migrating to zero trust architecture. IEEE Access Feb 2023; 11:19487-19511.	12/1.0	2023
Published research work	**Teerakanok S**, Rassameeroj I, Khurat A, Visoottiviseth V. Lessons learned from penetration testing hands-on training during COVID-19 pandemic. In: the 2022 6th International Conference on Information Technology (InCIT); 2022 Nov 10-11; Nonthaburi, Thailand; 2022. pp. 368-373.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Min NM, Visoottiviseth V, **Teerakanok S**, Yamai N. OWASP IoT top 10 based attack dataset for machine learning. In: the 2022 24th International Conference on Advanced Communication Technology (ICACT); 2022 Feb 13-16; Pyeongchang, Korea; 2022. pp. 317-322.	11/0.4	2022
Published research work	**Teerakanok S**, Uehara T, Inomata A. A secure cloud-centric IoT framework for smart device registration. Journal of Information Processing (JIP) May 2021;29: 381-391.	12/1.0	2021
Published research work	**Teerakanok S**, Uehara T, Inomata A. Migrating to zero trust architecture: reviews and challenges. Security and Communication Networks May 2021;9947347:1-10.	12/1.0	2021
Published research work	Yamakawa D, Okimoto T, **Teerakanok S**, Uehara T, Inomata A. Enhancing digital certificate usability in long lifespan IoT devices by utilizing private CA. Security and Communication Networks Feb 2021;6610863):1-14.	12/1.0	2021
Published research work	Nguyen HN, **Teerakanok S**, Inomata A, Uehara T. The comparison of word embedding techniques in RNNs for vulnerability detection. In Paolo Mori, Gabriele Lenzini, Steven Furnell, editors. Proceedings of the 7th International Conference on Information Systems Security and Privacy (ICISSP); 2021 Feb 11-13; Online Streaming; pp. 109-120.	11/0.4	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Nguyen HV, **Teerakanok S**, Inomata A, Uehara T. The proposal of double agent architecture using actor-critic algorithm for penetration testing. In Paolo Mori, Gabriele Lenzini, Steven Furnell, editors. Proceedings of the 7th International Conference on Information Systems Security and Privacy (ICISSP); 2021 Feb 11-13; Online Streaming. pp. 440-449.	11/0.4	2021
Published research work	Kosakatani S, Uehara T, **Teerakanok S**. Japan's act on wiretapping for criminal investigation: how the system is implemented and how it should be. In: the 2020 15th International Conference for Internet Technology and Secured Transactions (ICITST); 2020 Dec 8-10; London, United Kingdom. pp. 1-6.	11/0.4	2020
Published research work	**Teerakanok S**, Yasuki H, Uehara T. A practical solution against business email compromise (BEC) attack using invoice checksum. In: the 2020 IEEE 20th International Conference on Software Quality, Reliability and Security Companion (QRS-C); 2020 Dec 11-14; Macau, China. pp. 160-167.	11/0.4	2020

Current Teaching Load

ITCY	511	Computer and Network Security	3 (3-0-6)
ITCY	513	Cyber Ethics and Law	2 (2-0-4)
ITCY	531	System Hardening and Penetration Testing	3 (3-0-6)
ITCY	534	Reverse Engineering and Vulnerability Analysis	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	511	Computer and Network Security	3 (3-0-6)
ITCY	513	Cyber Ethics and Law	2 (2-0-4)
ITCY	531	System Hardening and Penetration Testing	3 (3-0-6)
ITCY	535	Reverse Engineering and Malware Analysis	3 (3-0-6)
ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

10. Name Lecturer Dr. Thanapon Noraset

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	Northwestern University, USA	2018
M.S.	Computer Science	Northwestern University, USA	2018
B.Sc. (1st Class Honor)	Information and Communication Technology	Mahidol University	2010

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Natural Language Processing, Biomedical Image Analysis, Deep Learning, Machine Learning

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Noraset T**, Chatrinan K, Tawichsri T, Thaipisutikul T, Tuarob S. Language-agnostic deep learning framework for automatic monitoring of population-level mental health from social networks. J Biomed Inform Jul 2022;133:104145.	12/1.0	2022
Published research work	Saramas K, Kraisangka J, **Supratak A**, Noraset T, Yimwadsana B, Kusakunniran W. Human detection and social distancing measurement in a video. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-4.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Yodrabum N, Rudeejaroonrung K, Chaikangwan I, Prompattanapakdee J, **Noraset T**. Precision of low-cost augmented reality in prefabricated cutting guide for fibular free flap surgery. J Craniofac Surg May 2022;33(3):916-919.	12/1.0	2022
Published research work	Pornprasit C, Liu X, Kiattipadungkul P, Kertkeidkachorn N, Kim K, **Noraset T**, Hassan S, Tuarob S. Enhancing citation recommendation using citation network embedding. Scientometrics Jan 2022;127:233–264.	12/1.0	2022
Published research work	Tuarob S, Wettayakorn P, Phetchai P, Traivijitkhun S, Lim S, **Noraset T**, Thaipisutikul T. DAViS: a unified solution for data collection, analyzation, and visualization in real-time stock market prediction. Financial Innovation Jul 2021;7(1):1-32.	12/1.0	2021
Published research work	Sawangphol W, **Noraset T**, Panphattarasap P, Praiwattana P, Sutthiratpanya P, Talanon N, Tungsupanich K, Prommin D. Foot arch posture classification using image processing. Journal of Information Science and Technology (JIST) Jun 2021;11(1):75-82.	12/1.0	2021
Published research work	**Noraset T**, Lowphansirikul L, Tuarob S. WabiQA: a wikipedia-based Thai question-answering system. Information Processing & Management Jan 2021;58(1): 102431.	12/1.0	2021
Published research work	Safder I, Hassan S-U, Visvizi A, **Noraset T**, Nawaz R, Tuarob S. Deep learning-based extraction of algorithmic metadata in full-text scholarly documents. Information Processing and Management Nov 2020;57(6):102269.	12/1.0	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Pornprasit C, Liu X, Kertkeidkachorn N, Kim K, **Noraset T**, Tuarob S. ConvCN: a CNN based citation network embedding algorithm towards citation recommendation. In: the ACM/IEEE Joint Conference on Digital Libraries (JCDL); 2020 Aug 1-5; Wuhan, Hubei, P. R. China; 2020. pp. 433–436.	11/0.4	2020
Published research work	Sangtunchai P, Kim KS, Kim T, **Noraset T**, Tuarob S. Intelligent distributed customer anticipation approach for taxi routing optimization. In: the 2020 12th International Conference on Knowledge and Smart Technology (KST); 2020 Jan 29 – Feb 1; Pattaya, Thailand; 2020. pp. 149-154.	11/0.4	2020

Current Teaching Load

ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	696	Independent Study	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Full time instructors

1. Name Associate Professor Dr. Suppawong Tuarob

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science and Engineering	Pennsylvania State University, USA	2015
M.S.	Industrial Engineering	Pennsylvania State University, USA	2015
M.SE.	Computer Science and Engineering	University of Michigan, Ann Arbor, USA	2010
B.SE.	Computer Science	University of Michigan, Ann Arbor, USA	2009

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Machine Learning Applications, Data Science and Engineering, Data and Social Media Mining, Natural Language Processing

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Tuarob S**, Satravisut M, Sangtunchai P, Nunthavanich S, Noraset T. FALCoN: detecting and classifying abusive language in social networks using context features and unlabeled data. Information Processing & Management Jul 2023;60(4):103381.	12/1.0	2023

