



Master of Science in  
Technology Enhanced Learning and Innovation  
(International Program)  
(2019 New Program)

Faculty of Industrial education and Technology  
King Mongkut's Institute of Technology Ladkrabang

Master of Science  
In Technology Enhanced Learning and Innovation  
(International Program)  
(2019 New Program)

Name of Institution            King Mongkut's Institute of Technology Ladkrabang  
Faculty/Campus/College      Faculty of Industrial education and Technology  
Department                    Industrial education

**PART 1 : General Information**

**1. Program Title**

**Title**                            :      Master of Science Program in Technology-Enhanced Learning and Innovation (International Program)

**2. Degree and field title**

**Full Title**                    :      Master of Science (Technology-Enhanced Learning and Innovation)

**Abbreviation**                :      M.Sc. (Technology-Enhanced Learning and Innovation)

**3. Major or minors subjects (if-any)**

None

**4. Total Credits**

- Plan A      -      A1 (36 Credits)
- A2 (36 Credits)

**5. Type of program**

**5.1 Type:** 2-year graduate program

**5.2 Language of instruction:** English

**5.3 Admission:** Both Thai and foreign students

**5.4 Collaborations with other institutes:** Program issued specifically by KMITL and collaborate with other institution as agreement

**5.5 Degree of conferment:** One degree, Master of Science in Technology Enhanced Learning and Innovation from KMITL

## 6. Status of the program and consideration for the Authorization/Agreement

Program course begins on August 2019.

## 7. Expected date for Thai Qualifications Register (TQR)

Academic Year 2020

## 8. Possible careers path

Professors/ Entrepreneurs/ Specialist/ Researchers

Both in government organizations and Private sector with potential In technology for learning and innovation

## 9. Instructor Details

Name/Surname Academic position	Qualification (Academic Year)	University (Academic year)
1. Assist.Prof.Dr. Sirirat Petsangsri (Educational Technology)	Ed.D. (Instructional Design and Technology), 2002	University of Pittsburgh, U.S.A
	M.ed.(Audiovisual),1994	Chulalongkorn University
	B.Ed. (English Language Teaching), 1987	Srinakharinwirot University
2. Dr. Jirarat Sitthiworachart	Ph.D. (Computer Science), 2006	University of Warwick, UK
	M.Sc. ( Information Technology for Manufacture), 2001	University of Warwick, UK
	B.B.A. (Business Computer),1995	Prince of Songkla University
2. Assoc.Prof.Dr Chantana Viriyavejakul (Educational Technology)	B.A. (Educational Technology and Communications),2001	Chulalongkorn University
	M.Ed. (Audiovisual),1996	Chulalongkorn University
	B.Ed. (Primary Education) (Honors), 1993	Chulalongkorn University

**10. Location of Study:** King Mongkut's Institute of Technology Ladkrabang

## 11. External situation of developments needed to be considered for planning of the program

### 11.1 Economic situation/Development

The curriculum development must consider the changing of world society from the agricultural society age to the industry industrial society, information and telecommunication technology society and especially, Thailand 4.0 society. As a result, competitiveness enhancement of each country has to change from labour and cost based to the Knowledge

Based Economy Society and Innovative Society based. This means it is important to regulate the economy system from the basic factors based to human resources and innovation based. Thus, the improvement of manufacturing factors in this field have been prioritized in order to improve the leadership qualities to human resources in the disruptive world; and to enhance the competitiveness under the technology and innovation circumstances.

Moreover, Thailand is one of the members of ASEAN, so Thai people have to adapt accordingly for the changes in order to cooperate with other countries. Thus, it is important to prioritize human resource development in term of sustainable development as the founder of ASEAN.

### **11.2 Social and cultural situation/Development**

Thailand has been considered as an open society; however, several citizens cannot access state welfare. Thus, the number of the underprivileged who are not able to adjust themselves to conform with the new economic system has raised, together with lacking the transformational leader caused social inequality, especially, the poverty problem. The endless cycle of this problem has deteriorated and led to the decline of culture and the way of life in the country; for example, several people have been preoccupied with materialism and consumerism, and concern their own success rather than the benefit of mankind resulting in high competition. The above changes cause the social problem, particularly drug addiction issue, crime problem, family problems, community and society problem. Consequently, the effective solution is the investments in education and infrastructure. This can also eradicate poverty; in other words, investment in education is a vital investment that solves the problems and certifies higher productivity in the economy.

