

Course Detail

Master of Science in Organic Agriculture Management

Course Title:	Master of Science in Organic Agriculture Management (International Program)
Master Degree:	Master of Science (Organic Agriculture Management)
Academic Institution:	International College, Maejo University
Duration:	2 years (June 2022 - 2024)

Background and Rational:

Over the years, the university has conducted research and development of organic agriculture in a full range. We transfer knowledge modern technology to the use of the community in the form of academic services to society especially the issue of the impact of the monoculture production system, which is the mainstream agricultural system with continuous use of chemicals which is the cause of the destruction of the environment and life in this world, destroy the health of farmers manufacturers and consumers and reduce food security seeds and crops that grow from the land and water sources of the community without knowing the value.

Under the Educational Development Plan of Maejo University, Phase 12 (2017-2021), the main mission of higher education institutions and the objectives of the university establishment, at present, the university has established an important strategy for becoming a leading university with agricultural excellence at international level. We focus on producing graduates to be knowledgeable, international ability and develop research and innovation by using agriculture as a base in order to be accepted at the national and international level. In addition, the importance of being a center for learning and transferring arts and culture local knowledge.

Maejo University by the Maejo International College, therefore designed the Master of Science Program in Organic Agriculture Management as an international program to produce and develop manpower in organic agriculture management. This program is adhering to the philosophy of sufficiency economy as the basis create innovation according to the sustainable development guidelines of the country and the world society graduates will be ready and able to pursue the following occupations;

- Executives, social entrepreneurs and organic agriculture
- Academics, researchers and organic agricultural workers in government and private agencies
- Executives, leaders, relevant developers, the environment, public health and agriculture

University readiness in curriculum preparation

1. The university is well equipped with academic personnel who are professors and researchers with knowledge and expertise and have direct experience both from teaching, research and academic services
2. The university has a network of cooperation with external agencies. We working with the farmer group of producer, processor and distributor that can be a base for learning exchange and can practice joint research for national development
3. International Organic Agriculture Management Program is designed to be a curriculum that answers social needs consistent with the philosophy, objectives and vision of Maejo University to be a leading university with international agricultural excellence. In addition, it also focuses on creating new research and innovation and also focus on developing leaders and organic agriculture entrepreneurs in order to make changes.

Objectives:

This program intends to produce post-graduates who are qualified as follows:

- 1) Ability to apply knowledge and skills in organic agriculture and integrated agricultural management to sustainability at all levels, through research process.
- 2) Leadership skills, know how to produce and sell with morals and ethics, as well as responsible to community, society and environment.
- 3) English Skills for presenting and publishing to recognized international journals.
- 4) Ability to use IT for communication and development of organic agriculture effectively.

Course Synopsis and Methodology:**Study Plan**

The program provide 3 plans of study, with the total credits not less than 36 credits.

- **Plan A Type A1:** research oriented plan; designed for those researchers and other who have research experience in agriculture & related field > 1 year.
- **Plan A Type A2 :** research oriented plan; designed for B.S. graduate without research experience

Plan B: designed for B.S. graduate without research experience

Courses	Plan A1 (Research)	Plan A2 (Course work + thesis)	Plan B (Course work + IS)
Non-Credit Courses	(7)	(7)	(7)
Course work	-	24	30
– Core	-	16	16
– Elective	-	8	14

Thesis	36	12	—
Independent Study (IS)	-	-	6
Total Credits	36	36	36
Comprehensive Exam	-	-	x

Course Content/ Study Topic:

(1) Non-Credit Courses		7 Credits
OM 501	Research Methodology for Interdisciplinary Organic Agriculture Management	3 (2-3-5)
OM 591	Seminar 1	1 (0-2-1)
OM 592	Seminar 2	1 (0-2-1)
OM 593	Seminar 3	1 (0-2-1)
OM 594	Seminar 4	1 (0-2-1)
(2) Major Core Courses		9 Credits
OM 502	Organic Standard System	3 (2-3-5)
OM 503	Organic Agribusiness Innovation and Technology Management	3 (2-3-5)
OM 504	Processing Innovation and Branding of Organic Products	3 (2-3-5)
(3) Major Elective Courses *		15 Credits
OM 511	Cannabis Science	3 (2-2-5)
OM 512	Beekeeping in Organic Farming	3 (2-2-5)
OM 513	Organic Livestock Production and Organic Aquaculture Farming	3 (2-2-5)
OM 514	Organic Seed Science and Technology	3 (2-2-5)
SM 515	Advanced Technology and SMART Farm in Modern Agriculture	3 (2-2-5)
OM 521	Sustainable Organic Farming Management	3 (2-2-5)
OM 522	Accounting and Financial Management for Organic Agribusiness	3 (2-2-5)
OM 523	Strategies for Organic Agribusiness Development	3 (2-2-5)
OM 524	Entrepreneurship in Organic Agriculture	3 (2-2-5)
OM 525	Business Plan for Entrepreneur in Organic Agribusiness	3 (2-2-5)
OM 526	Supply Chain and Logistics Management for Entrepreneurship in Organic Agribusiness	3 (2-2-5)
OM 526	Supply Chain and Logistics Management for Entrepreneurship in Organic Agribusiness	3 (2-2-5)
** Total 15 Credits for Plan A2, Total 21 Credits for Plan B		
(4) Thesis		
OM 691	Thesis 1 (Plan A1, Plan A2)	6 (0-18-0)
OM 692	Thesis 2 (Plan A1, Plan A2)	6 (0-18-0)
OM 693	Thesis 3 (Plan A1)	12 (0-36-0)
OM 694	Thesis 4 (Plan A1)	12 (0-36-0)

(5) Independent Study**6 Credits**

OM 690 Independent Study

Course Description

OM 501 Research Methodology for Interdisciplinary Organic Agriculture Management 3 (2-3-5)

The concepts of interdisciplinary organic agriculture management research. Experimental designs and steps in interdisciplinary organic agriculture management research, data processing, analysis and interpretation of research results, writing and presenting a research report.

OM 591 Seminar 1 1 (0-2-1)
Presentation and discussion of topics of interest in the general area of organic agriculture management for master degree students

OM 592 Seminar 2 1 (0-2-1)
Presentation and discussion of topics of interest in the specialized area of Organic agriculture management related to master thesis.

OM 593 Seminar 3 1 (0-2-1)
Presentation and discussion of topics of interest in the specialized area of Organic agriculture management related to master thesis.

OM 594 Seminar 4 1 (0-2-1)
Presentation and discussion of topics of interest in the specialized area of Organic agriculture management related to master thesis..

OM 502 Organic Standard System 3 (2-3-5)
Principles and practices of organic crop production, organic input Production, weed management, pest control and plant diseases, organic farm and processing unit inspector, certification and documentation in international organic standard.

OM 503 Organic Agribusiness Innovation and Technology Management 3 (2-3-5)
Concepts of management of organic agriculture innovation and technology, Use of information technology for data analysis and management in organic agribusiness, digital management for organic agribusiness.

OM 504 Processing Innovation and Branding of Organic Products 3 (2-3-5)
Principles of organic agricultural products processing, Techniques for processing organic agricultural products, phytochemical extraction and analysis of natural products, sensory and shelf life testing, quality control of organic products, introduction of new product, market testing and brand building.

- OM 511 Cannabis Science** 3 (2-2-5)
 Botany of Cannabis, culture, bioactive compound, extraction and analytical techniques for bioactive compounds, processing, marketing and the application of Cannabis in the medicine, cosmetic and pharmaceutical industries.
- OM 512 Beekeeping in Organic Farming** 3 (2-2-5)
 Biodiversity of honey bees, bee behavior, colony development, bee enemies, develop and bee propagation, breeding of bees, honey bee production technology, value added of honey bee products, organic beekeeping farming-system, utilization of bee in the pollination of organic agriculture crop, organic honey bee product management and field trip.
- OM 513 Organic Livestock Production and Organic Aquaculture Farming** 3 (2-2-5)
 Principles and animal production in organic farming systems, organic livestock farming management, organic livestock feed production, principles and practices of organic aquaculture farming, ecological system in aquaculture farm, organic aquatic animal feed and organic aquaculture farming management, processing and management of livestock and aquatic animals products in organic systems.
- OM 514 Organic Seed Science and Technology** 3 (2-2-5)
 Physiology and development of seed science production, organic seed production, storage, organic seed testing and quality control, handling, packaging, seed laws and regulations, seed processing and improvement, modern seed technology for high quality and high standard of organic seed.
- OM 515 Advanced Technology and SMART Farm in Modern Agriculture** 3 (2-2-5)
 Applications of advanced agricultural technologies, automated and precision system, application of the Geographic Information System (GIS), modern tools and machinery, application of the remote sensor for the precision farm management and development directions corresponding with global situations.
- OM 521 Sustainable Organic Farming Management** 3 (2-2-5)
 Patterns of organic farming systems, factors affecting farming system management, research and development on cropping patterns, sustainable management in production, land conservation and utilization, integrated pest management in farming systems, planning and farm budget, analysis and evaluation of organic farming systems, marketing and price of product.
- OM 522 Accounting and Financial Management for Organic Agribusiness** 3 (2-2-5)
 Roles of accounting and finance in organic agribusiness management concepts of financial management in organic agribusiness, cost analysis, financial performance analysis, risk and return in organic agribusiness, short and long term financing and budgeting, financial budgeting for organic agribusiness.

- OM 523 Strategies for Organic Agribusiness Development** 3 (2-2-5)
 Concept of strategies for organic agribusiness, related problems about organization management in organic agribusiness, direction of business management and administration, business development, production and marketing of input, agricultural outputs and products under globalization, organic agribusiness organization development
- OM 524 Entrepreneurship in Organic Agriculture** 3 (2-2-5)
 Characteristics of entrepreneurship in organic agriculture business;
 Inspirational encouragement; Entrepreneurial development; Laws for new business establishments; Sources of funding; Marketing research creation of business plan; Marketing plan; Production plan; Organizational and operational plan; Business plan evaluation; Guidelines for business operations.
- OM 525 Business Plan for Entrepreneur in Organic Agribusiness** 3 (2-2-5)
 Concept, significant and use of business plan, the principles of writing business plan, business background, industry competitive analysis, determination of vision, mission and goals, business strategy, operation plan, backup plan and solutions.
- OM 526 Supply Chain and Logistics Management for Entrepreneurship in Organic Agribusiness** 3 (2-2-5)
 Impacts of logistics operations to business organizations, logistics service provider, international logistics, logistics costs analysis for business decision making, measuring logistics performance, organizing for effective logistics, supply chain management..
- OM 691 Thesis 1** 6 (0-18-0)
 Review the literature related to the master thesis, conceptual framework, experimental design and thesis planning, emphasize the discussion with advisory committee to select research topic and propose proposal
- OM 692 Thesis 2** 6 (0-18-0)
 Plan A Type A1: Research conduction with creativeness, theory and analysis techniques with instruments, data collection and interpretation, discussion with advisory committee and solving research problems.
 Plan A Type A2: Research conduction with creativeness, theory and analysis techniques with instruments, data collection and interpretation, development of independent thinking and expression of opinion, integration of research knowledge for research publication, academic presentation and thesis writing in clear and concise manner; thesis preparation must be done according to Maejo University guidelines.
- OM 693 Thesis 3** 12 (0-36-0)
 Research data collection and interpretation, independent thinking and personal development, integration of research knowledge for research publication and academic presentation.
- OM 694 Thesis 4** 12 (0-36-0)
 The development of independent thinking & expression of opinion, creating and integration knowledge which reflects research gained for thesis writing in clear and concise manner; thesis preparation must be done according to Maejo University guidelines.

OM 690 Independent Study

6 (0-18-0)

Independent study at the master's level as characterized by analysis and study of data related to major courses and writing as report, under the supervision and recommendation of the student advisor..

Applicant Qualifications:

Qualifications	Study Program	
	Plan A , Type A1 & A2	Plan B
Education level	Bachelor degree or equivalent in the field of Science or any other related fields	Bachelor degree or equivalent in the field of Science or any other related fields
GPA	> 3.25 for Type A1 or > 2.75 with research article or publication in journals. > 2.5 for Type A2	> 2.5
Work experience	Research experience or work for agriculture, community development, or related fields at least one year.	At least 3 years of experience in agriculture , community development, or related fields
English Language Certification	TOEFL (Paper based) = 500 TOEFL (Internet based) = 65 TOEFL (Computer-based) = 173 IELTS = 6.0	TOEFL (Paper based) = 450 TOEFL (Internet based) = 55 OEFL (Computer-based) = 160 IELTS = 4.5 (Or pass the English Proficiency Test which conducted by Mae Jo University within the first academic year of the study duration.)
Applications in addition to above requirements are in accordance with the approval by program committee.		

Document Required:

- 1) Application Form sealed with photo & curriculum vitae
- 2) Transcripts of studies in English.
- 3) English language certificate (e.g. TOEFL, IELTS), if available)
- 4) References Recommendation Letters
- 5) A brief proposal of research project (Plan A) and independent study (Plan B),
With statement of the problems, objectives and expectations

Contact:**Lecturers Responsible for the Program**

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Engineering Program in Environmental Engineering

Course Title:	Master of Engineering Program in Environmental Engineering
Master Degree:	M. Eng. (Environmental Engineering)
Academic Institution:	Faculty of Engineering, Naresuan University
Duration:	2 years (June 2022 – March 2024)
	First Semester : June - October
	Second Semester : November – March

Background and Rational:

Environmental issues directly affect the potential for economic and social development, especially the impact it will have on agriculture, industry and tourism. Which is a key component of the country's economic development. Environmental engineering courses must cover both basic knowledge and new methods. Therefore, Master of Engineering in Environmental Engineering that can be developed according to modern technology and rapidly changing Include the potential to produce environmental engineering personnel who are ready to work immediately and have high potential to develop themselves to suit both academic and professional work.

In this program, research in environmental engineering involve the treatment and distribution of drinking water; the collection, treatment, and disposal of wastewater; the control of air pollution and noise pollution; municipal solid-waste management and hazardous-waste management; the cleanup of hazardous-waste sites; and the preparation of environmental assessments, audits, and impact studies. Mathematical modeling and computer analysis are widely used to evaluate and design the systems required for such tasks. Environmental engineering functions include applied research and teaching; project planning and management; the design, construction, and operation of facilities; the sale and marketing of environmental-control equipment; and the enforcement of environmental standards and regulations.