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Rungbanapan V, Thaipisutikul T, Pongpaichet S, Supratak A, Lin CY, **Tuarob S**. To Dev or to Doc?: predicting college IT students' prominent functions in software teams Using LMS activities and academic profiles. In: the 2022 26th International Computer Science and Engineering Conference (ICSEC); 2022 Dec 21-23; Sakon Nakhon, Thailand; 2022. pp. 105-110.	11/0.4	2022
Published research work	Thaipisutikul T, Tatiyamaneekul P, Lin CY, **Tuarob S**. A deep feature-level fusion model for masked face identity recommendation system. Journal of Ambient Intelligence and Humanized Computing Sep 2022. https://doi.org/10.1007/s12652-022-04380-0.	12/1.0	2022
Published research work	Assavakamhaenghan N, Tanaphantaruk W, Suwanworaboon P, Choetkiertikul M, **Tuarob S**. Quantifying effectiveness of team recommendation for collaborative software development. Automated Software Engineering Aug 2022;29(51):1-48.	12/1.0	2022
Published research work	Sajjacholapunt P, Supratak A, **Tuarob S**. Automatic measurement of acidity from roasted coffee beans images using efficient deep learning. Journal of Food Process Engineering Nov 2022;45(11):e14147. https://doi.org/10.1111/jfpe.14147.	12/1.0	2022
Published research work	Pongpalchet S, Nirunwiroj K, **Tuarob S**. Automatic assessment and identification of leadership in college students. IEEE Access Jul 2022;10:79041-79060.	12/1.0	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Noraset T, Chatrinan K, Tawichsri T, Thaipisutikul T, **Tuarob S**. Language-agnostic deep learning framework for automatic monitoring of population-level mental health from social networks. J Biomed Inform Jul 2022;133:104145.	12/1.0	2022
Published research work	Manzoor MA, Hassan S, Muazzam A, **Tuarob S**, Nawaz R. Social mining for sustainable cities: thematic study of gender-based violence coverage in news articles and domestic violence in relation to COVID-19. Journal of Ambient Intelligence and Humanized Computing Apr 2022. https://doi.org/10.1007/s12652-021-03401-8.	12/1.0	2022
Published research work	Pornprasit C, Liu X, Kiattipadungkul P, Kertkeidkachorn N, Kim K, Noraset T, Hassan S, **Tuarob S**. Enhancing citation recommendation using citation network embedding. Scientometrics Jan 2022;127:233–264. https://doi.org/10.1007/s11192-021-04196-3.	12/1.0	2022
Published research work	**Tuarob S**, Assavakamhaenghan N, Tanaphantaruk W, Suwanworaboon P, Ul Hassan S, Choetkiertikul M. Automatic team recommendation for collaborative software development. Empirical Software Engineering May 2021;26(64). https://doi.org/10.1007/s10664-021-09966-4.	12/1.0	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Said A, Ul Hassan S, **Tuarob S**, Nawaz R, Shabbir M. DGSD: Distributed graph representation via graph statistical properties. Future Generation Computer Systems Feb 2021;119:166-175.	12/1.0	2021
Published research work	Wang W, Liu J, Tang T, **Tuarob S**, Xia F, Gong Z, King I. Attributed collaboration network embedding for academic relationship mining. ACM Transactions on the Web Feb 2021;15(1):1-20.	12/1.0	2021
Published research work	Noraset T, Lowphansirikul L, **Tuarob S**. WabiQA: A Wikipedia-based Thai question-answering system. Information Processing & Management Jan 2021;58(1):102431.	12/1.0	2021
Published research work	Thaipisutikul T, **Tuarob S**, Pongpalchet S, Amornvatcharapong A, K. Shih T. Automated classification of criminal and violent activities in Thailand from online news articles. In: the 2021 13th International Conference on Knowledge and Smart Technology (KST); 2021 Jan 21-24; Chonburi, Thailand; 2021. pp.170-175.	11/0.4	2021
Published research work	Sangtunchai P, Kim KS, Kim T, Noraset T, **Tuarob S**. Intelligent distributed customer anticipation approach for taxi routing optimization. In: the 2020 12th International Conference on Knowledge and Smart Technology (KST); 2020 Jan 29 – Feb 1; Pattaya, Thailand; 2020. pp. 149-154.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Safder I, Hassan S-U, Visvizi A, Noraset T, Nawaz R, **Tuarob S**. Deep learning-based extraction of algorithmic metadata in full-text scholarly documents. Information Processing and Management Nov 2020;57(6):102269.	12/1.0	2020
Published research work	**Tuarob S**, Kang S, Wettayakorn P, Pornprasit C, Sachati T, Hassan S, Haddawy P. Automatic classification of algorithm citation functions in scientific literature. IEEE Transactions on Knowledge and Data Engineering Oct 2020;32(10):1881-1896.	12/1.0	2020
Published research work	Assavakamhaenghan N, Suwanworaboon P, Tanaphantaruk W, **Tuarob S**, Choetkiertikul M. Towards team formation in software development: a case study of moodle. In: the 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2020 Jun 24-27; Phuket, Thailand; 2020. pp. 157–160.	11/0.4	2020
Published research work	Pongpaichet S, T. Unprasert T, **Tuarob S**, Sajjacholapunt P. SGD-Rec: a matrix decomposition based model for personalized movie recommendation. In: the 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2020 Jun 24-27; Phuket, Thailand; 2020. pp. 588-591.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Suwanworaboon P, Lynden S, **Tuarob S**. Enhancing visualization applications using open data sources. In: the 2020 17th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2020 Nov 4-6; Bangkok, Thailand; 2020. pp. 30-35.	11/0.4	2020
Published research work	Pornprasit C, Liu X, Kertkeidkachorn N, Kim K, Noraset T, **Tuarob S**. ConvCN: a CNN based citation network embedding algorithm towards citation recommendation. In: the ACM/IEEE Joint Conference on Digital Libraries (JCDL); 2020 Aug 1-5; Wuhan, Hubei, P. R. China; 2020. pp. 433–436.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

2. Name Associate Professor Dr. Worapan Kusakunniran

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science and Engineering	University of New South Wales, Australia	2013
B.Eng. (1st Class Honor)	Computer Engineering	University of New South Wales, Australia	2008

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Gait Recognition, Biometrics, Pattern Recognition, Medical Image Processing, Computer Vision, Machine Learning, Action and Behavioral Analysis, Image and Video Processing, Object Tracking, Object Classification and Retrieval

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Kusakunniran W**, Borwarnginn P, Siriapisith T, Karnjanapreechakorn S, Sutassananon K, Tongdee T, Saiviroonporn, P. Detecting COVID-19 in chest X-ray images. International Journal of Electrical and Computer Engineering Jun 2023;13(3):3290–3298.	12/1.0	2023

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Kusakunniran W**, Borwarnginn P, Karnjanapreechakorn S, Thongkanchorn K, Ritthipravat P, Tuakta P, Benjapornlert P. Encoder-decoder network with RMP for tongue segmentation. Medical and Biological Engineering and Computing May 2023;61(5):1193–1207.	12/1.0	2023
Published research work	**Kusakunniran W**, Karnjanapreechakorn S, Siriapisith T, Saiviroonporn P. Fast MRI reconstruction using StrainNet with dual-domain loss on spatial and frequency spaces. Intelligent Systems with Applications May 2023;18:200203.	12/1.0	2023
Published research work	Precharattana M, Sanium S, Pongsanon K, Ritthipravat P, Chuechote S, **Kusakunniran W**. Blended engineering design process learning activities for secondary school students during COVID-19 epidemic: students' learning activities and perception. Education Sciences Feb 2023;13(2):159.	12/1.0	2023
Published research work	**Kusakunniran W**, Saiviroonporn P, Siriapisith T, Tongdee T, Uraiverotchanakorn A, Leesakul S, Thongnarintr P, Kuama A, Yodprom P. Automatic measurement of cardiothoracic ratio in chest x-ray images with ProGAN-generated dataset. Applied Computing and Informatics Apr 2023. doi: https://doi.org/10.1108/ACI-11-2022-0322.	12/1.0	2023