## **12. Effect from 11.1 and 11.2 on the development of the program and the relation to the mission of the institute**

### **12.1 Program Development**

From the above-mentioned effect of economic, social and cultural circumstances, the aim of the curriculum development in master of philosophy (Technology-Enhanced Learning and Innovation) is to produce the leader of educational and innovative technology who can develop the innovation to serve the public. In addition to concerning the Thai and cultural aspects, it is important to introduce the new approach of teaching and learning so that the student can intricate between the knowledge and innovation. Hence, the ultimate goal of this program is to equip the graduate with technology-enhanced learning and innovation and encourage the graduate to create educational innovation to benefit the human resources since it is the primary concern of the country's development. Furthermore, education will play an important role in the quality of life and inheriting the well-established tradition through innovative education. As a result, the quality of life of the public sector will be enhanced and they can prepare for the global change of technology.

## 12.2 Relation to the missions of the Institute

Master of Science Program Development (Technology for Learning and Innovation Program) Consistent with the mission 1 "Teaching and Learning" of the King Mongkut's Institute of Technology Ladkrabang

### Curriculum and instructors

#### Curriculum

##### Total curriculum credits

Plan A1	36	credits
Plan A2	39	credits

##### Curriculum Structure

Plan A1:	<u>36</u>	credits
a. Thesis subject category	36	credits
Plan A2:		
a. Thesis subject category	12	credits
b. Seminar subjects category	3	credits
c. Core course	18	credits
- Foundation compulsory courses	6	credits
- Major compulsory courses	12	credits
d. Elective course	9	credits

#### Subjects

##### Plan A1

##### a. Thesis subject category

**36 credits**

Credits (Lecture-Pratice-Self Study)

03257901 THESIS

36 (0-108-0)

##### Plan A2

##### a. Thesis subjects category

**12 credits**

Credits (Lecture-Pratice-Self Study)

03257902 THESIS

12 (0-36-0)

##### b. Seminar subjects (Non-credit)

Credits (Lecture-Pratice-Self Study)

03257801 SEMINAR EDUCATIONAL TECHNOLOGY  
IN TEACHING & LEARNING

12 (0-36-0)

**c. Core course****18 credits**

-Foundation compulsory courses

6 credits

Credits (Lecture-Pratice-Self Study)

03257001 INNOVATION AND EDUCATIONAL TECHNOLOGY RESEARCHMETHODS 3(3-0-6)

03257002 INTEGRATING EDUCATIONAL TECHNOLOGY IN TEACHING & LEARNING 3(3-0-6)

-Major compulsory courses

12 credits

Credits (Lecture-Pratice-Self Study)

03257103 EDUCATIONAL DESIGN OF MEDIA AND LEARNING ENVIRONMENTS 3(3-0-6)

03257104 TEACHING AND LEARNING WITH DIGITAL MEDIA 3(3-0-6)

03257105 COGNITIVE SCIENCE AND EDUCATIONALTECHNOLOGY 3(3-0-6)

03257106 INTERACTIVITY AND LEARNING DESIGN 3(3-0-6)

**d. Elective course****9 credits**

Credits (Lecture-Pratice-Self Study)

03257207 INTEGRATING TECHNOLOGY INTO THE SOCIAL STUDIES 3(3-0-6)

03257208 FOUNDATIONS OF EDUCATIONAL TECHNOLOGY 3(3-0-6)

03257209 BLENDED LEARNING ENVIRONMENTS 3(3-0-6)

03257210 HUMAN-COMPUTER INTERACTION 3(3-0-6)

03257211 ISSUES AND TRENDS IN EDUCATIONAL TECHNOLOGY RESEARCH 3(3-0-6)

03257212 GAMES AND SIMULATIONS FOR TEACHING AND LEARNING 3(3-0-6)

03257213 MANAGING EDUCATIONAL TECHNOLOGY PROJECTS 3(3-0-6)

03257214 DIGITAL PHOTOGRAHPY 3(3-0-6)

03257215 EDUCATIONAL ENTREPRENEURSHIP 3(3-0-6)

03257216 MARKETING FOR EDUCATIONAL ENTREPRENEURS 3(3-0-6)

03257217 FUNDAMENTAL OF DATA ANALYTICS 3(2-2-5)

## Study plan

### Plan A : Type A1

#### 1<sup>st</sup> Year, 1<sup>st</sup> Semester

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257901	THESIS	9 (0-27-0)
<b>Total</b>		<b>9</b>

#### 1<sup>st</sup> Year, 2<sup>nd</sup> Semester

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257901	THESIS	9 (0-27-0)
<b>Total</b>		<b>9</b>

#### 2<sup>nd</sup> Year, 1<sup>st</sup> Semester

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257901	THESIS	9 (0-27-0)
<b>Total</b>		<b>9</b>