The education of environmental engineers involves graduate-level course work to specialize or take elective courses in the environmental field. Program is available for training. In the public sector, graduates will be trained by national and regional environmental agencies, local health departments, and municipal engineering and public works departments. In the private sector, graduates will be trained by consulting engineering firms, construction contractors, water and sewerage utility companies, and manufacturing industries.

The main mission of Naresuan University is to develop into a quality higher education institution that meets international standards. The four missions of Naresuan University consist of producing graduates, research, academic service and the making of arts and culture. Therefore, it is part of the mission of Naresuan University in teaching and learning in the integrated science and technology to provide graduates with diverse and up-to-date knowledge and skills. It also distributes opportunities and equality in education to the people of the region, the country and the abroad for continuous human resource development.

Objectives:

1. To produce graduates with modern academic knowledge and advanced engineering skills in designing, controlling and supervising processes of water, air pollution treatment unit, solid waste and hazardous waste management and the potential to develop advanced technology, research and improve technology to be suitable for industry, community and local.

2. To produce quality academic work based on research topics that are consistent with the missions of Naresuan University and the country.

3. To provide services and cooperation with various agencies, both governmental and private sector, both academic and research which requires advanced environmental engineering knowledge as well as exchange and help in knowledge between academics in national and international educational institutions and research institutes.

Course Synopsis and Methodology:**1. Study plan****(1) Plan A (Type A1)**

Year I
First Semester

307581	Research Methodology in Science and Technology (Non-credit)	3(3-0-6)
307591	Thesis 1, Type A1	9 Credits
	Total	9 Credits

Year I
Second Semester

307592	Thesis 2, Type A1	9 Credits
307582	Seminar 2 (Non-credit)	1(0-3-1)
	Total	9 Credits

Year II
First Semester

307593	Thesis 3, Type A1	9 Credits
	Total	9 Credits

Year II
Second Semester

307594	Thesis 4, Type A1	9 Credits
	Total	9 Credits

(2) Plan A (Type A2)

Year I
First Semester

307501	Principle of Environmental Chemistry and Analysis	3(2-2-5)
307502	Principle of Environmental Engineering	3(2-2-5)
307503	Membrane Technology for Water Quality Management	3(2-2-5)
307504	Advanced Environmental Modelling and Prediction	3(2-2-5)
307581	Research Methodology in Science and Technology (Non-credit)	3(3-0-6)
Total		12 Credits

Year I
Second Semester

307582	Seminar (Non-credit)	1(0-3-1)
307505	Remediation Technology for Soil and Groundwater	3(2-2-5)
307xxx	Elective Course (1)	3(2-2-5)
3xxxxx	Elective Course (2)	3(x-x-x)
307595	Thesis 1, Type A2	3 Credits
Total		12 Credits

Year II
First Semester

307579	Current Issue in Environmental Engineering	3(2-2-5)
307596	Thesis 2, Type A2	3 Credits
Total		6 Credits

Year II
Second Semester

307597	Thesis 3, Type A2	6 Credits
Total		6 Credits

(3) Plan B

Year I
First Semester

307501	Principle of Environmental Chemistry and Analysis	3(2-2-5)
307502	Principle of Environmental Engineering	3(2-2-5)
307503	Membrane Technology for Water Quality Management	3(2-2-5)
307504	Advanced Environmental Modelling and Prediction	3(2-2-5)
307571	Independent Study 1	1 Credits
307581	Research Methodology in Science and Technology (Non-credit)	3(3-0-6)
Total		12 Credits

Year I
Second Semester

307582	Seminar (Non-credit)	1(0-3-1)
307505	Remediation Technology for Soil and Groundwater	3(2-2-5)
307xxx	Elective Course (1)	3(2-2-5)
3xxxxx	Elective Course (2)	3(x-x-x)
3xxxxx	Elective Course (3)	3(x-x-x)
307572	Independent Study 2	1 Credits
Total		13 Credits

Year II
First Semester

307579	Current Issue in Environmental Engineering	3(2-2-5)
307573	Independent Study 3	2 Credits
Total		5 Credits

Year II
Second Semester

3xxxxx	Elective Course (4)	3(x-x-x)
307574	Independent Study 4	2 Credits
Total		5 Credits

- Thesis topic submission due on March 2023
- Thesis proposal examination due on October 2024
- Fieldwork data collection due on October 2024
- Thesis defense examination due on March 2025

2. Course Content

- 302544 Energy Conversion** **3(3-0-6)**
 Forms of energy and their interrelationships; classification of power plant; practical cycles for power plant; effects of variables on efficiency; comparison of steam, gas turbine, and internal combustion engine plant; fuel quality requirement; emissions; selection of plants for given applications :economic, technical, resource use, and environmental factors
- 302546 Energy Conservation and Management** **3(3-0-6)**
 Principles of energy conservation; energy auditing and costing; controlling and planning; energy measurement; industrial and commercial air conditioning; electricity; renewable energy resources in industry; assessment of energy systems; case studies
- 302547 Renewable Energy Resources** **3(3-0-6)**
 Renewable energy resources : solar energy, wind energy, biomass, hydropower, geothermal energy, tidal power, with special references to Thailand; development of technologies for use and conversion of renewable energy; technical and economic feasibility
- 304537 Application of Remote Sensing and Geographic Information Systems for Engineers** **3(2-3-5)**
 Theoretical concepts and procedures of Geographic Information Systems (GIS); developing computing skills related to GIS; providing basic spatial analysis skills; applications of GIS and remote sensing technologies for environmental and water resource areas
- 304546 Groundwater Hydraulics** **3(3-0-6)**
 Physical flow characteristics of groundwater flow; mechanics of flow through porous media; Darcy's law; Laplace equation; solution of Laplace equation by analytical, graphical, and numerical methods; steady and unsteady flow through isentropic and an-isentropic porous media; seepage through earthen dams, embankments, and foundation; flow to wells, subsurface drains, and drainage ditches; solute transport models; freshwater-salt water interface
- 304547 Flood Protection and Drainage** **3(3-0-6)**
 Causes of flood; hydrologic and hydraulic studies of flood and storm characteristics; design flood and storm; preliminary design and planning of flood mitigation measures; flood control reservoir; level and floodwalls; flood diversion channel; channel improvement; evaluation and floodplain zoning/flood retention basin; preliminary design and planning of urban drainage systems; system lay-out; estimate of runoff quantities and sewer sizes; effect of retention storage; pump and gate operation
- 307501 Principle of Environmental Chemistry and Analysis** **3(2-2-5)**
 Fundamental concept in chemistry, chemistry of water, kinetic chemistry, equilibrium chemistry, precipitation and dissolution, oxidation- reduction reaction, organic chemistry, biological chemistry, application of chemistry principle for prediction or estimation of fate and transport of pollutants in natural water and treatment system, laboratory analysis of water quality, principle of advanced analytical instruments for pollutants measurement

307502 Principle of Environmental Engineering 3(2-2-5)

General concept of water, air, and soil pollutions; causes of pollution problems and their preventions; treatment, technology, and current solution in Thailand and other countries; determination of pollution control area; factor analysis of pollution management; policy and management plan of pollution in Thailand; analysis and propose of practical plan pollution situation in Thailand

307503 Membrane Technology for Water Quality Management 3(2-2-5)

Theories and advanced processes for producing portable water by membrane technology, drinking water, and industrial water; water recycling and reuse; membrane types; calculation and plant design; case study

307504 Advanced Environmental Modelling and Prediction 3(2-2-5)

Mathematical modeling development for environmental system simulation; numerical methods for solving equations; development of mathematical modeling for calculation of surface water and groundwater flow; simulation of pollutant distribution in air, surface water, and groundwater; mathematical modeling for health risk assessment and site remediation

307505 Remediation Technology for Soil and Groundwater 3(2-2-5)

Environmental and health impact due to environmental contamination by hazardous compounds; monitoring; site investigation and characterization; risk assessment; selection of remedial technologies; evaluation of site remediation efficiency

307510 Advanced Wastewater Treatment Process 3(2-2-5)

Advanced technologies and processes for treatment of recalcitrant compounds in wastewater; processes for industrial wastewater reuse; advanced oxidation; adsorption; ion exchange; membrane filtration; biological wastewater treatment for toxic substances; emerging technologies

307511 Sewerage and Water Distribution Systems 3(2-2-5)

Water demand and wastewater flow rate; hydraulics of water flow in pipe; water intake system; water storage system; design of water transmission and distribution system; relation between rainfall-duration-frequency; specification and magnitude of flood; estimation of rainfall and runoff; calculation of sewer system; pumps and pump stations; design of drainage and collection system

307512 Water and Wastewater Treatment Plant Operation and Management 3(2-2-5)

Principle of plant operation; chemical and biological measurement; data record and interpretation for problem analysis and solving; management and control of mechanical and electrical systems in a wastewater treatment plant including pumping, aeration, mixing, chemical feeding, sensor, and computer systems for water distribution and wastewater treatment; maintenance and monitoring

307513 Waste Utilization 3(2-2-5)

Types of waste; nature and properties of waste (liquid, solid, air); generation sources and formation process of wastes; effects on the environment; current management philosophy; necessary regulation and standard; policy and plan; best available engineering technology in reuse and utilization of wastewater, sludge utilization and soil waste; management organization; economic analysis

307514 Industrial and Hazardous Waste Management 3(2-2-5)

Classification and characterization of hazardous waste; physicochemical and biological properties of hazardous waste; fate and transport of hazardous waste in environment; toxicology and risk assessment; hazardous waste treatment and disposal technology; site remediation

307515 Air System Design for Industrial Sectors 3(2-2-5)

Principles and design of air pollution control units for particulate and gases for industry; gravity settlers; incinerators; cyclones; electrostatic precipitators; fabric filters; wet scrubbers; adsorption; absorption; ventilation system design for industry; operation and maintenance

307516 Advanced Biological Treatment Process 3(2-2-5)

The definition of growth, measurement of growth and growth yields of microorganisms. Different modes of nutrition in bacteria; sulfate reduction, phosphorus metabolism, nitrogen metabolism – nitrifying and denitrifying bacteria, nitrogen fixation and microbes used as biofertilizer. Different modes of operation in bioprocess for wastewater treatment; aerobic and anaerobic. Influences of environmental factor for pollutant removal and biogas production through microorganism metabolism. The hybrid of bioprocess and other technologies such as filtration and adsorption for improvement of water quality.

307520 Environmental and Health Impact Assessment 3(2-2-5)

System analysis; methods for environmental risk assessment; exposure- response relationships; quantitative risk assessment; concept of health impact assessment and method; implementation

307521 Solid Waste Management 3(2-2-5)

Need for integrated solid waste management; characterization and properties of MSW; collection, transfer, and transport of solid waste; separation, pre-treatment, and recycling of waste material; solid disposal waste by combustion process and incinerator; landfill design for solid waste disposal; compositing of solid waste; alternative approaches such as waste-to-energy, methane generation by anaerobic digestion

307522 Sampling Technology and Air Pollution Control 3(2-2-5)

Introduction to air pollution; air pollutant and sources; effects of air pollution; air pollution meteorology; atmospheric pollutant sampling and analysis; gaussian equation and other air pollution models; pollutant and gas control; laws and regulations

307523 Global Warming and Climate Change 3(2-2-5)

Global warming problem; theory and evidence of climate change; greenhouse phenomenon; ozone depletion; change of sea level; impacts of climate change on hydrology, food and water deficiency, and alteration of disease; impact mitigation measures for agricultural, industrial, and residential stakeholders; Thailand and the impact of global warming

307524 Evaluation of Water and Wastewater Treatment Technology 3(2-2-5)

Principles and mechanisms of water quality improvement engineering; analysis of system problems; by-products control; case studies; construction; system design and economic cost-effectiveness.

307525 Economic Analysis of Water Reuse 3(2-2-5)

Water balance analysis; appropriate organizations and management structures; water management policies and guidelines covering legal, economic, social, and environmental aspects; sustainable development; planning system in water resources development; remote sensing and geographical information systems for water resources management; statistics for water resources engineering

307526 Environmental Forensics 3(2-2-5)

Fundamentals of environmental forensic science and environmental pollution, random sampling, data collection methods analysis, and research statistics for investigation of crimes against the environment; case studies on applying forensic technique to analyze environmental evidence.

307527 Safety and Environment Management in Workplace 3(2-2-5)

Knowledge on risk and hazard in workplaces; risk assessment; theories of accident causation; accident analysis and prevention; mechanical hazard, fire and explosion hazard; chemical hazard; radioactive hazard; noise hazard; plant layout; personal protective equipment; maintenance and engineering control; emergency plan and monitoring; law and standard

307528 Community Health Development 3(2-2-5)

Community development; educational process and management for people to be self-reliant; study and analyze the structure of Thai society; elements influencing the development of health in the community; participation in health and community development; self and community health care; individual and community health problems; importance of environmental health; the relationship between humans and the environment in terms of ecology; elements of the environment which affects the well-being and health of human beings; residential sanitation; school; community; drinking water; water use; disposal and control of sewage and nuisance; noise; smell; smoke; air; case study; health development in communities in developed and developing countries

307529 Environmental Law and Policy 3(2-2-5)

Background of environmental law; legislation principle; national and international environmental laws; relationships and roles of environmental organizations; environmental policy and management for organizations

307571 Independent Study 1 1 Credits

Literature review in various databases, compilation of fundamental knowledge and research articles on topics of interest, finding and creating of guideline for hypothesis establishment, presenting summary report of independent study and progress report

307572 Independent Study 2 1 Credits

Allocation of guidelines and framework for independent study, conducting research, proposal independent study, presenting summary report of independent study and progress report

307573 Independent Study 3 2 Credits

Review of research, writing research articles in environmental engineering area and improvement and modification of research articles due to expert opinions, presenting summary report of independent study and progress

307574 Independent Study 4 2 Credits

Defending independent study examination, correcting an independent study report according to comments from the examiners, writing a final independent study defense and submit to the graduate school

307579 Current Issue in Environmental Engineering 3(2-2-5)

Study on current issues that related to environmental engineering in the present and the future trend

307581 Research Methodology in Science and Technology 3(3-0-6)

Research definition, characteristics and goal; types and research process; research problem determination; variables and hypothesis; data collection, data analysis, proposal and research report writing; research evaluation; research application; ethics of researchers; and research techniques in science and technology

307582 Seminar 1(0-3-1)

Report and discuss topics related to environmental engineering

307591 Thesis 1, Type A1 9 Credits

Studying the elements of a thesis; reviewing literature and related research; and determining the thesis title

307592 Thesis 2, Type A1 9 Credits

Developing a concept paper and preparing a summary of the literature and related synthesis

307593 Thesis 3, Type A1 9 Credits
Developing research instruments and research methodology; and preparing a thesis proposal in order to present it to the committee

307594 Thesis 4, Type A1 9 Credits
Collecting data; analyzing data; preparing a progress report in order to present it to the thesis advisor; and preparing the full-text thesis and a research article in order to get published according to the graduation criteria

307595 Thesis 1, Type A2 3 Credits
Study the elements of thesis or thesis examples in the related field of study, determine thesis title, develop concept paper, and prepare the summary of literature and related research synthesis

307596 Thesis 2, Type A2 3 Credits
Develop research instruments and research methodology and prepare thesis proposal in order to present it to the committee

307597 Thesis 3, Type A2 6 Credits
Collect data, analyze data, prepare progress report in order to present it to the thesis advisor, and prepare full-text thesis and research article in order to get published according to the graduation criteria

314531 Health Management 3(3-0-6)
Introduction to the evolving role of public health and epidemiology in disaster preparedness and response, standards of disaster health management and resources, ethical, cultural and legal aspects of disaster health care, principles of on scene and hospital management, roles of emergency services, challenges of medical care in the disaster environment, epidemiology of disasters including types, severity and economic, human and societal impact, psychological impact of disasters on individual, populations and responders

Graduation Conditions:

Accordance with Naresuan University Regulations for Graduate Studies B.E. 2016 and Naresuan University Regulations for Graduate Studies 3rd Addition Edition B.E. 2020. The criteria for graduation are as stated in the 2016 university regulations for graduated studies as described below:

Curriculum Type A 1 Under Naresuan University Regulation

1. Complete within the length of time required for the programme
2. Complete all the courses as required by the programme
3. Meet the English requirement stated by the university
4. Present and pass the oral examination
5. A work or part of work based on the student's thesis must be published as research paper or accepted for publication in national or international journal that meet with the quality standard as announce by Higher Education Commission.