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Aukkapinyo K, Hotta S, **Kusakunniran W**. Manga Face Detection on Various Drawing Styles Using Region Proposals-Based CNN. Science and Technology Asia Mar 2023;28(1):120–135.	12/1.0	2023
Published research work	**Kusakunniran W**, Borwarnginn P, Imaromkul T, Aukkapinyo K, Thongkanchorn K, Wattanadhirach D, Mongkolluksamee S, Thammasudjarit R, Ritthipravat P, Tuakta P, Benjapornlert P. Automated tongue segmentation using deep encoder-decoder model. Multimedia Tools and Applications Mar 2023. doi: https://doi.org/10.1007/s11042-023-15061-1.	12/1.0	2023
Published research work	Sriyuktasuth A, Chuengsaman P, **Kusakunniran W**, Khurat A, Rattana-umpa N. Telehealth service for patients receiving continuous ambulatory peritoneal dialysis: a pilot study. Siriraj Medical Journal Jan 2023;75(1):46–54.	13/0.8	2023
Published research work	Aung ZH, Sanium S, Songsaksuppachok C, **Kusakunniran W**, Precharattana M, Chuechote S, Pongsanon K, Ritthipravat P. Designing a novel teaching platform for AI: A case study in a Thai school context. Journal of Computer Assisted Learning Dec 2022;38(6):1714–1729.	12/1.0	2022
Published research work	Borwarnginn P, Haga JH, **Kusakunniran W**. Predicting river water height using deep learning-based features. ICT Express Dec 2022;8(4):588–594.	12/1.0	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Kriangsakdachai S, Palakvangsa-Na-Ayudhya S, **Kusakunniran W**, Devakula-Na-Ayudhya W, Chantrasagul C, Manasboonpermpool R, Sathianvichitr K, Sangsre P, Surachatkumtonekul T. Anomaly detection in red reflex images using deep learning approaches. In: the 2022 IEEE Region 10 Conference (TENCON); 2022 Nov 1-4; Hong Kong; 2022. pp. 1-6.	11/0.4	2022
Published research work	Miao Z, **Kusakunniran W**, Siriapisith T, Saiviroonporn P. Deep learning based technique for classification of abdominal aortic aneurysm (AAA) in CT-scan images. In: the 2022 IEEE Region 10 Conference (TENCON); 2022 Nov 1-4; Hong Kong; 2022. pp. 1-6.	11/0.4	2022
Published research work	Zhang H, **Kusakunniran W**, Siriapisith T, Saiviroonporn P. Brain hemorrhage segmentation in CT scan images using deep learning based approach. In: the 2022 IEEE Region 10 Conference (TENCON); 2022 Nov 1-4; Hong Kong; 2022. pp. 1-5.	11/0.4	2022
Published research work	Yao L, **Kusakunniran W**, Wu Q, Xu J, Zhang J. Recognizing gaits across walking and running speeds. ACM Transactions on Multimedia Computing, Communications and Applications Aug 2022;18(3):75.	12/1.0	2022
Published research work	Siriapisith T, **Kusakunniran W**, Haddawy P. A retrospective study of 3D deep learning approach incorporating coordinate information to improve the segmentation of pre- and post-operative abdominal aortic aneurysm. PeerJ Computer Science Jul 2022;8:e1033.	12/1.0	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Saramas K, Kraisangka J, Supratak A, Noraset T, Yimwadsana B, **Kusakunniran W**. Human detection and social distancing measurement in a video. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-4.	11/0.4	2022
Published research work	Karnjanapreechakorn S, **Kusakunniran W**, Siriapisith T, Saiviroonporn P. Multi-level pooling encoder–decoder convolution neural network for MRI reconstruction. PeerJ Computer Science Mar 2022;8:e934.	12/1.0	2022
Published research work	**Kusakunniran W**, Aukkapinyo K, Borwarnginnn P, Imaromkul T, Thongkanchorn K, Wattanadhirach D, Mongkolluksamee S, Thammasudjarit R, Ritthipravat P, Tuakta P, Benjapornlert P. Measurement of tongue motion using optical flows on segmented areas. In: the 2022 14th International Conference on Knowledge and Smart Technology (KST); 2022 Jan 26-29; Chonburi, Thailand; 2022. pp. 24-28.	11/0.4	2022
Published research work	Yao L, **Kusakunniran W**, Wu Q, Zhang J, Tang Z, Yang W. Robust gait recognition using hybrid descriptors based on Skeleton Gait Energy Image. Pattern Recognition Letters Oct 2021; 150:289-296.	12/1.0	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Kusakunniran W**, Charoenpanich P, Smunyarnoraset P, Suksai S, Kanchanapreechakorn S, Wu Q, Zhang J. Hybrid learning of vessel segmentation in retinal images. ECTI Transactions on Computer and Information Technology (ECTI-CIT) Apr 2021;15(1):1-11.	12/1.0	2021
Published research work	Yao L, **Kusakunniran W**, Wu Q, Zhang J. Gait recognition using a few gait frames. PeerJ Computer Science Mar 2021;7:e382.	12/1.0	2021
Published research work	Borwarmginn P, **Kusakunniran W**, Kanchanapreechakorn S, Thongkanchorn K. Knowing Your Dog Breed: Identifying a Dog Breed with Deep Learning. International Journal of Automation and Computing Feb 2021;18(1):45-54.	12/1.0	2021
Published research work	**Kusakunniran W**, Wiratsudakul A, Chuachan U, Kanchanapreechakorn S, Imaromkul T, Suksriupatham N, Thongkanchorn K. Biometric for cattle identification using muzzle patterns. International Journal of Pattern Recognition and Artificial Intelligence Nov 2020;34(12):2056007.	12/1.0	2020
Published research work	Aukkapinyo K, Sawangwong S, Pooyoi P, **Kusakunniran W**. Localization and classification of rice-grain images using region proposals-based convolutional neural network. International Journal of Automation and Computing Apr 2020;17:233-246.	12/1.0	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Natakuaithung P, **Kusakunniran W**. Development of AR learning assistance tool for clay-sculpting 3D model. In: the 2020 12th International Conference on Knowledge and Smart Technology (KST); 2020 Jan 29 – Feb 1; Pattaya, Thailand; 2020. pp. 109-114.	11/0.4	2020
Published research work	Li N, **Kusakunniran W**, Hotta S. Detection of animal behind cages using convolutional neural network. In: the 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2020 Jun 24-27; Phuket, Thailand; 2020. pp. 242-245.	11/0.4	2020
Published research work	Aukkapinyo K, Sawangwong S, Pooyoi P, **Kusakunniran W**. Localization and classification of rice-grain images using region proposals-based convolutional neural network. International Journal of Automation and Computing Apr 2020;17:233-246.	12/1.0	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

3. Name Assistant Professor Dr. Boonsit Yimwadsana

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Electrical Engineering	Columbia University, USA	2007
M.S.	Electrical Engineering	Columbia University, USA	2001
B.S.	Electrical Engineering	Columbia University, USA	2000

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Computer Communications and Networks, Computer Science

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Saramas K, Kraisangka J, Supratak A, Noraset T, **Yimwadsana B**, Kusakunniran W. Human detection and social distancing measurement in a video. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-4.	11/0.4	2022
Published research work	**Yimwadsana B**, Chanthapeth P. Determining natural rubber humidity level using rubber color. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-5.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Yimwadsana B**, Vichhaiy S. Improving accuracy of an AoA-based Wi-Fi indoor localization using Kalman filter. In: the 2020 17th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2020 Nov 4-6; Bangkok, Thailand. pp. 155-159.	11/0.4	2020
Published research work	Tao Q, Cao Y, **Yimwadsana B**, Fu X, RSS-based underwater acoustic distance measurement with multiple frequencies. Ocean Engineering Nov 2020;215(107772). https://doi.org/10.1016/j.oceaneng.2020.107772.	12/1.0	2020
Published research work	Liu R, Guo B, Zhang A, **Yimwadsana B**. Research on GPS precise point positioning algorithm with a Sea Surface Height Constraint. Ocean Engineering Feb 2020;197(106826). https://doi.org/10.1016/j.oceaneng.2019.106826.	12/1.0	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

4. Name Assistant Professor Dr. Charnyote Pluempitiwiriyawej

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Engineering-CISE	University of Florida, USA	2001
M.S.	Computer Science	University of Maryland, USA	1997
B.Eng. (2nd Class Honor)	Computer Engineering	King Mongkut's institute of Technology Thonburi	1994

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Data and Knowledge Management, Data Warehousing, Data Mining, Data Engineering, Data Science, Natural Language Processing and Information Retrieval.

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Pluempitiwiriyawej C**. Comparison of learning achievement between online and onsite learning in database design course. Journal of Information and Learning Aug 2022; 33(2):45-56.	9/0.6	2022
Published research work	Phon U, **Pluempitiwiriyawej C**. Khmer WordNet construction. In: the 2020 5th International Conference on Information Technology (InCIT); 2020 Oct 21-22; Chonburi, Thailand; 2020. pp. 122-127.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Ya Aung S, **Pluempitiwiriyawej C**. Blockchain-based implementation for integration of DNA profiles information systems. In: the 2020 5th International Conference on Information Technology (InCIT); 2020 Oct 21-22; Chonburi, Thailand; 2020. pp. 110-115.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

5. Name Assistant Professor Dr. Mores Prachyabrued

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University of Louisiana at Lafayette, USA	2013
M.S.	Computer Science	University of Louisiana at Lafayette, USA	2007
M.Eng.	Computer Engineering	Kasetsart University	2002
B.Eng.	Computer Engineering	Kasetsart University	1998

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Virtual Reality, Entertainment Computing, Computer Graphics, Artificial Intelligence

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Ragkhitwetsagul C, Choetkiertikul M, Hoonlor A, **Prachyabrued M**. Virtual reality for software engineering presentations. In: the 2022 29th Asia-Pacific Software Engineering Conference (APSEC); 2022 Dec 6-9; Japan; 2022. pp. 507-516.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Vogtle F, Haddawy P, Yin MS, Barkowsky T, Bicout D, **Prachyabrued M**, Lawpoolsri S. A collaborative platform supporting distributed teams in visualization and analysis of infectious disease data. In: the 2022 IEEE 10th International Conference on Healthcare Informatics (ICHI); 2022 Jun 11-14; Rochester, MN, USA; 2022. pp. 226-232.	11/0.4	2022
Published research work	**Prachyabrued M**, Haddawy P, Tengputtipong K, Su Yin M, Bicout D, Laosiritaworn Y. Immersive visualization of dengue vector breeding sites extracted from street view images. In: the 2020 IEEE International Conference on Artificial Intelligence and Virtual Reality (AIVR); 2020 Dec 18-20; Online conference; 2020. pp. 33-42.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