#### 2<sup>nd</sup> Year, 2<sup>nd</sup> Semester

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257901	THESIS	9 (0-27-0)
<b>Total</b>		<b>9</b>

### Plan A : Type A2

#### 1<sup>st</sup> Year, 1<sup>st</sup> Semester

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257001	INNOVATION AND EDUCATIONAL TECHNOLOGY RESEARCH METHODS	3(3-0-6)
03257002	INTEGRATING EDUCATIONAL TECHNOLOGY IN TEACHING & LEARNING	3(3-0-6)
03257103	EDUCATIONAL DESIGN OF MEDIA AND LEARNING ENVIRONMENTS	3(3-0-6)
032572XX	ELECTIVE SUBJECTS I	3(3-0-6)
<b>Total</b>		<b>12</b>

**1<sup>st</sup> Year, 2<sup>nd</sup> Semester**

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257104	TEACHING AND LEARNING WITH DIGITAL MEDIA	3(3-0-6)
03257105	COGNITIVE SCIENCE AND EDUCATIONAL TECHNOLOGY	3(3-0-6)
03257106	INTERACTIVITY AND LEARNING DESIGN	3(3-0-6)
032572XX	ELECTIVE SUBJECTS II	3(3-0-6)
<b>Total</b>		<b>12</b>

**2<sup>nd</sup> Year, 1<sup>st</sup> Semester**

Code	Subjects	Credits (Lecture-Practice-Self Study)
032572XX	ELECTIVE SUBJECTS III	3(3-0-6)
03257801	SEMINAR IN TECHNOLOGY-ENHANCED LEARNING AND INNOVATION	3 (1-4-0) Non-credit
03257901	THESIS	6 (0-18-0)
<b>Total</b>		<b>9</b>

**2<sup>nd</sup> Year, 2<sup>nd</sup> Semester**

Code	Subjects	Credits (Lecture-Practice-Self Study)
03257901	THESIS	6 (0-18-0)
<b>Total</b>		<b>6</b>

**Total Credits**

**39 Credits**



## Instructors

Name/Surname Academic position	Qualification (Field of study)	Publications
Assist.Prof.Dr. Sirirat Petsangsri (EducationalTechnology.)	Ed.D. (Instructional Design and Technology) University of Pittsburgh, U.S.A, 2002	<b>1. Research</b> - A Development of Constructionism Learning Skills Model for Internship Student Teachers in Thailand - Space Learning Model for Flipped Classroom: Startup to Improve Learning and Innovation Skills in Higher Education. - Thai Vocational Internship Student Teacher Development thought a Constructionism Learning Skills Model <b>2. Instruction</b> - <b>3. Teaching</b> - New Paradigms In Educational Technology
	M.Ed. (Audiovisual) Chulalongkorn University, Thailand, 1994	
	B.Ed. (Eng) Srinakharinwirot University,Thailand,1987	

## Course description

### Thesis

03257901 THESIS 12(0-36-0)

PREREQUISITE : NONE

Study technology-enhanced learning and innovation research methodologies, writing a thesis proposal, presenting and criticizing the thesis proposal, examination and conducting the research, thesis result dissemination and thesis final examination.

### Core course

#### Foundation compulsory courses

03257001 INNOVATION AND EDUCATIONAL TECHNOLOGY RESEARCH METHODS 3(3-0-6)

PREREQUISITE : NONE

Definition; importance and types of research; reviewing of related literature and research; formulation of research problems; research objectives and research hypothesis; designing of variables; sampling techniques; construction of research instruments; data analysis; research design; writing research proposal and research report; and researcher's ethics

03257002 INTEGRATING EDUCATIONAL TECHNOLOGY IN TEACHING & LEARNING 3(3-0-6)

PREREQUISITE : NONE

Integrating digital media and technology into curricula through demonstrations, hands-on use, and application projects, Roles of digital tools that support teaching methods and learning strategies associated with a continuum of learner- and teacher-centered educational approaches and goals, Developing skills in podcasting, digital storytelling, educational use of Web 4.0 tools digital video, and augmented reality, and common software packages in order to design and formatively assess engaging learning communities.

#### Major compulsory courses

03257103 EDUCATIONAL DESIGN OF MEDIA AND LEARNING ENVIRONMENTS 3(3-0-6)

PREREQUISITE : NONE

Principles and practices of instructional design for the development of media-based learning as well as issues in the field of instructional design; different theoretical and philosophical approaches to the design of mediated learning environments; issues related to the use of media in learning instructional design models; the types of learning and learners they support for the design of learning environment

03257104 TEACHING AND LEARNING WITH DIGITAL MEDIA 3(3-0-6)

PREREQUISITE : NONE

Design of digital media as well as the design principles and constitutive elements with an emphasis on designing media narratives that enable and support pedagogical models including story-based learning, digital storytelling, and Ubiquitous Learning.