Curriculum Type A 2 Under Naresuan University Regulation

1. Complete within the length of time required for the programme
2. Complete all the courses as required by the programme
3. Meet the English requirement stated by the university
4. Pass all the courses required by the curriculum
5. Minimum GPA of 3.00
6. Present and pass the oral examination
7. A work or part of work based on the student's thesis must be published as research paper or accepted for publication in national or international journal that meet with the quality standard as announce by Higher Education Commission or present as research paper in an academic conference with the full paper published in the conference proceedings.

Curriculum Type B Under Naresuan University Regulation

1. Having completed the duration of study as specified by the course
2. Having registered all courses as required by the course
3. Having passed the English proficiency test as announced by the University
4. Having completed all courses and passed all conditions as specified in the course
5. Having a grade point average of not less than 3.00
6. Having passed the comprehensive examination
7. Having completed the report of Independent Study and passed the final oral examination by the university's committee
8. Independent Study or a part of it has been published or presented in an academic conference as the full paper, and been published as the proceeding from that conference

Applicant Qualifications

Plan A, Type A1

- 1) Applicants are required to have at least bachelor's degree with GPA 3.00/4.00 in Environmental Engineering or Science or a relevant degree.

Plan A, Type A2

- 1) Applicants are required to have at least bachelor's degree with GPA 2.50/4.00 in Environmental Engineering or Science or a relevant degree.

Plan B

- 1) Applicants must hold a bachelor's degree in any field or major related to Environmental Engineering from an accredited academic institution and applicants must have at least 1 year of work experience or are working in a field related to environmental engineering.

Document Required:

- Applicants for Plan A and B are required to submit their CV, English Test, and a brief research proposal (a maximum of three pages of A4 paper). The brief research proposal must cover principles and rationale, objectives, research methodology, and significance/expected outcomes.

Contact:

1. Curriculum Head:

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Science Program in Disaster Management

Course Title: Master of Science Program in Disaster Management

Master Degree: M.S. (Disaster Management)

Academic Institution: Faculty of Engineering, Naresuan University

Duration: 2 years (June 2022 – March 2024)

First Semester : June - October

Second Semester : November – March

Background and Rational:

According to the Twelfth National Economic and Social Development Plan (NESDP) (2017 – 2021) developed by National Economic and Social Development Board (Office of the Prime Minister). In formulating the Twelfth Plan, the Office of the National Economic and Social Development Board (NESDB) adhered to the 20-year National Strategy framework (2017- 2036), the country's Sustainable Development Goals (SDGs), the Thailand 4.0 Policy, as well as other reform agendas. In order to set out development directions and strategies to achieve the objectives of “Security, Prosperity, and Sustainability”, the NESDB regards participation by a broad cross-section of society to be a crucial principle in this Plan.

Within the twelfth NESDP, one of the strategies pay attention to Environmentally-Friendly Growth for Sustainable Development (Strategy 4). From the fact that climate change and natural disasters have become more unpredictable and severe, particularly floods and droughts, causing impacts on the economic sectors and the domestic supply chain. Furthermore, international agreements on climate change and competitive trade have intensified, and Thailand needs to be ready to take responsibility of greenhouse gas reduction. Simultaneously, the post-2015 Sustainable Development Agenda has established the global direction for the next 15 years (2016-2030), and this too will have an influence on the development of the country. Therefore, the challenges that need to be addressed during the Twelfth Plan are the follows: to build security in the stock of natural resources and leverage environmental quality in order to support green growth (which is friendly to both the environment and the quality of life); solving the environmental crisis to reduce pollution from production and consumption; setting up a transparent and fair environmental management system; promoting and scaling up sustainable consumption and production; accelerating readiness for greenhouse gas reduction while enhancing capacity for climate change adaptation and management in order to reduce risks from natural disasters.

Worldwide, management of natural resources and the environment has often not been effective, and Thailand is no exception, and the conflict between environmental conservation and economic development has been made manifest. Nonetheless, Thailand's food security has remained adequate despite challenges from climate change and from increasing demand for fuel crops.

One of the missions of the Twelfth National Economic and Social Development Plan is to build secure natural resource and environmental bases through supporting community participation and improving resilience, based on Sufficiency Economy Philosophy that will

cushion impacts from climate change and disasters. Capacity and preparedness should be improved, and regional cooperation enhanced for dealing with natural disasters and emergencies, and in collaborating in the prevention of the spread of emerging and re-emerging diseases. Development guidelines for managing natural resources and the environmental sustainability include upgrading the ability to adapt to climate change and ensure preparedness to respond to natural disasters. Maps and priority lists of risk areas should be prepared at national, regional and provincial levels. Disaster management efficiency should be improved while database systems and telecommunication networks should be developed. Support is also needed to provide for the development of science and technology in disaster management. The national volunteer work system should be improved to meet international standards. Further, the private sector, government and semi-government enterprises and NGOs, schools and local authorities should be well prepared with action plans for disaster response.

Objectives:

1. To Produce graduates with the knowledge, skills and ability in the area of Disaster Management in order to increase the capacity to cope with disaster impacts.
2. To Construct new knowledge related to Disaster Management in a context of the Asian region.

Course Synopsis and Methodology:

1. Study plan

(1) Plan A (Type A1)

Year I First Semester

314581	Thesis 1, Type A1	9 Credits
314594	Research Methodology in Science and Technology (Non-credit)	3(3-0-6)
314595	Seminar 1 (Non-credit)	1(0-3-1)
Total		9 Credits

Year I Second Semester

314582	Thesis 2, Type A1	9 Credits
314596	Seminar 2 (Non-credit)	1(0-3-1)
Total		9 Credits

Year II First Semester

314583	Thesis 3, Type A1	9 Credits
Total		9 Credits

**Year II
Second Semester**

314584	Thesis 4, Type A1	9 Credits
	Total	9 Credits

(2) Plan A (Type A2)

**Year I
First Semester**

314501	Disaster Management and Disaster Risk Reduction	3(3-0-6)
3145xx	Elective Course	3(x-x-x)
3145xx	Elective Course	3(x-x-x)
314594	Research Methodology in Science and Technology (Non-credit)	3(3-0-6)
314595	Seminar 1 (Non-credit)	1(0-3-1)
	Total	9 Credits

**Year I
Second Semester**

314503	GIS and Remote Sensing in Disaster Management	3(2-2-5)
3145xx	Elective Course	3(x-x-x)
3145xx	Elective Course	3(x-x-x)
314591	Thesis 1, Type A2	3 Credits
314596	Seminar 2 (Non-credit)	1(0-3-1)
	Total	12 Credits

**Year II
First Semester**

314592	Thesis 2, Type A2	3 Credits
3145xx	Elective Course	3(x-x-x)
3145xx	Elective Course	3(x-x-x)
	Total	9 Credits

**Year II
Second Semester**

314593	Thesis 3, Type A2	6 Credits
	Total	6 Credits

- Deadline for submitting thesis topic in March 2023
- Schedule for thesis proposal examination in October 2024
- Schedule for collecting fieldwork data in October 2024
- Thesis defense examination is scheduled for March 2025

2. Course Content

Core Courses

314501 Disaster Management and Disaster Risk Reduction 3(3-0-6)

Introduction to disaster and disaster management, disaster management terminology, evolution of disaster management, introduction to risk management, disaster risk management cycle, disaster risk identification and assessment, risk analysis and evaluation; risk transfer, disaster risk reduction, mainstreaming disaster risk reduction into development, crisis management.

314503 GIS and Remote Sensing in Disaster Management 3(2-2-5)

Basic principles of remote sensing (RS) and geographic information systems (GIS), information from weather radar, damage assessment, damage detection and disaster monitoring, disaster risk management, integration of several sources of information and applications for disaster monitoring and management.

Elective Courses

a) Science Technology

314511 Meteorological Hazards 3(2-2-5)

Atmospheric composition and structure, atmospheric instability, forecasting, types of meteorological hazards, meteorological data, meteorological risk assessment, meteorological phenomena, cyclones, thunderstorms, lightning, storm surge, monsoon surge, climate change/global warming, a case study on disaster management cycle due to meteorological hazards.

314512 Geological Hazards 3(2-2-5)

Understanding of geological causes, types and processes of slope movement, engineering methods for slope stabilisation and mitigation, landslide risk analysis using remote sensing, GIS and other techniques, preparation of landslide hazard zone maps, early warning system of landslide, identification of safe sites with community participation, awareness programs for community, geology of earthquakes, seismological studies, surface faulting and effects, landslides and liquefaction triggered by earthquake, earthquake resistant constructions, a case study on disaster management cycle due to geo hazards.

314513 Hydrological Hazards 3(2-2-5)

Hydrological system, types of hydrological hazards, hydrological data, hydrological risk assessment, drought, flooding, flood risk and its causes, hydrological hazards application in dam management and irrigation system, flood frequency analysis, mitigation procedures, hydrological hazards in a changing climate, a case study on disaster management cycle due to hydrological hazards.

314514 Industrial Hazards 3(2-2-5)

Types of industrial hazards, fire, explosion, toxic/chemical release, industrial pollution, chemical risk assessment, plant safety, process safety management, monitoring and protective measures, proper storage of hazardous materials, waste management, safe toxic waste disposal technologies, emergency planning, public awareness, a case study on disaster management cycle due to industrial hazards.

314515 Fire Hazards 3(2-2-5)

Combustion and fire dynamics, fire detection and warning, bush fires, forest fires, wild fires, high-rise building fires, control and safety measures, atmospheric smoke pollution, evacuation procedures, firefighting procedures, mitigating the effects of fire, land management, fire risk assessment, legislation , a case study on disaster management cycle due to fire hazards.

314516 Hazards Forecasting and Early Warning Systems 3(3-0-6)

Natural hazard analysis, natural hazard assessment, probability models, forecasting techniques, reliability analysis, early warning system, monitoring and warning service, coordination mechanisms, dissemination and communication, response capability.

314517 Urban and Rural Planning and Hazards Mapping 3(2-2-5)

Characteristics of urban and rural systems and their complex inter-relations, land use, planning tools, hazard mapping and zoning, building regulations, building codes, performance standards, shelters, shelters management, route planning evacuation.

314518 Climate Change Adaptation and Mitigation 3(3-0-6)

Introduction to the basic physical science of climate change, climate modelling, climate monitoring and evaluation frameworks, understanding of anthropogenic climate change and adaptation, current climate change scenarios and their impacts, adaptation and mitigation mechanisms, climate vulnerability, climate change impacts and adaptation practice for ecosystem, land use, water resources and human health, climate change mitigation strategies, technological and economic mitigation strategies, national and international policy frameworks, sustainable development.

314519 Selected Topics in Disaster Management 3(2-2-5)
(Science Technology)
 Current interesting topics related to Disaster Management in sciences technology issue.

b) Social Sciences

314521 Disaster Resilience Leadership 3(3-0-6)
 Leadership characteristics for emergencies and disasters, ethical foundation of leadership, problem solving skills, decision-making skills, analysis of policing and public safety from a strategic leadership perspective, crisis leadership, managing routine emergencies, leadership competencies in managing catastrophes.

314522 Community-Based Disaster Risk Reduction 3(2-2-5)
 Community-based approaches to disaster risk reduction, design and conduct community based disaster risk assessments, identify measures for hazard, vulnerability reduction, community capacity building, implementation of community based risk reduction plans and its integration into developmental activities, role of local organisations and local authorities in community-based disaster risk management, early warning systems at community level.

314523 Earthquake Vulnerability Reduction 3(3-0-6)
 Principles of earthquake risk reduction, tools and techniques of earthquake risk assessment, earthquake vulnerability and risk reduction strategies, planning for earthquake risk reduction, relationship between rapid unstable development and earthquake vulnerability, vulnerability and risk assessment, effective strategies for earthquake vulnerability reduction and resistance, multi-sector partnership for implementing comprehensive earthquake vulnerability reduction strategies, capacity building on earthquake preparedness and response functions, planning and recovery for sustainable development.

314524 Legal and Policy in Disaster Management 3(3-0-6)
 Principles of the law of emergency management, emergency policy and operations, disaster planning and prevention, torts/compensation, environmental law, land use planning, social justice, tax and insurance, conflict management, common features and the differences of the law of emergency management across Asia, case study of Thai relevant laws and regulations.

314525 Disaster Management in ASEAN Context 3(2-2-5)
 Disaster management in ASEAN communities, disaster law of ASEAN communities, Transboundary problem, government policies related to disaster among ASEAN countries, non-government organisation network in ASEAN countries and their activities, development of networking.

314526 Role of Media in Disaster Management 3(2-2-5)
 Types of media, impact of the media, media strategies, capabilities of communications, data gathering, data management, role of media in pre, during and post-disaster, emergency broadcasts, information dispersal, integration of the media in disaster mitigation, communication technology related to disaster, role of social media in pre, during and post-disaster.