6. Name Assistant Professor Dr. Preecha Tangworakitthaworn

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University of Southampton, United Kingdom	2014
M.Sc.	Computer Science	Mahidol University	2006
B.Sc.	Computer Science	Mahidol University	1998

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Conceptualization, Conceptual Modeling, Instructional Design, Intended Learning Outcome, Competency, Outcome-Based Education, ELearning, Technology-Enhanced Learning

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Huu PN, **Tangworakitthaworn P**, Gilbert L. The design and development of an adaptive intelligent tutoring system based on constructive alignment and cognitive theories. In: the 2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2022 Jun 22-25; Bangkok, Thailand; 2022. pp. 1-6.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Huu PN, **Tangworakitthaworn P**, Gilbert L. Towards self-regulated individual learning path generation using outcome taxonomies and constructive alignment. In: the 2021 IEEE International Conference on Engineering, Technology & Education (TALE); 2021 Dec 5-8; Wuhan, Hubei Province, China; 2021. pp. 465-472.	11/0.4	2021
Published research work	Nguyen PH, **Tangworakitthaworn P**, Gilbert L. Measuring individual learning effectiveness based on cognitive taxonomies. In: the 2020 IEEE Region 10 Conference (TENCON); 2020 November 16-19; Osaka, Japan; 2020. pp. 1002-1006.	11/0.4	2020
Published research work	**Tangworakitthaworn P**, Tengchaisri V, Sudjaidee P. Serious game enhanced learning for agricultural engineering education: two games development based on IoT technology. In: the 2020 - 5th International Conference on Information Technology (InCIT); 2020 Oct 21-22; Chonburi, Thailand; 2020. pp. 82-86.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

7. Name Assistant Professor Dr. Thitinan Tantidham

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	RWTH Aachen University, Germany	2010
M.Sc.	Computer Science	Mahidol University	1997
B.Eng.	Computer Engineering	Kasetsart University	1993

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Computer and Data Communications, Green Computing and Applications, Embedded System and Applications

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Hu C, Kuo L, Chen Y, **Tantidham T**, Mongkolwat P. QoS-prioritised media delivery with adaptive data throughput in IoT-based home networks. International Journal of Web and Grid Services Mar 2021;17(1):60-80.	12/1.0	2021
Published research work	Bamrung C, Kamintra W, Hui L, Hu C, **Tantidham T**, Mongkolwat P. Self-organized unstructured network architecture for device and service deployment in smart home. In: the 2020 IEEE 2nd Global Conference on Life Sciences and Technologies (LifeTech); 2020 Mar 10-12; Kyoto, Japan; 2020. pp. 288-289.	11/0.4	2020

Current Teaching Load

ITCY	571	Information Assurance and Risk Management	3 (3-0-6)
ITCY	697	Thematic Paper	6 (0-18-0)
ITCY	698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

ITCY	571	Information Assurance and Risk Management	1 (1-0-2)

8. Name Lecturer Dr. Pattanasak Mongkolwat

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	Illinois Institute of Technology, USA	1996
M.Sc.	Computer Science	McNeese State University, USA	1991
B.Sc.	Computer Science	University of the Thai Chamber of Commerce	1988

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Medical and imaging Informatics, Software Engineering, Object-Oriented Programming

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Beheshti M, Naeimi T, Hudson TE, Feng C, **Mongkolwat P**, Riewpaiboon W, Seiple W, Vedanthan R, Rizzo JR. A smart service system for spatial intelligence and onboard navigation for individuals with visual impairment (VIS4ION Thailand): study protocol of a randomized controlled trial of visually impaired students at the Ratchasuda College, Thailand. Trials Mar 2023;24(169):1-17.	12/1.0	2023

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Damkham W, Thaipisutikul T, Supratak A, Kraisangka J, **Mongkolwat P**, Wang JC. Automated COVID-19 screening framework via deep convolutional neural network with chest x-ray medical images. In: the 2022 6th International Conference on Information Technology (InCIT); 2022 Nov 10-11; Nonthaburi, Thailand; 2022. pp. 96-99.	11/0.4	2022
Published research work	Sittirit N, **Mongkolwat P**, Thaipisutikul T, Supratak A, Chen TS, Wang JC. Fingerprint liveness detection with voting ensemble classifier. In: the 2022 6th International Conference on Information Technology (InCIT); 2022 Nov 10-11; Nonthaburi, Thailand; 2022. pp. 105-110.	11/0.4	2022
Published research work	Yang A, Beheshti M, Hudson TE, Vedanthan R, Riewpaiboon W, **Mongkolwat P**, Feng C, Rizzo JR. Unav: an infrastructure-independent vision-based navigation system for people with blindness and low vision. Sensors Nov 2022;22(22):8894. doi: 10.3390/s22228894.	12/1.0	2022
Published research work	Thaipisutikul T, Shih TK, Enkhbat A, Aditya W, Shih H, **Mongkolwat P**. Beyond fear go viral: a machine learning study on infodemic detection during covid-19 pandemic. In: the 2022 14th International Conference on Knowledge and Smart Technology (KST); 2022 Jan 26-29; Chonburi, Thailand; 2022. pp. 1-6.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Bai X, Wang H, Ma L, Xu Y, Gan J, Fan Z, Yang F, Ma K, Yang J, Bai S, Shu C, Zou X, Huang R, Zhang C, Liu X, Tu D, Xu C, Zhang W, Wang X, Chen A, Zeng Y, Yang D, Wang MW, Holalkere N, Halin NJ, Kamel IR, Wu J, Peng X, Wang X, Shao J, **Mongkolwat P**, Zhang J, Liu W, Roberts M, Teng Z, Beer L, Sanchez LE, Sala E, Rubin DL, Weller A, Lasenby J, Zheng C, Wang J, Li Z, Schönlieb C, Xia T. Advancing COVID-19 diagnosis with privacy-preserving collaboration in artificial intelligence. Nature Machine Intelligence Dec 2021;3:1081–1089.	12/1.0	2021
Published research work	Hu C, Kuo L, Chen Y, Tantidham T, **Mongkolwat P**. QoS-prioritised media delivery with adaptive data throughput in IoT-based home networks. International Journal of Web and Grid Services Mar 2021;17(1):60-80.	12/1.0	2021
Published research work	Rizzo JR, Beheshti M, Hudson TE, **Mongkolwat P**, Riewpaiboon W, Seiple W, Ogedegbe OG, Vedanthan R. The global crisis of visual impairment: an emerging global health priority requiring urgent action. Disability and Rehabilitation: Assistive Technology Dec 2020; doi: 10.1080/17483107.2020.1854876.	12/1.0	2020
Published research work	Rizzo JR, Feng C, Riewpaiboo W, **Mongkolwat P**. A low-vision navigation platform for economies in transition countries. In: the 2020 IEEE World Congress on Services (SERVICES); 2020 Oct 18.23; Beijing, China; 2020. pp. 1-3.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Bamrung C, Kamintra W, Hui L, Hu C, Tantidham T, **Mongkolwat P**. Self-organized unstructured network architecture for device and service deployment in smart home. In: the 2020 IEEE 2nd Global Conference on Life Sciences and Technologies (LifeTech); 2020 Mar 10-12; Kyoto, Japan; 2020. pp. 288-289.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

9. Name Lecturer Dr. Pawitra Liamruk

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University of Bath, United Kingdom	2015
M.Sc.	Software Systems Engineering	University College London, United Kingdom	2010
B.Sc. (1st Class Honor)	Information and Communication Technology	Mahidol University	2008

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Cognitive Science, Human-computer Interaction and User Behavioural Model

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Jiang S. **Liamruk P.** Effects of SERP information on academic search behaviours. In: the 2020-5th International Conference on Information Technology (InCIT); 2020 Oct 21-22; Chonburi, Thailand; 2020. pp. 33-38.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

10. Name Lecturer Dr. Siripen Pongpaichet

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Computer Science	University of California, Irvine, USA	2016
M.S.	Computer Science	University of California, Irvine, USA	2011
B.Sc. (1st Class Honor)	Information and Communication Technology	Mahidol University	2008

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Situation Recognition, Spatial-Temporal Data Analytics, Event Streams Processing Engines, Micro-Reporting Systems, Database Design and Models, Personal to Public Health Decision Systems