03257105 COGNITIVE SCIENCE AND EDUCATIONAL TECHNOLOGY 3(3-0-6)

PREREQUISITE : NONE

Introduction to cognitive science applied to teaching, learning, and the design of instructional media. Readings include developments in cognitive science and descriptions and analyses of instructional programs developed in a cognitive science frame-work. The design and implementation of cognitive aspects of learning and teaching strategies are examined through class demonstrations, discussions, on-line activities, readings, and projects.

03257106 INTERACTIVE AND LEARNING DESIGN 3(3-0-6)

PREREQUISITE : NONE

Overview of interactive and learning design; Images and Video; Multimedia for interaction; Instruction and Interaction; Support Learners Online

### **Elective course**

03257207 INTEGRATING TECHNOLOGY INTO THE SOCIAL STUDIES 3(3-0-6)

PREREQUISITE : NONE

Inquiry learning and service learning using technology in social studies; primary sources and digital resources; personal learning environments, networks, and communities; and bridging the digital divide

03257208 FOUNDATIONS OF EDUCATIONAL TECHNOLOGY 3(3-0-6)

PREREQUISITE : NONE

History of digital technologies; Issues that impact technology uses; Categories of software tools; Instructional software systems; Hypermedia tools for teaching

03257209 BLENDED LEARNING ENVIRONMENTS 3(3-0-6)

PREREQUISITE : NONE

The overview of blended learning; planning blended learning; conducting and evaluating blended learning.

03257210 HUMAN-COMPUTER INTERACTION 3(3-0-6)

PREREQUISITE : NONE

Usability of interactive systems; guidelines and principles; direct manipulation and virtual environments; input/output devices; collaboration nonanthropomorphic design; display design; window design; color; user manuals, online help, and tutorials; managing design processes; evaluating interface designs

03257211 ISSUES AND TRENDS IN EDUCATIONAL TECHNOLOGY RESEARCH 3(3-0-6)

PREREQUISITE : NONE

Principles, method and presentation of Technology-Enhanced Learning and Innovation research project

03257212 GAMES AND SIMULATIONS FOR TEACHING AND LEARNING 3(3-0-6)

PREREQUISITE : NONE

Characteristics and terminology of games and simulations, design principles and evaluation, virtual worlds with an emphasis on connecting principles of learning and teaching to the design of games and simulations.

03257213 MANAGING EDUCATIONAL TECHNOLOGY PROJECTS 3(3-0-6)

PREREQUISITE : NONE

Examination of principles of planning, scheduling, allocating resources, budgeting, proposal preparation, cost control, risk assessment, and personnel management for instructional technology projects, negotiating an effective design project plan, how to implement that plan, and how to control and monitor project activities. Case studies will be used as a basis for exercises and discussions, Developing a plan that meets specific criteria.

03257214 DIGITAL PHOTOGRAPHY 3(3-0-6)

PREREQUISITE : NONE

Digital photography technology; digital photography technique and modern technology photography processing by computer; application of digital photography for education

03257215 EDUCATIONAL ENTREPRENEURSHIP 3(3-0-6)

PREREQUISITE : NONE

Provision of understanding on the nature of educational entrepreneurship related to public, private, for-profit, and non-profit organizations. Focusing on strategic management of educational entrepreneurship. Learn the basics fundamental to business plan

design, patents, trademark, registration, and development of educational entrepreneurial projects

03257216 MARKETING FOR EDUCATIONAL ENTREPRENEURS

3(3-0-6)

PREREQUISITE : NONE

Develop understanding on the roles of school administrators as educational entrepreneurs. Address how to design and implement combinations of marketing efforts to carry out a school's strategy in its target group of stakeholders. Seek to develop an understanding of how a school can benefit by creating and delivering value to its stakeholders. Develop skills on the analytical concepts and tools of marketing to such decisions as segmentation and targeting, branding, pricing, and promotion.

03257217 FUNDAMENTAL OF DATA ANALYTICS

3(3-0-6)

PREREQUISITE : NONE

Artificial intelligence; Expert system; Data mining (e.g. data mining process, database segmentation, classification, association rule discovery); big data analytics.

### **Seminar subjects category**

03257801 SEMINAR IN TECHNOLOGY-ENHANCED LEARNING AND INNOVATION

3 (1-4-0)

PREREQUISITE : NONE

Study and discussion about movements of education, study tours on education in domestic areas and/or abroad.