314527 Business Continuity Management 3(2-2-5)
 Introduction to business continuity management (BCM), ISO standard for business continuity management systems, fundamental of business continuity management planning methodology, fundamental of business impact analysis (BIA), business continuity (BC) strategy, crisis management, business impact assessments.

314528 Selected Topics in Disaster Management 3(2-2-5)
(Social Sciences)
 Current interesting topics related to Disaster Management in social sciences issue.

314529 Disaster Journalism 3(2-2-5)
 Concepts of disaster journalism, development aspects, functions and practices, limitations and ethical concerns which are related to disaster risk lifecycle or its respect to public disaster planning, management, response, and recovery.

c) Health Sciences

314530 Public Health and Conflict 3(2-2-5)
 Health and conflict, international humanitarian law, planning and organizing services for refugees and IDPs, safe and healthy environment, camp management, sexual and reproductive health programing, mental health and psychosocial support programming, food supply and nutrition programming, protection and security.

314531 Health Management 3(3-0-6)
 Introduction to the evolving role of public health and epidemiology in disaster preparedness and response, standards of disaster health management and resources, ethical, cultural and legal aspects of disaster health care, principles of on-scene and hospital management, roles of emergency services, challenges of medical care in the disaster environment, epidemiology of disasters including types, severity and economic, human and societal impact, psychological impact of disasters on individual, populations and responders.

314532 Nutrition in Emergencies 3(3-0-6)
 Surveys and surveillance, therapeutic and supplementary feeding, infant and young child feeding in emergencies, general food distribution, micronutrient assessment and intervention, monitoring and evaluation, humanitarian standards and coordination, emergency preparedness.

314533 Public Health in Complex Emergencies 3(3-0-6)
 Context of emergencies, reproductive health, epidemiology, weapons, violence and trauma, communicable disease, protection and security, environmental health, nutrition, coordination.

314534 Public Health Response in Disasters 3(3-0-6)
 Pre-disaster context and global health, indirect and direct effects of disasters on health and health systems, assessment of public health needs in disasters, planning and implementation of curative and preventive public health, principles for and handling of mass-curative situations, epidemiological surveillance in disasters, control of infectious diseases, damage and lost assessment, international systems for disaster response and evaluation of public health response in disasters.

314535 Selected Topics in Disaster Management 3(2-2-5)
(Health Sciences)
 Current interesting topics related to Disaster Management in health sciences issue.

314536 Health Emergency and Disaster Risk Management 3(2-2-5)
(HEDRM)

Basic concepts and principles of risk management for health and disasters, health risk assessment, consequences of different hazards (natural, biological, social and technological), health indicators as vulnerabilities of people including vulnerable population and their specific needs during emergencies, capacities needed to manage health risks from emergencies and disasters including how you can strengthen normal public health and safety services to be able to respond to meet the increase demand during emergencies and disasters, information on the linkages of disasters, development and importance of enhancing health system resilience, international humanitarian system and coordination, communicating risk.

314537 Outbreaks and Epidemics 3(2-2-5)

Global system on disease outbreak management system, international health regulation, pandemic planning, outbreak communication, emerging and re-emerging infectious disease / animal-human interface of disease outbreak, vaccine preventable disease, early warning and response system (EWARS), tracking/contact tracing, case management.

314538 Safe and Disaster Resilient Health Facilities and Hospitals 3(2-2-5)

Safe hospital framework, risk assessment of hospitals using hospital safety index tool, hospital vulnerabilities (structural, nonstructural and emergency management), emergency response planning, hospital ICS, patient reception and triage, surge capacity, emergency medical team standards, continuity of operations, return to normal health operations.

314539 Mass Casualty Management 3(2-2-5)

Emergency medical service system, organizing onsite response and roles of different stakeholders, working with volunteers and other non-state actors, Incident command system, managing dead bodies, coordination with hospitals for regulated transport, mass casualty triage onsite, mass gathering planning and management, hospital response, crisis communication, CPR and First Aid Skills.

314581 Thesis 1, Type A1 9 credits

Studying the elements of a thesis, reviewing literature and related research, and determining the thesis title.

314582 Thesis 2, Type A1 9 credits

Developing a concept paper and preparing a summary of the literature and related synthesis.

314583 Thesis 3, Type A1 9 credits

Developing research instruments and research methodology and preparing a thesis proposal in order to present it to the committee.

314584 Thesis 4, Type A1 9 credits

Collecting data, analyzing data, preparing a progress report in order to present it to the thesis advisor, preparing the full-text thesis and a research article in order to get published according to the graduation criteria.

314591 Thesis 1, Type A2 3 credits

Studying the elements of a thesis or thesis examples in the related field of study, determining the thesis title, developing a concept paper; and preparing the summary of the literature and related research synthesis.

- 314592 Thesis 2, Type A2 3 credits**
Developing research instruments and research methodology, preparing a thesis proposal in order to present it to the committee.
- 314593 Thesis 3, Type A2 6 credits**
Collecting data, analyzing data, preparing a progress report in order to present it to the thesis advisor, preparing the full-text thesis and a research article in order to get published according to the graduation criteria.
- 314594 Research Methodology in Science and Technology 3(3-0-6)**
Research definition, characteristics and goal, type and research process, research problem determination, variables and hypothesis, data collection, data analysis, proposal and research report writing, research evaluation, research application, ethics of researchers, and research techniques in science and technology.
- 314595 Seminar 1 1(0-3-1)**
Report and discussion on topics related to Disaster Management, excursion.
- 314596 Seminar 2 1(0-3-1)**
Report and discussion on topics in Disaster Management related to the research proposal, excursion.

Graduation Conditions:

Accordance with Naresuan University Regulations for Graduate Studies B.E. 2016 and Naresuan University Regulations for Graduate Studies 3rd Addition Edition B.E. 2020. The criteria for graduation are as stated in the 2016 university regulations for graduated studies as described below:

Curriculum Type A 1 Under Naresuan University Regulation

1. Complete within the length of time required for the programme
2. Complete all the courses as required by the programme
3. Meet the English requirement stated by the university
4. Present and pass the oral examination
5. A work or part of work based on the student's thesis must be published as research paper or accepted for publication in national or international journal that meet with the quality standard as announce by Higher Education Commission.

Curriculum Type A 2 Under Naresuan University Regulation

1. Complete within the length of time required for the programme
2. Complete all the courses as required by the programme
3. Meet the English requirement stated by the university
4. Pass all the courses required by the curriculum
5. Minimum GPA of 3.00
6. Present and pass the oral examination
7. A work or part of work based on the student's thesis must be published as research paper or accepted for publication in national or international journal that meet with the quality standard as announce by Higher Education Commission or present as research paper in an academic conference with the full paper published in the conference proceedings.

Applicant Qualifications:

Plan A, Type A1

1) Students are required to have at least bachelor's degree with honour in Engineering or Science or a relevant degree with 3 years experiences in Disaster Management and a good level of the English language proficiency.

2) Students are required to have the characteristics and academic qualifications according to the regulations for Graduate Studies and addition regulations of Faculty of Engineering.

Plan A, Type A2

1) Students are required to have at least bachelor's degree in Engineering or Science or a relevant degree with the experiences in Disaster Management and a good level of the English language proficiency.

2) Students are required to have the characteristics and academic qualifications according to the regulations for Graduate Studies and addition regulations of Faculty of Engineering.

Document Required:

- Certificate of Employment

Contact:

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail
Master of Science Program in Biology

Course Title: Master of Science Program in Biology (International Program)

Master Degree: Master of Science (Biology), M.Sc. (Biology)

Academic Institution: Division of Biological Science, Faculty of Science, Prince of Songkla University

Duration: 2 years (June 2022 - May 2024)

Background and Rational:

Master of Science Program in Biology aims to produce graduate students with profound knowledge in biology including genetics and cell biology, botany, zoology and ecology, as well as 21st century skills which consists of critical thinking and the ability to build knowledge in biology. This will lead to the effective capability to transfer knowledge to general public through publications and media. Graduates are able to understand the scientific problem and turn it into research questions which will greatly improve our understanding of biological resources and ecosystems, particularly in Thai-Malay peninsula and Southeast Asia.

Objectives:

1. Can apply knowledge in biology to solve biological issues of plants or animals in the Malay Peninsula, especially in taxonomy and ecology
2. Can select appropriate tools and methods to test hypotheses in research
3. Can use information technology (IT) to search for information and proceed academically correct in the field of interest related to biology
4. Can communicate and present academic information precisely and directly
5. Have academic ethics and have a public responsibility
6. Can carry out duties while working with others

Course Synopsis and Methodology:

Study plan

Course Structure	A Number of Credits	
	Plan A1	Plan A2
Required subject	-	5
Elective subject (no more than.....)	-	11
Thesis	36	20
Total	36	36

Course content

Plan A1

Thesis

331-591	Thesis	36(0-108-0)
	Individual research in biological problems under supervision of the advisory committee	

Plan A2**Required subject**

- 330-500 Research Techniques in Biology 3((2)-3-4)
Development of concepts and theories in biology; biological questions; literature review; techniques in biological research; research ethics; research planning; data analysis using computer; application of statistical methodology to design experiments and field surveys; research presentation and publication; practice
- 331-571 Seminar in Biology I 1(0-2-1)
A literature review, presentation, and discussion of the interesting and recent scientific topics in biology
- 330-572 Seminar in Biology II 1(0-2-1)
Presentation and discussion related to thesis

Elective subject

- 330-501 Biogeography 2((2)-0-4)
Distribution of living organisms in a spatial and temporal contexts; focusing on pattern of distribution analysis and interpretation; causes of different patterns of distributions in both plants and animals; phylogeography as well as the relationships between physical changes and organism evolutionary dynamics; impacts of human activities on ecology and distribution of organisms
- 330-502 Philosophy of Science 2((2)-0-4)
Development of scientific thinking through the development of human society to the present time; scientific inquiry as well as scientific process; case study
- 330-512 Aquatic Insects 3((2)-3-4)
Morphology, classification and identification, physiology, behavior and ecology of aquatic insects; collecting and preserving aquatic insects; laboratory study and field trip
- 330-513 Palynology 3((2)-3-4)
Spore and pollen morphology; evolutionary and morphological trends of spore and angiosperm pollen; studies of pollen and spore morphology in some selected families; applied to pollination ecology and biology, plant geography, geology, archeology, paleontology, forensic science and medical science, preparation method through permanent slide for studying with light and scanning microscopes; laboratory study
- 330-520 Photosynthesis 3((2)-3-4)
Processes and mechanisms of photosynthesis; ecophysiological aspects of photosynthesis; acclimation to different environments and climate change; photosynthesis measurement techniques; laboratory study
- 330-521 Plant Ecophysiology 2((2)-0-4)
Interaction between environment, both physical and biological, with plant physiology; plant stress physiology; acclimation and plasticity of plant physiological

processes; link between physiological traits and ecological phenomena; discussion on current knowledge in plant ecophysiology

- | | | |
|---------|--|------------|
| 330-522 | Physiology of Cladocera | 3((2)-3-4) |
| | Digestion; respiration; circulation; excretion and osmotic regulation; growth and molting; reproduction; locomotion and behavior; nervous system and sense organ; immunity; ecophysiology; cellular and molecular physiology of cladoceran; laboratory study | |
| 330-523 | Insect Morphology and Physiology | 3((2)-3-4) |
| | External and internal morphology, physiology of insects; comparative study of structure and functional of organs and organ systems of various representative insects; laboratory study and field trip | |
| 330-524 | Module: Neurobiology and Behavior | 5((4)-3-8) |
| | Structural and functional organization of nervous system; neurotransmitters and communication within neural circuit; development of the nervous system; evolution of nervous system and behaviors; behavioral molecular genetics; hormone and pheromone; sexual behavior; foraging behavior; social behavior and communication within social community; learning and memory; cognitive behavior; neurobehavior disorders; experimental design and statistic used neurobehavior; principle and programing for the analysis of neurobehavior; laboratory study | |
| 330-527 | Physiological Ecology of Marine Animals | 3((3)-0-6) |
| | Physiological adaptation of organisms to their habitats, searching for food and foraging, energy budget, development rate, control of body size, reproduction pattern, adaptation to temperature and salinity and response to environmental stress | |
| 330-529 | Plant-water Relations and Mineral Nutrition | 3((2)-3-4) |
| | Water and plant relations, water stress, principle of plant mineral nutrition, nutrient use efficiency in crop improvement, responses to nutrient deficiencies and plant-microbe symbioses | |
| 330-530 | Systematics Biology | 3((3)-0-6) |
| | Principle of systematics biology; evolutionary of classification; philosophy, systematic, classification of microbe, animal and plant; case study | |
| 330-531 | Bryology | 3((2)-3-4) |
| | Morphology, classification, identification, description of selected families; phylogeny, ecology, geographical distribution; conservations and utilizations of mosses, liverworts and hornworts; laboratory study and field trip | |
| 330-532 | Pteridology | 3((2)-3-4) |
| | Morphology, classification, identification, description of selected families; phylogeny, ecology, geographical distribution; conservations and utilizations of ferns and fern allies; laboratory study and field trip | |

- | | | |
|---------|---|------------|
| 330-533 | Module: Techniques in Plant Taxonomic Revision | 5((4)-3-8) |
| | Theories and concepts in plant taxonomy; international code of nomenclature; plant taxonomic problems; information for identification and taxonomic revision; current knowledge and methodology in plant taxonomy; plant collecting and herbarium management, photographic and illustration technique, molecular technique and data analysis; case study; individual study of interesting plant taxonomic problem; field trip | |
| 330-534 | Ichthyology | 3((2)-3-4) |
| | Biology of fishes; diversity, evolution, morphology, physiology, ecology, behavior, biogeography and applied ecology in the sense of fisherie management and aquaculture; laboratory and fieldwork activities focusing on the ecology and behavior of important local fish species | |
| 330-535 | Mammalogy | 3((2)-3-4) |
| | Origin and evolution of mammals; diversity; classification; morphology; physiology; behavior; ecology; zoogeographical distribution; importance and conservation of mammals; laboratory on mammal classification and field trip | |
| 330-536 | Biology of Crustaceans | 3((2)-3-4) |
| | Morphology, anatomy, physiology, embryology, ecology and taxonomy of crustaceans with emphasis on the economic importance; field trip | |
| 330-537 | Techniques in Plankton Identification | 3((1)-6-2) |
| | Basic knowledge on morphology of plankton, techniques in plankton identification, preparation of permanent slide for reference collection, preparation and identification of plankton with light and electron microscope; laboratory study | |
| 330-540 | Plant Growth and Development | 3((2)-3-4) |
| | Plant growth regulator and applications, factors controlling plant growth and development, stress physiology | |
| 330-550 | Coral Reef Ecology | 3((2)-3-4) |
| | Biology of Cnidaria, taxonomy of corals, reproduction, growth, nutrition, energy allocation, competition, reef forming system; their distribution, relationships between coral reef organisms; nutrient cycling in reef as well as reef conservation; laboratory study and field trip | |
| 330-551 | Module: Advanced Marine Ecology | 5((4)-3-8) |
| | Theories and concepts in marine ecology; physical and biological oceanography; marine biodiversity and ecosystems; Methods for assessment of population size and dynamics, biodiversity, productivity, species interactions and energy flow; application of theory to experimental and field survey practices | |
| 330-552 | Mangrove Ecology | 3((3)-0-6) |
| | Environmental condition of mangrove forests; structure, species composition, distribution of mangrove flora and fauna; interrelationships among organisms and environment; energy flow, nutrient cycling with emphasis on detrital food chains; utilization and conservation of mangrove forests; field trips and special projects | |