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Rungbanapan V, Thaipisutikul T, **Pongpaichet S**, Supratak A, Lin CY, Tuarob S. To Dev or to Doc?: predicting college IT students' prominent functions in software teams Using LMS activities and academic profiles. In: the 2022 26th International Computer Science and Engineering Conference (ICSEC); 2022 Dec 21-23; Sakon Nakhon, Thailand; 2022. pp. 105-110.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Sirikasem D, **Pongpaichet S**. Thai paraphrasing tool for chatbot intent recognition training. In: the 2022 26th International Computer Science and Engineering Conference (ICSEC); 2022 Dec 21-23; Sakon Nakhon, Thailand; 2022. pp. 111–116.	11/0.4	2022
Published research work	**Pongpalchet S**, Nirunwiroj K, Tuarob S. Automatic assessment and identification of leadership in college students. IEEE Access Jul 2022;10:79041-79060.	12/1.0	2022
Published research work	**Pongpalchet S**, Thabsuwan C, Boonthanom K. The spatio-temporal distribution of residential real estate price monitoring system. In: the 2021 13th International Conference on Knowledge and Smart Technology (KST); 2021 Jan 21-24; Chonburi, Thailand; 2021. pp.159-164.	11/0.4	2021
Published research work	Thaipisutikul T, Tuarob S, **Pongpalchet S**, Amornvatcharapong A, K. Shih T. Automated classification of criminal and violent activities in Thailand from online news articles. In: the 2021 13th International Conference on Knowledge and Smart Technology (KST); 2021 Jan 21-24; Chonburi, Thailand; 2021. pp.170-175.	11/0.4	2021
Published research work	**Pongpaichet S**, T. Unprasert T, Tuarob S, Sajjacholapunt P. SGD-Rec: a matrix decomposition based model for personalized movie recommendation. In: the 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2020 Jun 24-27; Phuket, Thailand; 2020. pp. 588-591.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Pongpaichet S**, Jankapor S, Janchai S, Tongsanit T. Early detection at-risk students using machine learning. In: the 2020 International Conference on Information and Communication Technology Convergence (ICTC); 2020 Oct 21-23; Jeju, South Korea; 2020. pp. 283-287.	11/0.4	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

11. Name Lecturer Dr. Wudhichart Sawangphol

Education

Degree	Degree Name	Institute	Year of Graduation
Ph.D.	Information Technology	Monash University, Australia	2017
MIT (MIT Honours)	Software Engineering and Data Management	Monash University, Australia	2012
B.Sc. (1st Class Honor)	Information and Communication Technology	Mahidol University	2009

Affiliation: Faculty of Information and Communication Technology, Mahidol University

Interesting Research Topics or Specialties

Artificial Intelligence, Description Logic, Ontology, Automated Reasoning, Optimisation, Data analysis

Publication that are not parts of doctoral dissertation and are complied with the criteria for academic position appointment within 5 Years

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Sawangphol W, Panphattarasap P, Praiwattana P, Kraisangka J, Noraset T, Prommin D. Foot arch classification via ML-based image classification. Computer-Aided Design and Applications 2023;20(4):200-213.	12/1.0	2023
Published research work	Kyaw KM, Rittima A, Phankamolsil Y, Tabucanon AS, **Sawangphol W**, Kraisangka J, Talaluxmana Y, Vudhivanich V. Evaluating hydroelectricity production re-operating with adapted rule curve under climate change scenarios: case study of Bhumibol Dam in Thailand. Naresuan University Engineering Journal Nov 2022;17(2):38-46.	13/0.8	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Phutonglom P, Rittima A, Phankamolsil Y, Tabucanon AS, **Sawangphol W**, Kraisangka J, Talaluxmana Y, Vudhivanich V. Tracing Ccrop water requirement in the pumping, gravitational and inundation irrigation schemes using cloud–based IrriSAT application. Naresuan University Engineering Journal Nov 2022;17(2):28-37.	13/0.8	2022
Published research work	Kyaw KM, Rittima A, Phankamolsil Y, Tabucanon AS, **Sawangphol W**, Kraisangka J, Talaluxmana Y, Vudhivanich V. Optimization–based solution for reducing water scarcity in the greater Chao Phraya River Basin, Thailand: through re–operating the Bhumibol and Sirikit Reservoirs using non–linear programming solver. Engineering Journal Oct 2022;26(10):39-56.	13/0.8	2022
Published research work	Phankamolsil Y, Rittima A, Teerapunyapong P, Surakit K, Tabucanon A, **Sawangphol W**, Kraisangka J, Talaluxmana Y, Vudhivanich V. Comparative assessment of groundwater recharge estimation using physical-based models and empirical methods in Upper Greater Mae Klong Irrigation Project, Thailand. Agriculture and Natural Resources Sep 2022;56(4):737-750.	13/0.8	2022
Published research work	Kraisangka J, Rittima A, **Sawangphol W**, Phankamolsil Y, Tabucanon AS, Talaluxmana Y, Vudhivanich V. Application of machine learning in daily reservoir inflow prediction of the Bhumibol Dam, Thailand. In: the 2022 19th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON); 2022 May 24-27; Prachuap Khiri Khan, Thailand; 2022. pp. 1-4.	11/0.4	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Rantasewee S, Teerapunyapong P, Rittima A, Surakit K, Phankamolsil Y, Tabucanon A, **Sawangphol W**, Kraisangka J, Talaluxmana Y. Impacts of the 2011 Thailand flood on groundwater recharge potential in flood retention area in the Middle Reach of Tha Chin River. Engineering Access Apr 2022;8(2):186-191.	9/0.6	2022
Published research work	Phankamolsil Y, Rittima A, Rantasewee S, Talaluxmana Y, Surakit K, Tabucanon AS, **Sawangphol W**, Kraisangka J. Analysis of potential site for managed aquifer recharge scheme in the upper greater Mae Klong Irrigation Project, Thailand. Applied Environmental Research Mar 2022;44(1):80-94.	12/1.0	2022
Published research work	**Sawangphol W**, Noraset T, Panphattarasap P, Praiwattana P, Sutthiratpanya P, Talanon N, Tungsupanich K, Prommin D. Foot arch posture classification using image processing. Journal of Information Science and Technology (JIST) Jun 2021;11(1):75-82.	12/1.0	2021
Published research work	Tabucanon AS, Rittima A, Raveephinit D, Phankamolsil Y, **Sawangphol W**, Kraisangka J, Talaluxmana Y, Vudhivanich V, Xue W. Impact of climate change on reservoir reliability: A case of Bhumibol Dam in Ping River Basin, Thailand. Environment and Natural Resources Journal May 2021;19(4):266-281.	12/1.0	2021
Published research work	Mitrpanont J, **Sawangphol W**, Thongrattana W, Suthinuntasook S, Sillapathadapong S, Kitkhachonkunlaphat K. ICDWiz: Visualizing ICD-11 using 3D force-directed graph. Communications in Computer and Information Science Apr 2021;1371:331-334.	12/1.0	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Kraisangka J, **Sawangphol W**, Rojcharoenpreeda P, Tangchadakorn C, Vechjatuporn M, Limpasitiponm C, Itthisaeng P, Boonwan S. Getting to know one's role in team through personality-based clustering. In: the 2020 17th International Joint Conference on Computer Science and Software Engineering (JCSSE); 2020 Nov 4-6; Bangkok, Thailand; 2020. pp. 80-85.	11/0.4	2020
Published research work	Mitrpanont J, **Sawangphol W**, Sillapathadapong S, Suthinuntasook S, Thongrattana W, Haga J. MedThaiSAGE2: enhancing the decision support system using rich visualization on SAGE 2. In: the 2020 - 5th International Conference on Information Technology (InCIT); 2020 Oct 21-22; Chonburi, Thailand; 2020. pp. 128-133.	11/0.4	2020
Published research work	Kyaw KM, Rittima A, Phankamolsil Y, Tabucanon AS, **Sawangphol W**, Kraisangka J, Talaluxmana Y, Vudhivanich V. Tracing crop water demand in the lower ping river basin, Thailand using cloud–based irrisat application. In: the 22nd Congress of International Association for Hydro Environment Engineering and Research (IAHR) and Asia Pacific Division (APD); 2020 Sep 14-17; Sapporo, Japan; 2020. pp. 1-8.	11/0.4	2020
Published research work	Pojsomphong N, Visoottiviseth V, **Sawangphol W**, Khurat A, Falls D. Investigation of drone vulnerability and its countermeasure. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 251-255.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Puakalong C, Takano R, Visoottiviseth V, Khurat A, **Sawangphol W**. A network bandwidth limitation with the DEMU network emulator. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Malaysia; 2020. pp. 151-154.	11/0.4	2020
Published research work	Reantongcome V, Visoottiviseth V, **Sawangphol W**, Khurat A, Falls D. Securing and trustworthy blockchain-based multi-tenant cloud computing. In: the 2020 IEEE 10th Symposium on Computer Applications & Industrial Electronics (ISCAIE); 2020 Apr 18-19; Penang, Malaysia. pp. 256-261.	11/0.4	2020
Published research work	Kang Y, Krishnaswamy S, **Sawangphol W**, Gao L, Li Y. Understanding and improving ontology reasoning efficiency through learning and ranking. Information Systems Jan 2020;87:101412.	12/1.0	2020

Current Teaching Load

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Assigned Teaching Load for the Proposed Program

ITCY	516	Research Methodology and Seminar	1 (1-0-2)

Appendix C

Curriculum Mapping

Appendix C

Curriculum Mapping

● Major responsibility ○ Minor responsibility

Subjects	Knowledge			Skills				Ethics			Character	
	1	2	3	1	2	3	4	1	2	3	1	2
1. Required courses												
ITCY 511 Computer and Network Security	●	○	●	●	●	○		○	○	○		
ITCY 512 Information Security Management	●	○	●	●	●	●		○	○	○	●	●
ITCY 513 Cyber Ethics and Law	●	○	●	○	○	○		●	●	●	●	●
ITCY 516 Research Methodology and Seminar	●	●	○	●	●	○	○	○	○	○	○	○
ITCY 531 System Hardening and Penetration Testing	●	○	●	○	●	○		○	○	○		
ITCY 541 Digital Forensics Technologies and Techniques	●	○	●	●	●	●		●	●	●	○	○
ITCY 571 Information Assurance and Risk Management	●	○	●	●	●	●		○	○	○	●	●
2. Elective courses												
ITCY 514 Fraud Analysis and Detection	●	○	●	○	●	●		○	○	○		
ITCY 535 Reverse Engineering and Malware Analysis	●	○	●	○	●	●		○	○	○		
ITCY 543 Network Forensics	●	○	●	●	●	●		●	●	●		
ITCY 545 Cloud Security	●	○	●	●	●	●		○	○	○		
ITCY 546 Mobile and IoT Security	●	○	●	●	●	●		○	○	○		
ITCY 552 Authentication Technology Management	●	○	●	○	●	●		○	○	○		
ITCY 553 Secure Software Design	●	○	●	○	●	●		○	○	○		
ITCY 562 Intrusion Detection and Prevention	●	○	●	○	●	●		○	○	○		
ITCY 581 Incident Response Management	●	○	●	○	●	●		○	○	○	●	●
ITCY 582 Blockchain Technology	●	○	●	○	●	●		○	○	○		

The Mahidol University Council approved the program in its meeting 598th November 15, 2023

Subjects	Knowledge			Skills				Ethics			Character	
	1	2	3	1	2	3	4	1	2	3	1	2
ITCY 583 Data Science for Cyber Security	●	○	●	○	●	●		○	○	○		
ITCY 591 Special Topics in Cyber Security and Forensics	●	○	●	○	●	●		○	○	○		
ITCY 592 Special Topics in Information Assurance	●	○	●	○	●	●		○	○	○		
3. Thesis												
ITCY 698 Thesis	●	●	●	●	●	●	●	●	●	●	●	●
4. Independent Study												
ITCY 696 Independent Study	●	●	●	●	●	●	○	●	●	●	●	●

Table of Relationship between Learning Outcomes of the Program and Core Value of Mahidol University

Learning Outcomes (as stated in Section 5, item no. 2)	Core value of Mahidol University
1. Knowledge	
1.1 Have knowledge and understanding of principles and theories in the field of cyber security and information assurance.	Mastery, Determination
1.2 Have the ability to understand and explain research problems.	Mastery, Determination
1.3 Keep up with current knowledge in cyber security and information assurance.	Mastery, Determination
2. Skills	
2.1 Be able to communicate clearly, and to explain and present information effectively using English.	Mastery, Determination
2.2 Able to review related literature, analyze and summarize issues and problems systematically.	Mastery, Determination
2.3 Able to apply knowledge and tools to develop solutions to problems in cyber security and information assurance.	Mastery, Determination, Originality
2.4 Can synthesize existing knowledge to create new knowledge in cyber security and information assurance.	Mastery, Determination, Originality
3. Ethics	
3.1 Possesses morality, ethics and honesty.	Mastery, Integrity
3.2 Have professional integrity.	Mastery, Altruism
3.3 Respect the rights and opinions of others, as well as not violating the rights and intellectual property of others.	Harmony, Integrity
4. Character	
4.1 Able to work with others, have skills in building relationships and interacting with others.	Harmony
4.2 Demonstrate responsibility for their own actions, being responsible for work in the group, display leadership, be able to work as a team.	Integrity, Leadership

Appendix D

Program Learning Outcomes

Appendix D

Program Learning Outcomes

Table 1: Comparison between before and after revised objectives of the program

Objectives of the Program B.E. 2562	Revised Objectives of the Program B.E. 2567
1.2.1 To produce graduates with academic and IT professional morals and ethics.	1.2.1 Have knowledge in the principles and theory of cybersecurity and information assurance
1.2.2 To produce graduates with knowledge in the principles and theory of cybersecurity and information assurance, and the ability to present, analyze and classify facts in the body of knowledge on cybersecurity and information assurance as well as other related information systems security fields.	1.2.2 Develop the ability to present, analyze and classify facts, and is capable of developing framework or information systems to address security issues using research methodology and sound knowledge of cybersecurity and information assurance
1.2.3 To produce graduates who can develop framework or information systems to address security issues using research methodology and sound knowledge of cybersecurity and information assurance.	1.2.3 Adhere academic and IT professional morals and ethics
1.2.4 To produce graduates who have self-responsibility, social interaction, leadership, and teamwork skills.	1.2.4 Have self-responsibility, social interaction, leadership, and teamwork skills
1.2.5 To produce graduates who have ability in numerical analysis, use of information technology to improve cybersecurity and information assurance, and assessing information systems when new threats to cybersecurity and information assurance emerge.	

Table 2: Relationship between objective of the program and program learning outcome

Objective of the Program	Program Learning Outcome *				
	PLO1	PLO2.1	PLO2.2	PLO3	PLO4
1.2.1 Have knowledge in the principles and theory of cybersecurity and information assurance	X				
1.2.2 Develop the ability to present, analyze and classify facts, and is capable of developing framework or information systems to address security issues using research methodology and sound knowledge of cybersecurity and information assurance		X	X		
1.2.3 Adhere academic and IT professional morals and ethics			X	X	
1.2.4 Have self-responsibility, social interaction, leadership, and teamwork skills					X

*** Program Learning Outcome**

PLO1	Apply the concepts, and the theories in cyber security and information assurance to its IT applications as well as other related disciplines to assure security of IT systems.
PLO2	PLO2.1 Evaluate existing IT systems for security improvement against new threats, including capability to develop a new framework by using research methodology and knowledge, in cyber security and information assurance. (Plan 1)
	PLO2.2 Evaluate existing IT systems for security improvement against new threats or developing practical solutions in cyber security and information assurance by using research methodology (Plan 2)
PLO3	Apply professional-and-ethical responsibility and morality in professional environments and society.
PLO4	Demonstrate interpersonal skills, and the senses of responsibility and accountability, for operating in the assigned role and task within the team/organizational setting

Table 3: Standard domains of learning outcome and Program Learning Outcomes

Domains	Standard Learning Outcomes (TQF)	Program Learning Outcomes			
		PLO1	PLO2	PLO3	PLO4
Knowledge	1.1 Have knowledge and understanding of principles and theories in the field of cyber security and information assurance.	X			
	1.2 Have the ability to understand and explain research problems.	X			
	1.3 Keep up with current knowledge in cyber security and information assurance.	X			
Skills	2.1 Be able to communicate clearly, and to explain and present information effectively using English.		X		
	2.2 Able to review related literature, analyze and summarize issues and problems systematically.		X		
	2.3 Able to apply knowledge and tools to develop solutions to problems in cyber security and information assurance.		X		
	2.4 Can synthesize existing knowledge to create new knowledge in cyber security and information assurance.		X		
Ethics	3.1 Possesses morality, ethics and honesty.			X	
	3.2 Have professional integrity.			X	
	3.3 Respect the rights and opinions of others, as well as not violating the rights and intellectual property of others.			X	
Character	4.1 Able to work with others, have skills in building relationships and interacting with others.				X
	4.2 Demonstrate responsibility for their own actions, being responsible for work in the group, display leadership, be able to work as a team.				X

Table 4: Learning and Assessment Strategies for Program Learning Outcomes Evaluation

PLOs	Learning Method	Assessment
PLO1: Apply the concepts, and the theories in cyber security and information assurance to its IT applications as well as other related disciplines to assure security of IT systems.	Lecture, Lab, Group Discussion, Class Project, Case Study	Quiz, Exam, Lab/Project Report, Oral Presentation
PLO2.1 Create a new framework in cyber security and information assurance through original research (Plan 1) PLO2.2 Assess and select practical solutions in cyber security and information assurance to improve computer system security against threats by using research methodology (Plan 2)	Lecture, Lab, Group Discussion, Class Project, Case Study	Quiz, Exam, Lab/Project Report, Oral Presentation, Thesis/Independent Study
PLO3: Apply professional- and-ethical responsibility and morality in professional environments and society.	Lecture, Group Discussion, Class Project, Case Study	Quiz, Exam, Lab/Project Report, Oral Presentation
PLO4: Demonstrate interpersonal skills, and the senses of responsibility and accountability, for operating in the assigned role and task within the team/organizational setting.	Group Discussion, Class Project, Class Participation	Project Report, Oral Presentation