- 330-553 Marine Algal Ecology 3((2)-3-4)
Ecology of marine algae with emphasis on distribution, abundance, and dynamics of marine algal population and community; the ecological roles of marine algae; methods in marine algal ecology; anthropogenic and climate change impacts on marine algae; the potential use of marine algae; laboratory study and field trip
- 330-554 Insect Population Ecology 3((2)-3-4)
Interactions within insect populations; insect ecosystem; impacts of environments on insect life cycle; life table; analysis of survival and mortality rate affecting insect population density and distribution; analysis of population dynamic; applications to pest control; study of insect molecular genetic; laboratory study
- 330-556 Plankton Ecology 3((2)-3-4)
Importance of plankton in aquatic ecosystem; ecology of plankton community and limiting factors; research techniques; ecological index and application; impacts of plankton production on aquatic animals and fisheries; plankton culture; laboratory study and field trip
- 330-561 Plant Molecular Genetics 3((2)-3-4)
Gene regulation; genetic engineering; DNA mutation; changes in structure and number of chromosomes; factor and mechanism involving in mutation; roles of mutation in plant evolution and breeding; case study
- 330-571 Histochemistry 3((1)-6-2)
Methodology for analysis of the chemical components and enzyme activities of cells and tissues under the microscopy
- 330-580 Insect Biotechnology 3((2)-3-4)
Identification of beneficial proteins from insects; expression of insect proteins; insect genome sequencing; insect transcriptome; insect genetic engineering; laboratory study
- 330-581 Plankton Biotechnology 3((2)-3-4)
Physiology and biochemistry of plankton, expression of plankton gene; plankton genome sequencing; laboratory study
- 330-582 Ecotoxicology 3((3)-0-6)
Major classes of contaminants; uptake, biotransformation, detoxification, elimination and accumulation of contaminants in organisms; effects of contaminants on molecular level, DNA, chromosomes, cells, tissues, and organs; impacts of the environmental contaminants to the physiology of organisms; application of biomarkers and phytoremediation
- Thesis**
- 331-592 Thesis 20(0-60-0)
Individual research in biological problems under supervision of the advisory committee

Graduation Conditions:

1. Proof of English proficiency as required by the Graduate School
2. All required courses have been completed with an overall GPA ≥ 3.00 except Plan A1
3. The proposal/thesis/minor thesis exam result is 'S' = satisfactory together with the completed thesis submission.
4. The research has been published according to the requirements of the regulations/program/ scholarship/other as applicable.
5. Other conditions as required by regulation, criteria and guidelines.

Applicant Qualifications:

Plan A1

1. Applicants must hold a bachelor's degree in biology or relevant field with GPAs no less than 3.5 as well as experiences in research related to biology.
2. Applicants must have passed English proficiency test accredited by Graduate School no longer than 2 years ago such as TOEFL (Paper Based) at least 450 points, TOEFL (Computer Based) at least 133 points, TOEFL (Internet Based, iBT) at least 45 points, IELTS at least 4.0, CU-TEP at least 45 points or PSU-TEP at least 45%. Each case is subjected to the decision of the curriculum committee.

Plan A2

1. Applicants must hold a bachelor's degree in biology or relevant field with GPAs no less than 2.5 as well as experiences in research related to biology for at least 2 years. Each case is subjected to the decision of the curriculum committee.
2. Applicants must have passed English proficiency test accredited by Graduate School no longer than 2 years ago such as TOEFL (Paper Based) at least 450 points, TOEFL (Computer Based) at least 133 points, TOEFL (Internet Based, iBT) at least 45 points, IELTS at least 4.0, CU-TEP at least 45 points or PSU-TEP at least 45%. Each case is subjected to the decision of the curriculum committee.

Document required:

1. A recommendation letter
2. A transcript
3. A brief research proposal
4. Results of English proficiency test

Contact:

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Course Detail

Master of Science Program in Food Science and Technology

Course Title:	Master of Science Program in Food Science and Technology
Master Degree:	M.Sc. (Food Science and Technology)
Academic Institution:	Faculty of Agriculture, Natural Resources and Environment, Naresuan University
Duration:	2 years (June 2022 – May 2024)

Background and Rational:

In response to the 12th National Economic and Social Development Plan (2017-2021) which specifies guidelines for agricultural development towards food excellence, the growth of an aging society, trends in consumer health food demands, and the missions, goals, objectives, determinations and visions of Naresuan University, production and development of personnel with knowledge and competence in food science and technology with high potential in applying theoretical knowledge, research and new knowledge in order to put into practice and keep up with the current situation that Thailand is facing is therefore important and necessary. This is to bring innovation or modern technology to produce or process food efficiently, including creating added value to food and enhancing abilities in the competition and economic development of the country.

Department of Agro-Industry realizes the importance and necessity of producing graduates to meet the aforementioned needs. Therefore, the Master of Science Program in Food Science and Technology has been improved to support the need for further study at the graduate level and for the development of manpower in food science and technology to feed the labor market.

Objectives:

To produce Master of Science graduates in Food Science and Technology who have the following characteristics:

- Having advanced knowledge in the field of Food Science and Technology
- Being able to continuously integrate the knowledge of Food Science and Technology with other relevant disciplines
- Have good moral and ethical standards

Course Synopsis and Methodology:**1.1 Study Plan**

Year 1 Semester 1	
108522 Research Methodology in Science and Technology (Non-credit)	3(3-0-6)
108591 Thesis 1, Type A1	9 credits
Total	9 credits
Year 1 Semester 2	
108581 Seminar 1 (Non-credit)	1(0-3-1)
108592 Thesis 2, Type A1	9 credits
Total	9 credits
Year 2 Semester 1	
108593 Thesis 3, Type A1	9 credits
Total	9 credits
Year 2 Semester 2	
108582 Seminar 2 (Non-credit)	1(0-3-1)
108594 Thesis 4, Type A1	9 credits
Total	9 credits

1.2 Course Content

For Plan A Type A 1, student must enroll thesis with a minimum of 36 credits and the following non-credit courses: Research Methodology in Science and Technology (3 credits), Seminar 1 (1 credit) and Seminar 2 (1 credit). For those who have completed a Bachelor's degree in certain field, it is at the discretion of the curriculum responsible committees.

1) Thesis	36	credits
2) Non-credit required courses	5	credits
Total	36	credits

However, the curriculum responsible committees may request student to take additional courses or take other academic activities without counting credits but must have achievements as specified by the university and students must participate in academic activities including attending a seminar class or making a presentation in a seminar class at least once per semester for a total of not less than 4 semesters.

Total Course Content			
Thesis	Minimum	36	credits
108591 Thesis 1, Type A1		9	credits
108592 Thesis 2, Type A1		9	credits
108593 Thesis 3, Type A1		9	credits
108594 Thesis 4, Type A1		9	credits
Non-Credit Courses		5	credits
108522 Research Methodology in Science and Technology			3(3-0-6)
108581 Seminar 1			1(0-3-1)
108582 Seminar 2			1(0-3-1)

Graduation Conditions:

Graduation Criteria according to Naresuan University Regulations on Graduate Studies 2016 and (amended) No. 3 (2018).

No. 27 Conducting Thesis

(7) Thesis Examination and Examination Report

The oral thesis examination must be systematically open to interested parties. When students pass the oral thesis examination, the Thesis Examination Committee must report the results to the Graduate School within 2 weeks after the date of the thesis examination.

No. 28 Nominations for Degree Approval

In the last semester of the 2-years course, students must submit an expected graduation report to the university with the approval of the advisor within 4 weeks from the start date of the semester.

Students nominated for approval to receive a degree must meet the following conditions:

- Have a defined study period
- Complete the registration as required by the course
- Pass the English proficiency test as announced by the university
- Presenting a thesis and passing an oral examination, which is systematically open to interested people
- The thesis or part of the thesis must be published or at least accepted for publication as a research article in a national or international journal of quality according to the Higher Education Commission's Announcement on Criteria for Consideration of an Academic Journal for disseminating academic works
- Participation in academic activities including:
 - Organizing seminars and presenting work at least one time/semester for at least 2 semesters and students are required to attend every seminar classes throughout their study period
 - Attending and meeting at least 1 national or international academic symposium

Applicant Qualifications:

Requirements for admission to the program:

- A bachelor's degree or its equivalent in Science, Medical Science, or Engineering from an accredited institution
- Cumulative GPA at graduation of 2.5 or higher (on a 4.0 scale)
- Work-experience in Agro- Industry or academia, at least 3 years is required for applicants who have a GPA < 2.5 and would like to apply for Plan A, Type A 1
- An official English test score taken within the last two years is required for applicants who are not native speakers
 - A minimum paper based TOEFL of 417 or
 - A minimum internet based TOEFL of 35 or
 - A minimum IELTS score of 5.0
- Passing the oral examination. Applicants for Plan A, Type A 1 is required to demonstrate a comprehensive understanding of academic background and/or work-experience and ability to conduct research on areas of Food Science and Technology.
- Applicants for Plan A, Type A 1 are required to submit a brief research proposal (a maximum of three pages of A4 paper). The brief research proposal must cover principles and rationale, objectives, research methodology, and significance/expected outcomes.

Exceptions:

- The undergraduate students who are in the final semester holding a minimum GPA of 2.5 may apply as provisional students for admission to Plan A Type A 2.
- Bachelors who graduate in programs taught in English are exempted from the English requirement.
- Applicants who meet all the requirements except English language proficiency may be admitted as provisional students; however, students must have a required English test score before graduation.

Document Required:

- Applicants for Plan A Type A 1 is required to demonstrate a comprehensive understanding of academic background and/or work-experience and ability to conduct research on areas of Food Science and Technology.
- Applicants for Plan A Type A 1 are required to submit a brief research proposal (a maximum of three pages of A4 paper). The brief research proposal must cover principles and rationale, objectives, research methodology, and significance/expected outcomes.

Contact:

1. Curriculum Head:

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Course Detail

Master of Public Health Program in Global Health and One Health

Course Title:	Master of Public Health Program in Global Health and One Health (International Program)
Master Degree:	Master of Public Health (M.P.H)
Academic Institution:	Faculty of Public Health, Chiang Mai University
Duration:	2 years (June 2022 – May 2024)

Background and Rational:

The 2-year Master of Public Health (MPH) International Program provides students with a strong foundation in the fundamental principles of public health. The program offers students the opportunity to play the leadership role in public health policy and practice. This track is designed specifically for those who wish to work at the interface of policy making and management for health system strengthening. The program also provide student with public health administration for developing countries including primary health care, community health care system, universal health coverage. Its flexible modular structure allows the program to meet a wide range of student needs and interests, and to tailor learning the particular area of public health. The MPH is suitable for both clinical and non-clinical professionals who aspire to be the leaders in public health, either in Thailand or in their own countries. The student can participate in collaborative efforts to make positive changes in public health and to contribute to research to solve public health problems. To have maximum impact on health, collaboration is essential. Public health practice organizations, academic institutions, community-based organizations, and other related sectors all their roles and responsibilities in ensuring functional public health systems. The student will have opportunities to work together on assessing and addressing community health needs. A wide range of professionals can participate in the program, including doctors, public health technical officers, human physicians, veterinarians, dentist, pharmacists, medical technologist, nurses, social workers, health care managers, social scientists, and others.

The MPH program has been designed to provide progression from the fundamentals to more advanced topics in all tracks of public health. The program begins by introducing key issues in Global Health and One Health core competencies, learning and communication skills, risk analysis, assessment of health needs, prevention and control strategies and epidemiology for both communicable and non-communicable diseases. Alongside these units, students will take the introductory research methods unit, providing the basis for a research project conducted later in the program. This educational program is delivered through:

- Face-to-face classes
- Field experience with Global Health and One Health approaches and working effectively in partnership with experts from different disciplines
- Completing thesis/project in Thailand and student's country

Major in Global Health

The program is suitable for students who aspire to be leaders in public health in their own countries or at an international level. The flexible modular structure allows the program to meet a wide range of student needs and interests, and to tailor learning the particular area of public health focusing on Global Health and applications of this approach to specific challenges in planning, delivery and management of health services in an international context. The program serves a required core disciplines of public health and address the issue of migrant and minority health, health system planning and management for the aging population. Learning objectives include:

- Brings together aspects of clinical, public health and social science research to address the broad issues of health and health care
- Prepare students to meet global challenges for the health of populations and communities in a global context
- The application of this approach to specific challenges in planning, delivery and management of health services in a global context

Major in One Health

The MPH major in One Health seeks to provide students with an in-depth understanding of public health principles and practice focusing on One Health. The program is designed to develop capacity of professional to use and integrated One Health approach for surveillance, prevention mitigation and intervention addressing agents and associated diseases at interface of human, animal, and environmental health. The learning outcomes are:

- Demonstrate understanding of public health issues focusing on a One Health approach that includes a cross-disciplinary and cross border perspective
- Assess global drivers of reform in health systems and influence their potential impacts on future public health policy directions in both developed and developing countries
- Systematically assess and evaluate health needs of populations using a One Health approach and apply the research process to the study of public health

In addition to MPH in One Health a unique one of a kind opportunity is offered by Chiang Mai University as a double degree program in collaboration with School of Public Health, University of Minnesota (SPH-UMN), a top 10, U.S. CEPH accredited MPH program. The student who desires the double degree participate in online courses offered by University of Minnesota in addition to elective course work, field applied practice experiences and thesis or independent study projects at Chiang Mai University by both university advisors expanding their professional network not only throughout the ASEAN region but in the United States.