Table 5: Relationship between Courses of the Program and Program Learning Outcomes

Code	Name	Credits	Program Learning Outcomes			
			1	2	3	4
Year 1 Semester 1						
Required Courses						
ITCY 511	Computer and Network Security	3 (3-0-6)	R	R		
ITCY 512	Information Security Management	3 (3-0-6)	R/P	R		R
ITCY 513	Cyber Ethics and Law	2 (2-0-4)	R		R	R
ITCY 516	Research Methodology and Seminar	1 (1-0-2)		R	R	R
ITCY 541	Digital Forensics Technologies and Techniques	3 (3-0-6)	R/P	R	R	R
Year 1 Semester 2						
Required Courses						
ITCY 571	Information Assurance and Risk Management	3 (3-0-6)	R/P	R		R
ITCY 531	System Hardening and Penetration Testing	3 (3-0-6)	R/P	R	R	
Elective courses						

Code	Name	Credits	Program Learning Outcomes			
			1	2	3	4
ITCY 514	Fraud Analysis and Detection	3 (3-0-6)	R/P	R/P		
ITCY 535	Reverse Engineering and Malware Analysis	3 (3-0-6)	R/P	R		
ITCY 543	Network Forensics	3 (3-0-6)	R/P	R		R
ITCY 545	Cloud Security	3 (3-0-6)	R/P	R		
ITCY 546	Mobile and IoT Security	3 (3-0-6)	R/P	R		
ITCY 552	Authentication Technology Management	3 (3-0-6)	R/P	R		
ITCY 553	Secure Software Design	3 (3-0-6)	R/P	R		
ITCY 562	Intrusion Detection and Prevention	3 (3-0-6)	R/P	R		
ITCY 581	Incident Response Management	3 (3-0-6)	R/P	R		R
ITCY 582	Blockchain Technology	3 (3-0-6)	R	R		
ITCY 583	Data Science for Cyber Security	3 (3-0-6)	R/P	R		
ITCY 591	Special Topics in Cyber Security and Forensics	3 (3-0-6)	R/P	R		
ITCY 592	Special Topics in Information Assurance	3 (3-0-6)	R/P	R		
ITCY 698	Thesis *Only for Plan 1* (Developing the research topic, Reviewing literature and preparing for data collection)	3 (0-9-0)	M	R	R	R
Year 2 Semester 1						
Elective courses						
ITCY 514	Fraud Analysis and Detection	3 (3-0-6)	R/P	R/P		
ITCY 535	Reverse Engineering and Malware Analysis	3 (3-0-6)	R/P	R		
ITCY 543	Network Forensics	3 (3-0-6)	R/P	R	R	
ITCY 545	Cloud Security	3 (3-0-6)	R/P	R		
ITCY 546	Mobile and IoT Security	3 (3-0-6)	R/P	R		
ITCY 552	Authentication Technology Management	3 (3-0-6)	R/P	R		
ITCY 553	Secure Software Design	3 (3-0-6)	R/P	R		
ITCY 562	Intrusion Detection and Prevention	3 (3-0-6)	R/P	R		
ITCY 581	Incident Response Management	3 (3-0-6)	R/P	R		R
ITCY 582	Blockchain Technology	3 (3-0-6)	R	R		
ITCY 583	Data Science for Cyber Security	3 (3-0-6)	R/P	R		
ITCY 591	Special Topics in Cyber Security and Forensics	3 (3-0-6)	R/P	R		
ITCY 592	Special Topics in Information Assurance	3 (3-0-6)	R/P	R		
ITCY 698	Thesis	3 (0-9-0)	M	R	M	M

Code	Name	Credits	Program Learning Outcomes			
			1	2	3	4
	Only for Plan 1 (Conducting preliminary experiments, writing the proposal, and Proposing the thesis proposal)					
ITCY 696	Independent Study *Only for Plan 2* (Developing the independent study topic, Reviewing existing solutions and security threats, Assessing existing solutions, writing the proposal, and Proposing the independent study)	3 (0-9-0)	M	R	M	M
Year 2 Semester 2						
ITCY 698	Thesis *Only for Plan 1* (Conducting experiments, Writing the thesis and thesis defense)	6 (0-18-0)	M	M	M	M
ITCY 696	Independent Study *Only for Plan 2* (Implementing and evaluating solutions, Preparing for defense, and defense)	3 (0-9-0)	M	M	M	M

I = ELO is introduced & assessed R = ELO is reinforced & assessed

P = ELO is practiced & assessed M = Level of Mastery is assessed

Table 6: The expectation of learning outcomes at the end of the academic year

Year of study	Knowledge, skills, and any other expected learning outcomes	PLOs
1st	After the 1st year of study, the students are expected to complete the core knowledge of the curriculum and the expected learning outcomes of those courses, especially research methods, and some elective courses which are relevant to their specific research interests in order to be ready for conducting their thesis or independent study in the 2nd year of study.	PLO1
2nd	After the 2nd year of study, the students are expected to learn and apply advanced knowledge and develop research and development skills in order to complete their thesis or independent study as required for graduation and to fulfill all expected learning outcomes.	PLO1, PLO2, PLO3, PLO4

Appendix E

The Revised Curriculum

Appendix E

The Revision of Master of Science Program

in Cyber Security and Information Assurance Volume in B.E. 2562

Faculty of Information and Communication Technology

and Faculty of Graduate Studies, Mahidol University

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1. **The Curriculum was approved by the Office of the Higher Education Commission on 10 February B.E. 2564**

2. **The Mahidol University Council has approved this revised curriculum in the 598 meeting on** November 15, 2023

3. **The revised curriculum will be effective with student class B.E. 2567 from the 1st semester of the Academic Year 2024 onwards.**

4. **Rationale of revision**

   4.1 The program is required to be revised according to the announcement by The Commission of Higher Education Standards on Criteria and Standards for Higher Education B.E. 2565.

   4.2 Course contents are revised based on the stakeholders' suggestions.

   4.3 The content of the program is needed to be updated with contemporary body of knowledge in cyber security and information assurance according to the change in computer technology.

5. **The details of the revision**

   5.1 Adjustment of the course category in the Elective Courses as follows:

Courses of the Current Program (in 2019)	**Courses of the Revising Program (in 2024)**
Elective Courses (1) Cyber Security Courses (2) Information Assurance Courses	Elective Courses

5.2 Adjust the list of course instructors and instructors in charge of the course

Instructors of the Current Program	Instructors of the Revised Program
Associate Professor Dr. Sudsanguan Ngamsuriyaroj	-
Associate Professor Dr. Vasaka Visoottiviseth	Associate Professor Dr. Vasaka Visoottiviseth
Assistant Professor Dr. Apirak Hoonlor	-
-	Assistant Professor Dr. Morakot Choetkiertikul
Assistant Professor Dr. Srisupa Palakvangsa Na Ayudhya	Assistant Professor Dr. Srisupa Palakvangsa Na Ayudhya
Assistant Professor Dr. Thanwadee Sunetnanta	Assistant Professor Dr. Thanwadee Sunetnanta
Assistant Professor Dr. Thitinan Tantidham	-
Lecturer Dr. Assadarat Khurat	Lecturer Dr. Assadarat Khurat
-	Lecturer Dr. Chaiyong Ragkhitwetsagul
Lecturer Dr. Dolvara Guna-Tilaka	Lecturer Dr. Dolvara Guna-Tilaka
Lecturer Dr. Ittipon Rassameeroj	Lecturer Dr. Ittipon Rassameeroj
Lecturer Dr. Songpon Teerakanok	Lecturer Dr. Songpon Teerakanok
Lecturer Dr. Thanapon Noraset	Lecturer Dr. Thanapon Noraset

5.3 Adjustment of the courses in the curriculum structure as follows:

The Comparison Table of Courses between the Current Program and Revising Program

Courses of the Current Program (in 2019)		**Courses of the Revising Program (in 2024)**		**Remark**
Required Courses 18 credits		**Required Courses 18 credits**		
ITCY 511 Computer and Network Security ทสคม ๕๑๑ ความมั่นคงทางคอมพิวเตอร์และเครือข่าย	3 (3-0-6)	ITCY 511 Computer and Network Security ทสคม ๕๑๑ ความมั่นคงทางคอมพิวเตอร์และเครือข่าย	3 (3-0-6)	unchanged