Faculty of Public Health, Chiang Mai University is well-equipped in terms of networks, locations, and cooperation from both government and private sectors in the field of public health. The faculty also partners with leading universities across the globe. Academic staff members have graduated from leading university abroad and also published research in an internationally recognized journal. The program's focus is to create professionals with the capacity to carry out

their social responsibilities and contribute to the field of public health at local, national, regional, and international level. The graduate student who completes this program will develop a strong base of knowledge and the skill necessary in public health concerns.

Objectives:

At the end of the program, student will be able to:

- Clearly understand the core disciplines in public health
- Critically assess population health status and population health problems, risk factors, and determinants, and determine health needs
- Conduct the research related to Global Health and One Health approaches
- Apply theories and concepts related to Global Health and One Health approaches in potential community health management, prevention and control of disease, and health promotion
- Have a building skill on health literacy and health communication

Course Synopsis and Methodology:

1. Study plan

The 36 credits degree program consists of 20 credits core coursework, 4 credits of elective, 12 credits of thesis;

Year 1 - Semester 1			
Course 1	676702	Principle of Social and Behavioral Science in Public Health	3 credits
Course 2	676704	Research Methodology in Public Health	3 credits
Course 3	676701	Principles of Epidemiology	3 credits
Course 4	676700	Public Health Biostatistics	3 credits
Course 5	676703	Principle of Public Health Administration	2 credits
total			14 credits
Year 1 - Semester 2			
Course 6	676705	Occupational and Environmental Health	2 credits
Course 7	678792	Seminar in Global Health/One Health	2 credits
Course 8	676706	Fieldwork Practice in Public Health	2 credits
Course 9		Elective course	2 credits
Course 10		Elective course	2 credits
total			10 credits
Year 2 – semester 1			
	677799	Thesis	6 credits
		Thesis Proposal examination	
total			6 credits
Year 2 – semester 2			
	677799	Thesis	6 credits
		Thesis defense examination	
total			6 credits

2. Course Content

In order to complete the International Program in Master of Public Health, students must complete 36 credits as follows:

- **Major in Global Health Program**
Type A2 [Thesis] Degree Requirements a minimum of 36 credits
- **Major in One Health Program**
Type A2 [Thesis] Degree Requirements a minimum of 36 credits

Major in Global Health Program Type A2 [Thesis]

A. Coursework		24 Credits
Required courses		20 Credits
	Public Health Biostatistics	3 credits
	Principles of Epidemiology	3 credits
	Principle of Social and Behavioral Science in Public Health	3 credits
	Principle of Public Health Administration	2 credits
	Research Methodology in Public Health	3 credits
	Occupational and Environmental Health	2 credits
	Fieldwork Practice in Public Health	2 credits
	Seminar in Global Health	2 credits
Elective courses		4 credits
	Public Health Economics	2 credits
	Health Promotion	2 credits
	Public Health Project Evaluation	2 credits
	Public Health Informatics	2 credits
	Sustainable Health Development	2 credits
	Globalization and Health	2 credits
	Applied Public Health Nutrition	2 credits
	Emerging and Re-emerging Infectious Diseases	2 credits
	Healthy Aging	2 credits
	Environment and Health	2 credits
	Risk Analysis for Public Health	3 Credits
	Participatory Epidemiology	3 Credits
	Global Health Policy and Management	2 credits
	Public Health Aspects of Emergency and Disaster Management	2 credits
	Migrant and Ethnic Minority Health	2 credits
B. Thesis		12 credits

Major in One Health Program Type A2 [Thesis]

A. Coursework		24 Credits
Required courses		20 Credits
	Public Health Biostatistics	3 credits
	Principles of Epidemiology	3 credits
	Principle of Social and Behavioral Science in Public Health	3 credits
	Principle of Public Health Administration	2 credits

	Research Methodology in Public Health	3 credits
	Occupational and Environmental Health	2 credits
	Fieldwork Practice in Public Health	2 credits
	Seminar in One Health	2 credits
Elective courses		4 credits
	Public Health Economics	2 credits
	Health Promotion	2 credits
	Public Health Project Evaluation	2 credits
	Public Health Informatics	2 credits
	Sustainable Health Development	2 credits
	Globalization and Health	2 credits
	Applied Public Health Nutrition	2 credits
	Emerging and Re-emerging Infectious Diseases	2 credits
	Healthy Aging	2 credits
	Environment and Health	2 credits
	Introduction to One Health	2 credits
	Communication in One Health	2 credits
	Systems Thinking and Community Empowerment in One Health	2 credits
	Risk Analysis for Public Health	3 credits
	Participatory Epidemiology	3 credits
	Food Safety from Farm to Consumer	3 credits
	Zoonoses	1 credit
B. Thesis		12 credits

Graduation Conditions:

1. Complete the courses as specified by the program with an average score of not less than 3.00 from the 4 levels score system or equivalent.
2. Organize seminar and present a paper two times throughout the program and students have to attend seminar that the course is offered.
3. Present a thesis and pass the final oral examination by the committee that the University has appointed.
4. Thesis work or part of the thesis must be either published in English or at least accepted to publish in a national journal listed in TCI Tier 1 database or international journal **or** at least a thesis work must be presented in international conference accepted by the field of study with the student as the first author **or** have patent

Applicant Qualifications:

1. Applicants must hold any of the following degrees: M.D., M.B.B.S., B.Pharm., D.D.S., D.V.M., B.N., or B.Sc., from an accredited institution.
2. Work experiences of health or human services at least 1 year
3. TOEFL score of at least 500 (PBT) or 173 (CBT) or 61 (IBT), IELTS score of at least 5.5 or CMU-eTEGS score of at least 65 In some instances, an applicant may be allowed to begin the program with the intention of demonstrating English proficiency (e.g. TOEFL, IELT) within a year after starting the program. This option will be decided upon the MPH committee.

Document Required:

1. Certified copy of transcript of record (High school and Bachelor' s degree transcript, English version)
2. Certified copy of degree certified (English version)
3. Copy of TOEFL, IELTS, CMU-eTEGS or equivalent test result
4. Two recommendation letters, one of which must be from the current or latest applicant's major advisor and the other should be from the person most familiar with his/her scholarly work (recommendations will receive a stronger consideration if they are from a professor at CMU who is expected to be his/her master's thesis advisor).
5. Concept proposal of research field of interest (not more than 250 words)

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Course Detail

Master of Science Program in Health Sciences Research

Course Title: Master of Science Program in Health Sciences Research
(International Program)

Master's degree: Master of Science (Health Sciences Research)

Academic Institution: Research Institute for Health Sciences (RIHES),
Chiang Mai University

Duration: 2 years (June 2022 – May 2024)

Background and Rational:

In most situations, established knowledge alone is not enough to solve health problems in particular population. Timely and quality research have to be conducted so their results could be used to address the arisen local issues. Teams of qualified researchers are essential prerequisite for these efforts. However, it is generally affirmed that there is a shortage of qualified health science researchers in developing countries.

Graduate degree is necessary for a person to become an accomplished researcher. Nowadays, nearly all graduate programs in health sciences are topic based. Most programs focus on either population of interest or specific health issues. While these programs could produce experts on particular fields through the accompanying research, time and effort devoted to scientific aspects of research methodology and research management may be inadequate. To overcome this shortcoming, the proposed training/International Master's degree program will focus on developing knowledge and skills of the trainees on principles and practices of health sciences research.

The researchers of RIHES have conducted health sciences research for more than 50 years. Research at RIHES are of high quality and administered at the highest standards since most are under the international research networks and funded by the US government. The institute has taking part in several significant research projects which provided breakthrough scientific knowledge. It has been recognized as one of the eminent health sciences research institute in Asia. Throughout this long period of time, the institute has gained experiences on how to conduct high-quality health sciences research. Full range of research facilities and supportive system necessary are also accumulated. The trainees of this proposed program will be attached to the experienced researchers and have access to research facilities of the institute. The graduates of this program will be able to conduct high-quality health sciences research and better prepared to further pursue a doctoral degree if they wanted.

Objectives:

- To produce researchers and research staff who are reside and work in developing countries to be able to conduct quality health sciences research
- To produce quality health sciences research
- To produce publications in international journals

- To create research networks among researchers who work on health sciences research in developing countries
- To create reputation of Thai's academics and health sciences research capabilities

Course Synopsis and Methodology:

1. Study plan

The period of study is two years. Student must produce a thesis with a minimum of 12 credits, and take a minimum of 24 graduate courses credits (a minimum of 6 courses).

Year 1

1 st Semester		Credit	2 nd Semester		Credit
650701	Methods in Health Sciences Research	3	650705	Data Management and Analysis in Health Sciences Research	3
650702	Laboratory Techniques and Their Applications in Health Sciences Research	3	650706	Clinical Trial Research	3
650703	Ethics and Quality Assurance in Health Sciences Research	3	650736 Or 650789	Advanced in Health Sciences Research Selected Topics in Health Sciences Knowledge Integration	3
650704	Proposal Development and Health Sciences Research Presentation	3	650791	Seminar in Health Sciences Research 1	-
650731 - 650735	Elective courses Select 1 courses from the following list: 1. Research in Technologies for Biomedical Research and Diagnostics 2. Research in Clinical Infectious Diseases 3. Research in Non-communicable Diseases and the Elderly 4. Research in Food and Nutrition 5. Research in Environmental and Occupational Health Sciences	3			

Year 2

3rd Semester		Credit	4th Semester		Credit
650792	Seminar in Health Sciences Research 2	-	650799	Master's Thesis	6
650799	Master's Thesis	6		Thesis defense	-
	Report study result	-		Report study result	
	Total	6		Total	6

2. Course Content**(1) Required courses****Credits**

650701	RIHES	Methods in Health Sciences Research	3
701			
650702	RIHES	Laboratory Techniques and Their Applications	3
702		in Health Sciences Research	
650703	RIHES	Ethics and Quality Assurance in Health Sciences	3
703		Research	
650704	RIHES	Proposal Development and Health Sciences	3
704		Research Presentation	
650705	RIHES	Data Management and Analysis in Health	3
705		Sciences Research	
650706	RIHES	Clinical Trial Research	3
706			

(2) Elective courses

650731	RIHES	Research in Technologies for Biomedical	3
731		Research and Diagnostics	
650732	RIHES	Research in Clinical Infectious Diseases	3
732			
650733	RIHES	Research in Non-communicable Diseases and the Elderly	3
733			
650734	RIHES	Research in Food and Nutrition	3
734			
650735	RIHES	Research in Environmental and Occupational Health Sciences	3
735			
650736	RIHES	Advanced in Health Sciences Research	3
736			
650789	RIHES	Selected Topics in Knowledge Integration Health Sciences	3
789			

(3) Thesis

650799	RIHES	Master's Thesis	12
	799		

(4) Non-credit Courses

650791	RIHES	Seminar in Health Sciences Research 1	1
	791		
650792	RIHES	Seminar in Health Sciences Research 2	1
	792		

3 Learning management during the concerned COVID-19 pandemic:

The program will be flexible to cope with the uncertainty of COVID-19 situations as well as changing regulations. All teachings can be switched from onsite to online if needed as the program has already been equipped with necessary IT appliances. RIHES staff who are health professionals can also be in control of any related incidents if it happens. These are to make sure that the trainees are safe while all academic goals are achieved.

Graduation Conditions:

1. Pass foreign language requirement.
2. Complete all requirements set by the program.
3. Archive an accumulated grade point average (GPA) of at least 3.00 for all courses taken, and a GPA of not less than 3.00 for the chosen course in the field of specialization.
4. Successfully pass thesis examination
5. At least 1 master's thesis work or a part of master's thesis work, in which the student is the first author, must be published or at least accepted to be published in a peer-reviewed international journal which is indexed in PubMed or Scopus database or the student publish at least 1 full paper in an international conference proceeding which is accepted by the field of study.
6. Meet the qualifications outlined in the Chiang Mai University Regulations on Student Honors, 2007.

Applicant Qualifications:**1. English Proficiency test**

The applicant is required to submit official evidence of English-language proficiency test scores from one of these tests:

- CMU-eTEGs > 65
- IELTS > 5.5
- TOEFL-ITP > 523
- TOEFL-CBT > 193
- TOEFL-IBT > 69
- CU-TEP > 65%*
- TU-GET > 65%*
- KU-EPT > 65%*
- DynEd > 3.0 (CEFR = C1)
- CMU e-Grad > 65%

Remarks:

1. According to announcement of the institute, the score must be not less than the specified percentage from the total score.

2. An applicant who has a lower score criteria will be considered by the program admission/management committee.
3. Score of English-language proficiency test must not be later than 2 years at the date submitted to the Graduate School of Chiang Mai University and it can be used in all related activities until graduation.

2. Qualifications

The applicant must hold a Bachelor's degree in the field of Health Sciences or related science fields with a minimum grade point average (GPA) of 2.5. Other qualifications apart from those mentioned will be given according to the discretion of the program management committee.

Document Required:

1. Completed TIPP application form
(Download at: <http://www.tica.thaigov.net/main/en/relation/75500-TIPP-Application-form.html>)
2. Medical report
3. Transcript of Bachelor's degree
4. Certificate of Bachelor's degree
5. English test score
6. Recommendation Letter (At least 3 people)
7. Thesis proposal or other documents (As university request)
8. Copy of Passport
9. A Copy of the document certifying name or surname changing or document of marriage registration (if any)
10. Recent photograph (*passport size, ** no hat or sunglasses)

All forms are duly filled out and endorsed by the candidates' supervisor and the National Focal Point for International Development Cooperation. All of related documents must be in English.