Courses of the Current Program (in 2019)		Courses of the Revising Program (in 2024)		Remark
ITCY 512 Information Security Management ทสคม ๕๑๒ การจัดการความมั่นคงสารสนเทศ	3 (3-0-6)	ITCY 512 Information Security Management ทสคม ๕๑๒ การจัดการความมั่นคงสารสนเทศ	3 (3-0-6)	unchanged
ITCY 513 Cyber Ethics and Law ทสคม ๕๑๓ จริยธรรมและกฎหมายไซเบอร์	2 (2-0-4)	ITCY 513 Cyber Ethics and Law ทสคม ๕๑๓ จริยธรรมและกฎหมายไซเบอร์	2 (2-0-4)	unchanged
ITCY 515 Research Methodology and Seminar in Cybersecurity and Information Assurance ทสคม ๕๑๕ วิทยาระเบียบวิธีวิจัยและสัมมนาวิจัยความมั่นคงทางไซเบอร์และการประกันสารสนเทศ	1 (1-0-2)	ITCY 516 Research Methodology and Seminar ทสคม ๕๑๖ วิทยาระเบียบวิธีวิจัยและสัมมนา	1 (1-0-2)	change course name and course description
ITCY 531 System Hardening and Penetration Testing ทสคม ๕๓๑ การทำให้ระบบแข็งแกร่งและการทดสอบเจาะระบบ	3 (3-0-6)	ITCY 531 System Hardening and Penetration Testing ทสคม ๕๓๑ การทำให้ระบบแข็งแกร่งและการทดสอบเจาะระบบ	3 (3-0-6)	unchanged
ITCY 541 Digital Forensics Technologies and Techniques ทสคม ๕๔๑ เทคโนโลยีและเทคนิคทางนิติดิจิทัล	3 (3-0-6)	ITCY 541 Digital Forensics Technologies and Techniques ทสคม ๕๔๑ เทคโนโลยีและเทคนิคทางนิติดิจิทัล	3 (3-0-6)	unchanged
ITCY 571 Information Assurance and Risk Management ทสคม ๕๗๑ การประกันสารสนเทศและการจัดการความเสี่ยง	3 (3-0-6)	ITCY 571 Information Assurance and Risk Management ทสคม ๕๗๑ การประกันสารสนเทศและการจัดการความเสี่ยง	3 (3-0-6)	unchanged
Elective Courses **Plan A (A2) not less than 6 credits** **Plan B not less than 12 credits**		**Elective Courses** **Plan 1 Academic not less than 6 credits** **Plan 2 Profession not less than 12 credits**		
1. Cyber Security Courses				
ITCY 514 Fraud Analysis and Detection ทสคม ๕๑๔ การวิเคราะห์และการตรวจจับกลฉ้อฉล	3 (3-0-6)	ITCY 514 Fraud Analysis and Detection ทสคม ๕๑๔ การวิเคราะห์และการตรวจจับกลฉ้อฉล	3 (3-0-6)	unchanged

Courses of the Current Program (in 2019)		Courses of the Revising Program (in 2024)		Remark
ITCY 534 Reverse Engineering and Vulnerability Analysis ทสคม ๕๓๔ วิศวกรรมผันกลับและการวิเคราะห์จุดอ่อน	3 (3-0-6)	ITCY 535 Reverse Engineering and Malware Analysis ทสคม ๕๓๕ วิศวกรรมผันกลับและการวิเคราะห์มัลแวร์	3 (3-0-6)	change course name
ITCY 543 Network Forensics ทสคม ๕๔๓ นิติเครือข่าย	3 (3-0-6)	ITCY 543 Network Forensics ทสคม ๕๔๓ นิติเครือข่าย	3 (3-0-6)	unchanged
ITCY 544 Mobile Security ทสคม ๕๔๔ ความมั่นคงของระบบเคลื่อนที่	3 (3-0-6)	ITCY 546 Mobile and IoT Security ทสคม ๕๔๖ ความมั่นคงของระบบเคลื่อนที่และอินเตอร์เน็ตสรรพสิ่ง	3 (3-0-6)	change course name
ITCY 545 Cloud Security ทสคม ๕๔๕ ความมั่นคงของระบบคลาวด์	3 (3-0-6)	ITCY 545 Cloud Security ทสคม ๕๔๕ ความมั่นคงของระบบคลาวด์	3 (3-0-6)	change course description
ITCY 562 Intrusion Detection and Prevention ทสคม ๕๖๒ การตรวจจับและป้องกันการบุกรุก	3 (3-0-6)	ITCY 562 Intrusion Detection and Prevention ทสคม ๕๖๒ การตรวจจับและป้องกันการบุกรุก	3 (3-0-6)	unchanged
ITCY 591 Special Topics in Cyber Security and Forensics ทสคม ๕๙๑ หัวข้อพิเศษทางความมั่นคงและนิติไซเบอร์	3 (3-0-6)	ITCY 591 Special Topics in Cyber Security and Forensics ทสคม ๕๙๑ หัวข้อพิเศษทางความมั่นคงและนิติไซเบอร์	3 (3-0-6)	unchanged
2. Information Assurance Courses				
ITCY 551 Application of Cryptography ทสคม ๕๕๑ การประยุกต์การเข้ารหัส	3 (3-0-6)			closed course
ITCY 552 Authentication Technology Management ทสคม ๕๕๒ การจัดการเทคโนโลยีการยืนยันตัวตน	3 (3-0-6)	ITCY 552 Authentication Technology Management ทสคม ๕๕๒ การจัดการเทคโนโลยีการยืนยันตัวตน	3 (3-0-6)	change course description
ITCY 553 Secure Software Design ทสคม ๕๕๓ การออกแบบซอฟต์แวร์อย่างมั่นคง	3 (3-0-6)	ITCY 553 Secure Software Design ทสคม ๕๕๓ การออกแบบซอฟต์แวร์อย่างมั่นคง	3 (3-0-6)	unchanged

Courses of the Current Program (in 2019)		Courses of the Revising Program (in 2024)		Remark
ITCY 573 E-Services Security Management ทสคม ๕๗๓ การจัดการความมั่นคงการให้บริการอิเล็กทรอนิกส์	3 (3-0-6)			closed course
ITCY 581 Incident Response Management ทสคม ๕๘๑ การจัดการโต้ตอบเหตุการณ์	3 (3-0-6)	ITCY 581 Incident Response Management ทสคม ๕๘๑ การจัดการโต้ตอบเหตุการณ์	3 (3-0-6)	unchanged
ITCY 592 Special Topics in Information Assurance ทสคม ๕๙๒ หัวข้อพิเศษทางการประกันสารสนเทศ	3 (3-0-6)	ITCY 592 Special Topics in Information Assurance ทสคม ๕๙๒ หัวข้อพิเศษทางการประกันสารสนเทศ	3 (3-0-6)	unchanged
		ITCY 582 Blockchain Technology ทสคม ๕๘๒ เทคโนโลยีบล็อกเชน	3 (3-0-6)	new course
		ITCY 583 Data Science for Cyber Security ทสคม ๕๘๓ วิทยาการข้อมูลสำหรับความมั่นคงไซเบอร์	3 (3-0-6)	new course
Thesis 12 credits		**Thesis 12 credits**		
ITCY 698 Thesis ทสคม ๖๙๘ วิทยานิพนธ์	12 (0-36-0)	ITCY 698 Thesis ทสคม ๖๙๘ วิทยานิพนธ์	12 (0-36-0)	unchanged
Thematic Paper 6 credits		**Independent Study 6 credits**		
ITCY 697 Thematic Paper ทสคม ๖๙๗ สารนิพนธ์	6 (0-18-0)	ITCY 696 Independent Study ทสคม ๖๙๖ การค้นคว้าอิสระ	6 (0-18-0)	change code course name and course description

6. The Comparison Table of the Curriculum Structure between the Current Program and Revised Program Based on the Criteria on Graduate Studies of Graduate Degree Programs B.E. 2565 (set by The Commission on Higher Education Standards, The Office of Permanent, Ministry of Higher Education)

6.1 Plan 1 Academic

Course Category	Credits		
	Criteria on Graduate Studies B.E. 2565	Curriculum Structure of the Current Program	Curriculum Structure of the Revised Program
1. Required Courses	not less than 12	18	18
2. Elective Courses		not less than 6	not less than 6
3. Thesis	not less than 12	12	12
Total credits (not less than)	**36**	**36**	**36**

6.2 Plan 2 Profession

Course Category	Credits		
	Criteria on Graduate Studies B.E. 2565	Curriculum Structure of the Current Program	Curriculum Structure of the Revised Program
1. Required Courses	not less than 12	18	18
2. Elective Courses		not less than 12	not less than 12
3. Independent Study	not less than 3 and not more than 6	6	6
Total credits (not less than)	**36**	**36**	**36**