Contacts:

1. Applicant will be able to choose an area of concentration from one of the following;
 - Food and Nutrition
Contact person: Dr. Sakaewan Ounjaijean (sakaewan.o@cmu.ac.th)
 - Clinical Infectious Diseases
Contact person: Dr. Natthapol Kosachunhanan, M.D. (natthapol.ko@cmu.ac.th)
 - Molecular and Cell biology
Contact person: Dr. Sayamon Hongjaissee (sayamon.ho@cmu.ac.th)
 - Non-communicable Diseases and the Elderly
Contact person: Dr. Kanokwan Kulprachakarn (kanokwan.kul@cmu.ac.th)
 - Environmental and Occupational Health Sciences
Contact person: Lect. Dr. Surat Hongsibsong (surat.hongsibsong@cmu.ac.th)
2. For further information on the graduate education and benefit of awardees, please contact:
 1. Name: Assoc. Prof. Dr. Kriengkrai Srithanaviboonchai, MD MPH
Title: Head of School of Health Sciences Research
Email: kriengkrai@rihes.org
 2. Name: Mrs. Nattaluck Buranasilapin
Title: Supporting staff (Academic activities, regulation and policies)
Email: nattaluck.b@cmu.ac.th

3. Name: Ms. Nichapa Tuikumpee
Title: Supporting staff (Other activities, visa, living and accommodation information)
Email: shsr@rihes.org
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Research Institute for Health Sciences,
Chiang Mai University
110 Intavaroros Road, Sripum, Muang
Chiang Mai 50200 THAILAND
Phone: 66 5394 2508 ext. 111-2, 66 5393 6148
E-mail: shsr@rihes.org
Website: <https://shsr.rihes.cmu.ac.th/home/>

For more information:

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Science in Bioscience for Sustainable Agriculture

Course Title:	Master of Science in Bioscience for Sustainable Agriculture (International Program)
Master Degree:	M.Sc. (Bioscience for Sustainable Agriculture)
Academic Institution:	Faculty of Animal Sciences and Agricultural Technology, Silpakorn University.
Duration:	2 years 4 months (July 2022 – October 2024)

Background and Rational:

1. Background

Increasing population demands more food production and this requires more arable land for agriculture. Fertile forest has been encroached, due to the need for more lands for cultivation, and it brings about prolonged drought during summer season and flooding during rainy season. Biodiversity has been threatened, and greenhouse effect and global warming have become a clear and present danger to the wellbeing of the human being. The current agricultural malpractices, such as monoculture and overuse of chemical fertilizers and pesticides, have also caused negative impact to health and environment.

Thailand also faces with these problems. Encroachment of mangrove forest, for the production of commercial marine produces and for wood to produce charcoal for energy, has destroyed the nursery of coastal marine animals. The encroachment into the forest in the North also causes the degradation of water-shed area resulting to soil erosion which in turn brings about the accumulation of soil sediment in the rivers. Moreover, Thailand ranked 40 among the countries all over the world for the area used in agriculture but Thailand ranks fourth as the main importer of a chemical used for agriculture. This information indicates that agricultural production in Thailand has been contribution to a certain degree of the degradation of an environment.

There are several agricultural activities, such as pineapple production, dairy and goat production, and cultivation of commercial aquatic animals, in Phetchaburi province. These activities contribute to the above-mentioned environmental degradation. For example, pineapple production in the area, in which the farmers have used herbicides continuously, results to the accumulation of toxic herbicides and renders the land un-usable for producing other crops. All these problems make it necessary to adopt a new concept to practice agriculture should the negative effects be possibly mitigated if not eradicated.

2. Rational

Program in Bioscience for Sustainable Agriculture at ASAT, Silpakorn University, Phetchaburi IT campus, offers the curriculum with the emphasis on teaching and researching in

sustainability in agriculture to address these problems. The core concept of this curriculum bases on the application of knowledge in biological science to solve the problem in agricultural production based on sufficiency economy philosophy (SEP). Research questions come from any sectors of the society, regardless of disciplines and scales of operation.

There are several Royal initiated projects which promote the concept of sustainability and SEP in Phetchaburi province, Thailand where ASAT, SU is located. This makes ASAT suitable and ready to teach the students to study in the program in Bioscience for Sustainable Agriculture under the sponsorship of Thailand International Cooperation Agency (TICA), Ministry of Foreign Affairs of the Kingdom of Thailand. For instance, the HuaySai Royal Development Study Center has provided the knowledge about the sufficient and sustainable agricultural production to the farmers. Some of these farmers have become to be an expert, promoting SEP and related agricultural techniques to the other farmers. Other Royal projects, such as the Sirindhorn International Environment Park (SIEP), “Chang-Hua-Mun” Royal Initiative Project and the King Royally Initiated Laem Phak Bia Environmental Research and Development Project, are also promoting the concept of sustainability and sufficiency economy philosophy (SEP) although each project has focused on different themes.

Staffs of ASAT, with expertise in both theoretical and applicable aspects of biological science, have been robustly conducting various research projects covering the areas of sustainable animal production, clean technology, animal care and hygiene, plant pest control, sustainable coastal resource management, appropriate technology for environmental control, soil conservation, integrated soil fertility management, plant genetic management, efficient waste management and waste utilization. Current research projects in these areas, funded to ASAT staffs, should offer the TICA-sponsored students an opportunity to learn and grow for their future.

Objectives:

Master of Science in Bioscience for Sustainable Agriculture (International Program) aims to create personnel in agriculture with the capability to integrate bioscience knowledge with local wisdom, on the emphasis of the conservation of natural resources and environment to promote and develop the sustainability of agriculture.

Course Synopsis and Methodology:

The Master of Science Program in Bioscience in Sustainable Agriculture (International Program) requires the candidate to take courses no less than 24 credits plus the research which is equivalent to 12 credits (Total 36 credits). The degree shall be awarded when the students fulfill one international publication.

1. Study plan

Course code	Course name	Credits
The first year		
<u>1st Semester</u>		
715 501	Cell Science and Molecular Biology	3(3-0-6)
715 502	Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)

715 503	Research Methodology for Agricultural Sustainability	3(3-0-6)
715 504	Selected Skills for Research in Bioscience for Sustainable Agriculture	1(1-0-2)
715 505	Seminar in Bioscience for Sustainable Agriculture I	1(1-0-2)
	Total	11 credits

2nd Semester

715 506	Seminar in Bioscience for Sustainable Agriculture II	1(1-0-2)
715 507	Integrative Research in Bioscience for Sustainable Agriculture	3(2-3-4)
	Elective Course	6
	Total	10 credits

Thesis Proposal examination shall be conducted before the first semester of the second year.

The second year1st Semester

715 592	Thesis	6
	Elective Course	3
	Total	9 credits
	Comprehensive examination	

2nd Semester

715 592	Thesis	6 credit
	Total	6 credits
	Thesis defense examination	

2. Courses**Required courses 15 credits**

715 501	Cell Science and Molecular Biology	3(3-0-6)
715 502	Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 503	Research Methodology for Agricultural Sustainability	3(3-0-6)
715 504	Selected Skills for Research in Bioscience for Sustainable Agriculture	1(1-0-2)
715 505	Seminar in Bioscience for Sustainable Agriculture I	1(1-0-2)
715 506	Seminar in Bioscience for Sustainable Agriculture II	1(1-0-2)
715 507	Integrative Research in Bioscience for Sustainable Agriculture	3(2-3-4)

Elective courses not less than 9 credits**1. Animal Production**

715 521	Organic Livestock Production for Sustainability	3(3-0-6)
715 522	Animal Genetic Improvement and Conservation	3(3-0-6)
715 523	Animal Farming Management Technology	3(3-0-6)
715 524	Hygiene in Dairy Production	3(3-0-6)
715 525	Animal Pathobiology	3(3-0-6)
715 526	Diagnosis of Aquatic Animal Diseases	3(2-3-4)

2. Plant Production

715 527	Genetic Improvement for Crop Production	3(3-0-6)
715 528	Plant Genetic Resource and Application	3(3-0-6)
715 529	Seed Technology	3(2-3-4)
715 530	Plant Pathology	3(2-3-4)
715 531	Postharvest Physiology and Technology	3(2-3-4)
715 532	Integrated Pest Management	3(2-3-4)

3. Multidisciplinary

715 533	Principle of King Rama IX Wisdom for Agricultural Sustainability	3(3-0-6)
715 534	Natural Resources and Environmental Management	3(3-0-6)
715 535	Ecology and Management of Aquatic Resources	3(3-0-6)
715 536	Soil Fertility and Protection for Sustainable Agriculture	3(2-3-4)
715 537	Microbial Diversity and Agricultural Application	3(2-3-4)
715 538	Food Safety Standard and International Policy	3(3-0-6)
715 539	Agribusiness and Entrepreneurship	3(3-0-6)
715 540	Modern Technology for Smart Farming Agriculture	3(3-0-6)
715 541	Molecular Biology Techniques and Bioinformatics	3(3-0-6)
715 542	Research in Agricultural Areas	3(3-0-6)
715 543	Enzyme Technology	3(3-0-6)
715 544	Selected Topics in Bioscience for Sustainable Agriculture	3(3-0-6)

Thesis (equivalent to) 12 credits

715 592	Thesis (equivalent to)	12 credits
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Graduation Conditions:

- Complete the courses as specified by the program with an average score of not less than 3.00 from the 4 levels score system or equivalent.
- Pass the comprehensive examination and English test in accordance with the Silpakorn University's Regulations on Graduate Study.
- Present a thesis and pass the final oral examination by the committee that the University has appointed. The examination shall be open to the general public who may be interested on the examined topic.
- Thesis work or part of the thesis must be either published in a journal or an international conference proceeding at least 1 publication.

Applicant Qualifications:

The applicants must hold a bachelor's degree or equivalent in Agriculture, Science or a related field, or another degree by the consent of the Curriculum Administration Committee, Faculty of Animal Sciences and Agricultural Technology, Silpakorn University with GPA of 2.50 or higher in the 4 levels score system or equivalent. Age should be no more than 40 year-olds.

Document Required:

1. Certified copy of transcript of record (High school and Bachelor's degree transcript, English version)
2. Certified copy of degree certified (English version)
3. Copy of TOEFL, IELTS, TOEIC or equivalent test result
4. Two letters of recommendations from the faculty members of the home institutes
5. Letter of permission from the Dean/ Director/ Rector/ Vice Chancellor/ President of the home institutes in case the candidate has been working as the staff member in the organizations
6. Concept proposal of research field of interest (not more than 250 words)

Contact:

Faculty of Animal Sciences and Agricultural Technology, Silpakorn University, Phetchaburi IT campus. Address: 1 Moo 3, Sampraya, Cha-am, Phetchaburi. 76120 Thailand. Tel: 66-32-594-037 Fax: 66-32-594-038.

For academic information:

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Course Detail
Master of Science Program in Agriculture

Course Title:	Master of Science Program in Agriculture (International Program)
Master Degree:	Master of Science (Agriculture)
Academic Institution:	Faculty of Agriculture, Khon Kaen University
Duration:	2 years July 2022 – May 2024

Background and Rational:

As the number of world populations has been increasing, it is a major challenge for an agricultural researcher or scientist to produce enough food to meet the needs of the world population. The production area expansion to increase production is also limited due to the expansion of urbanization and the industrial sector. Therefore, productivity improving is the only way to produce sufficient food to meet the growing global demand. However, today's productivity must be done under complex global changes both in terms of climate change such as hot weather, drought or flood, the emergence of new pests or the return of pest outbreaks as well as the degradation of natural resources due to intensive use.

According to the contexts mentioned above, the United Nations has adopted it as 1 of the 17 Sustainable Development Goals in order to develop sustainable world economy. The goals that are important and directly aligned with agriculture such as Goal 1, Elimination of Poverty (no poverty) and Goal 2, Zero Hunger, by ensuring everyone, especially the poor and the vulnerable, that they will be able to have safe, nutritious and sufficient food. Therefore, in order to improve agricultural productivity, we must have sustainable food production system and a good agricultural practice that protects ecosystems and improves the ability to adapt to climate change, drought, flood and other disasters. Moreover, land and soil must be developed continually and the genetic diversity of plants and animals must also be maintained. Besides, it is also aligned with Goal 12 Sustainable Consumption and Production.

Therefore, body of knowledge, research and innovation are required to achieve sustainable management and efficient use of natural resources, halve the world's food waste at retail and consumer levels, and reduce the loss from the production process and supply chain, including post-harvest losses, all chemicals and waste management using environmentally friendly process, and the reduction of waste emissions into the air, water and soil to minimize the negative impacts that will have on human health and the environment as much as possible.

Objectives:

To encourage the graduate to increase their research ability, develop new knowledge, increase knowledge management and application ability for agricultural development and/or solve agricultural problems efficiently and effectively as well as leading to the development of innovation.

Course Synopsis and Methodology:

Master of Science Program in Agriculture (International Program) (Curriculum revised in 2018) focuses on Research Based Learning (RBL) in order to encourage the graduate to increase their research ability, develop new knowledge, increase knowledge management and application ability for agricultural development and/or solve agricultural problems efficiently and effectively as well as leading to the development of innovation.

1. Study plan

Course Structure	Number of Credit	
	Plan A Type 1	Plan A Type 2
1. Required Courses	5 (non-credit)	5
2. Elective Courses	-	15
3. Thesis	38	18
Total Credit	38	38

Study Plan

1st semester		Credit	
		Plan A Type 1	Plan A Type 2
AG 207 001	Statistical Methods in Agriculture	3(2-3-5) (non-credit)	3(2-3-5)
AG 207 891	Seminar in Agriculture I	1(1-0-2) (non-credit)	1(1-0-2)
AG 207 898	Thesis	9	-
xxx xxx	Elective Course		6
	Semester credits	13	10
	Cumulative credits	9	10

Thesis activities: Plan A Type 1; Thesis proposal examination Plan A Type 2; Thesis proposal preparation

2nd semester		Credit	
		Plan A Type 1	Plan A Type 2
AG 207 898	Thesis	10	
AG 207 899	Thesis		6
xxx xxx	Elective Course	-	6
	Semester credits	10	12
	Cumulative credits	19	22

Thesis activities: Plan A Type 1; carrying out research Plan A Type 2; Thesis proposal examination and carrying out research

3rd semester		Credit	
		Plan A Type 1	Plan A Type 2
AG 207 892	Seminar in Agriculture II	1(1-0-2) (non-credit)	1 (1-0-2)
AG 207 898	Thesis	10	
AG 207 899	Thesis		6
xxx xxx	Elective Course	-	3
	Semester credits	10	10
	Cumulative credits	29	32

Thesis activities: Plan A Type 1; carrying out research and writing manuscript Plan A Type 2; carrying out research

4 th semester		Credit	
		Plan A Type 1	Plan A Type 2
AG 207 898	Thesis	9	-
AG 207 899	Thesis	-	6
	Semester credits	9	6
	Cumulative credits	38	38

Thesis activities: Plan A Type 1; Writing manuscript and Thesis defense examination
Plan A Type 2; Writing manuscript and Thesis defense examination

2. Course Content

Required Courses

AG 2 07 0 0 1 Statistical Methods in Agriculture Research protocol and techniques in Agriculture and related disciplines, basic statistical analysis, experimental designs, regression analysis, correlation, nonparametric statistics, and computer application in agricultural research

AG 207 891 Seminar in Agriculture I Literature review on topics relating to agriculture, scientific report writing, presentation, discussion and conclusion of seminar

AG 207 892 Seminar in Agriculture II Writing research article, thesis, and presenting of the progress of the thesis work

Elective Courses

AG 207 101 Biological Control of Insect Pests Principles of biological control of insect pests, organisms as natural enemies, and use of natural enemies in biological control, conservation and augmentation of natural enemy, application of biological control with other control strategies

AG 20 7 1 0 2 Biological Control of Plant Diseases Basic knowledge in plant pathology, principle for plant disease management and strategies for biological control of plant diseases in major economic crops, species of antagonistic and plant growth enhancement microbes, screening for high potential antagonistic microbes, research and development for biological control commercial products, using antagonistic microbes in various cropping systems, mass production of antagonistic fungi and bacteria for self-sufficiency, bio-safety concerning used of beneficial microbes including antagonistic, growth enhancer microbes

AG 207 103 Organic Agriculture Principles, concepts, and techniques of organic agriculture including organic crop production covering soil, fertilizer and water management, cultural practices, pest control, harvest and postharvest handling, marketing of organic products, analysis of agricultural inputs in organic production system, principle and standard of organic animal, organic animal production such as beef cattle, dairy, pig and poultry, and organic bee keeping, and other animals, animal welfare, processing and marketing, policy, regulations and organic certification schemes and case study

AG 20 7 1 0 4 Ecosystem Management in Organic Agriculture Components of organic agricultural ecosystem, relationships between the components, energy flow and material cycle, management of factors related to sustainable organic agriculture and case study

AG 207 201 Fish Breeding and Production Planning Introduction, brood stock management, fish breeding methods, natural fish breeding, semi-natural fish breeding, hormonal induced fish breeding, examples of three breeding methods, equipment of fish breeding, egg incubating, fish embryo development, nursing methods, hatchery designs, production planning of fish fry

AG 207 202 Sustainable Aquaculture Introduction, aquaculture in various models, feed and adjustment to utilize local resources, effect of climate change and adaptation of environmentally friendly aquaculture practices, farm standard, quantity and quality of products, production planning, marketing and sustainable aquaculture management for strengthening community

AG 207 203 Fish Diseases and Diagnosis History on fish diseases; factors involving disease outbreak, economic impact of diseases pathogenic diseases, non-pathogenic diseases, global climate change and disease outbreak, disease diagnosis in aquatic animals, analysis and assessment on fish disease outbreak

AG 207 204 Fish Disease Control and Health Management Treatment methods for fish diseases, chemicals and chemotherapy, antibiotics and application methods, protocols on fish health management, immune modulation, utilization of herbal medicine for disease outbreak prevention and treatment

AG 207 205 Fish Nutrition Feed and nutrients for fish, nutrient uptake and metabolism of feed, determination of nutrient requirement of fish, problem related to nutrient, effect of global climate change on feed utilization and metabolism of fish, biotechnologies for fish feed development

AG 207 206 Fish Feed and Alternatives Situation of world fish feed production, factors related to fish feed production, nutrient in feed materials, alternative feed materials, limitations of feed material and alternative feed material, formulation and production of fish feed suitable for fish stages, biotechnologies for development of feed and minimizing problems related to feed nutrition and feed production, determination of fish feed requirement, utilization of local resources for feed production, fish feed production by local community

AG 207 207 Post-harvest Technology for Aquatic Animal Groups of commercial aquaculture, nutritive values of aquatic animals, deterioration of aquatic animals, preparation of aquatic animals before being transported and used for production of fresh aquatic animal, transporting live aquatic with water and without water, production and preservation of fresh aquatic animal, and utilization of local resources for increasing survival of live- aquatic animal, using local resources for preserving fresh aquatic animal

AG 207 208 Preservation and Value-addition Technology for Aquatic Animal Value-adding process and its principles such as salting, drying, chilling and freezing, irradiation, smoking, fermentation, canning and chemical preservation, packaging for fish product, selection of suitable preservation and value-addition technology for community, hygiene in processing aquatic animal, using local resources for processing aquatic animal

AG 207 301 Sustainable Agricultural and Rural Development Concepts relating to sustainable agricultural and rural development (SARD), its situation and dynamics leading to current important development issues such as population, climate, technology, pollution, goals and activities of world organizations influencing sustainable agricultural, rural development and policy, cases reflecting sustainable agricultural and rural development, evolution of technology and innovation for sustainable agricultural and rural development, green development, corporate social responsibility and relating issues for agricultural and rural development, application of biotechnology for propagations, resistance and tolerance to biotic and abiotic constraints

AG 207 302 Analysis of Agro-ecosystems, Resource Systems and Community Systems System theories, area-based research and development, methods of agro-ecosystem analysis, Rapid Rural Appraisal (RRA), conceptual framework building, source of data, methods of data collection, Participatory Rural Appraisal (PRA), data management and analysis, descriptive statistics, indicator analysis, marginal analysis and sensitivity analysis and synthesis of the findings

AG 207 303 Development of Project Planning and Management Concepts and process of project planning, development and management covering from need assessment, project planning and development, project management, project monitoring, project adjustment, project evaluation, design and implement alternative development project, program evaluation and data analysis, interpretation and presentation, tools, field testing for tools and evaluation methods

AG 207 304 Agricultural Systems under the Changing Environments Global change and its dynamics, agricultural systems under social and economic changes, technological changes, changing marketing systems, climate change, natural resources degradation, changes in labor in agriculture, aging society, health problems of the population, adaption of agriculture, adaptive agricultural systems of crop production, livestock production and aquaculture, smallholder adaptation, innovation process under changes, sustainable adaptive approaches

AG 207 305 Agricultural and Rural Sociology Background of rural sociology, structures of rural societies, differences between urban and rural societies, changes of rural societies, factors influencing changes of rural societies such as population, urbanization, technology, impacts of changes of rural societies on agriculture, social capitals and rural development, case studies

AG 207 306 Sustainable Crop Production Concepts and importance of cropping systems, cropping patterns and related production conditions, plant interactions and competition in multiple cropping, water and nutrients management approaches to increase water and nutrient use efficiency in sustainable crop production system, principles and environmental friendly methods of integrated plant pest management, maintaining soil fertility and crop production, indigenous knowledge and varietal conservation, indigenous knowledge and its limitations

AG 207 307 Communication in Agrarian Development Introduction to verbal and nonverbal aspects of communication, concept of culture and cultural values, landscape, rural and urban culture, economic and legal context, cultural and spiritual context, cultural heritage, aesthetics and quality of life, alternative communities and re-ruralization, case studies

AG 207 401 Introduction to Precision Agriculture Scope and overview of the agricultural technologies and their applications, record keeping, software, analysis and decision making, implementation

AG 207 402 Introduction to Agricultural GIS Fundamental processes of Geographic Information Systems (GIS), data base management, spatial analysis, mapping software

AG 207 403 Global Positioning System and Remote Sensing Fundamental of Global Positioning System (GPS), application in agriculture, general technical aspects of the GPS satellites such as mapping, navigation, introduction to remote sensing

AG207 404 Precision Farming Hardware Scope and overview of the agricultural technologies and their applications, record keeping, software, analysis and decision making, implementation, solar operated precision spraying and water irrigation, soil moisture sensing and automatic irrigating control, drone assisted in agriculture and robotic equipment

AG207 405 Soil, Water, Nutrient and Yield Variability Soil formation and catena, soil mapping, utilization of maps of different scales and details, investigation of field-scale spatial variability of soil properties and water availability, precision land management, irrigation and drainage, agricultural zoning, nutrient-specific crops, yield map interpretation, yield stability, crop quality sensor, variable rate technology (VRT)

AG 207 501 Essentials in Molecular Biology Comparative cell structure and function, central dogma in genetics, prokaryotic and eukaryotic DNA replications, RNA synthesis and regulation, protein synthesis and regulation, protein sorting, molecular biology applications in agriculture

AG 207 502 Agricultural Biotechnology Applications of biotechnology in agro-industry, horticulture, plant protection, livestock and aquatic animals and future food, ethics in genetically modified organisms (GMOs) and agricultural biotechnology

AG 207 503 Applied Plant Breeding Introduction to plant breeding, breeding program in self-pollinated and cross-pollinated plants, rice breeding technique for commercial and for community, breeding technique for industrial crops and horticultural crops, future trends in plant breeding

AG 207 504 Applied Animal Breeding Introduction to animal breeding, animal selection, mating system, breeding program in domestic animals, breeding techniques for native animals, beef and dairy cattle, poultry and swine, future trends in animal breeding

AG 207 505 Population Structure and Quantitative Genetics Genotypic and gene frequencies in population, factors affecting gene frequencies, genetic structure and subdivision, genetic clustering and classification, genetic variations and causal components, heritability, genetic resemblance, inbreeding depression and heterosis, genetic x environment interaction

AG 207 506 Gene Mapping Principle and application of gene mapping, basic linkage analysis, gene mapping function, genetic markers in animal and plant breeding, genetic mapping, physical mapping, quantitative trait locus (QTL) and expression quantitative trait loci (eQTLs), mapping, genome-wide association study (GWAS)

AG 207 507 Fundamental of OMICS Evolution of omics in agriculture, microbial, plant and animal genomics, basic of transcriptomics, proteomics and metabolomics in agriculture, current and future applications

AG 207 508 Agriculture Bioinformatics Single sequence analysis, multiple sequence comparisons, RNA and protein sequence analysis, phylogenetics and comparative genomics, applications of genome and proteome sequences, microarray, system biology

AG 207 509 Animal Cell Biotechnology Equipment and tools for animal cell culture, somatic cell culture, embryonic cell culture, Oocyte culture and fertilization, IVF (In-vitro Fertilization), cryopreservation, animal gene transfer

AG 207 510 Plant Cell Biotechnology Equipment and tools for plant cell culture, plant tissue culture, nuclear culture, embryo rescue, plant gene transfer, current topics in plant cell biotechnology

AG 207 601 Soil Resources and Sustainable Agriculture Role of soil in the environment its importance as a natural resource in agricultural and environment, fundamental of soil science such as soil composition, soil formation, soil physical, chemical and biological characteristics, land resource degradation and management approaches on soil pollution and their effects on soil

due to mismanagement, role of soil in maintaining environmental integrity; forest and sustainable agriculture, soil, water and environment relationship, sustaining soil resources

AG 127 712 Soil Water and Plant Relationships Principle of plant physiology, important plant organ, water movement from soil to root, stem and leaves, transpiration to atmosphere, irrigation water management for crops water requirement, plant response to water deficit, interaction models of soil-water and plant relationship

AG 127 763 Ecological Risk Assessment and Remediation of Contaminated Land Awareness of the risks posed by contaminants in contaminated land, monitoring, ecological evaluations and risk assessment, biomonitoring in aquatic and terrestrial ecosystem, bio indicator, solution and appropriated techniques in remediation and restoration of contaminated land

AG 127 765 Water Security and Climate Change Definitions of water security and climate change, hydrological process, water demand and supply in socio-economic and environmental activities in watershed, water resource policy, cooperation or conflict of water uses, climate change impacts are altering hydrological systems and water resource in mitigations of quality, quality and timing, dealing with uncertainties of climate situations for securing water, case studies

AG 129 743 Agricultural Pollution and Management Principles of pollution and environmental study, agricultural pollution contamination in ecosystem and environments, principles of toxicology, environmental pollution, environmental pollution control and management, case study on agricultural pollutants, integrated technique for optimizing agricultural pollution from agro-ecosystem

AG 129 762 Soil Biotechnology Principles of soil biotechnology, soil microorganisms, soil microorganism's product, application of soil biotechnology for agriculture and environment

AG 157 711 Advanced Agribusiness Management Concept of agribusiness, structure of agribusiness system, agribusiness management process, role of agribusiness manager in problem solving and decision making, agribusiness marketing management and consumer behavior, agro industrial economics, strategic management process in agribusiness, environmental scanning and strategy formulation process, sources of risk and risk management strategies in agribusiness

AG 157 721 Advanced Marketing Management in Agribusiness Concept and applied marketing in agribusiness, analyzing consumer market, identifying market segments and targets, product and brand equity strategies, developing pricing strategies, managing distribution channel strategies, marketing communication strategies, digital marketing

AG 157 731 Financial Management and Project Analysis in Agribusiness Concepts of financial management concept for agribusiness enterprises, money and capital markets, financing acquisition for agribusiness, financial report and analysis, time value of money, investment project concept, project cycle, and feasibility analysis of project

Thesis

AG 207 898 Thesis Conducting research and using research process to improve learning skill; critical thinking skill; identify and formulate research problem; advance knowledge, and apply knowledge to solve problem in agriculture and related fields, including writing research proposal, conducting research, writing research progress report; research article; and thesis under the supervision of thesis advisory committee (For Plan A Type 1)

AG 207 899 Thesis Conducting research to improve knowledge; research skill; critical thinking skill; identify and formulate research problem; advance knowledge; and apply knowledge to solve problem in agriculture and related fields, including writing research proposal, conducting research, writing research progress report; research article and thesis under the supervision of thesis advisory committee (For Plan A Type 2)

Graduation Conditions:

- Earning the total number of credits mentioned in curriculum regulation
- Average of cumulative GPA of coursework is not less than 3.00.
- Passed the standards English skills announced by the KKU Graduate School
- Thesis work or a part of thesis work must be published or accepted for publication in a quality academic journal (listed in TCI or SCOPUS or ISI)

At least 2 papers for Plan A Type 1

At least 1 paper for Plan A Type 2

Applicant Qualifications:

- Graduates with a bachelor's degree or equivalent
- Additional properties:

Plan A Type 1 There are agriculture work experience /or approved by the curriculum committee.

Plan A Type 2 Average of bachelor's degrees GPA is not less than 2.50 out of 4.00 or equivalent /or approved by the curriculum committee.

Document Required:

- TIPP Application Form and Medical Report (The form could be found at: <https://tica-thaigov.mfa.go.th/en/page/75500-tipp-application-form?menu=605b13dbb6f1b76ed31778b3>)
- Transcript
- Recommendation Letter
- English Test

Contact:

1. Assoc. Prof. Dr. Nakorn JONGRUNGKLANG (Program Chairman)
Tel: 098-2255598 E-mail: nuntawootjrk@gmail.com

2. Miss Sununtha Tinpana (International Relations Officer)
Tel: 063-6346520 E-mail: sunuti@kku.ac.th

For more information:

Human Resources Development Cooperation Division
Thailand International Cooperation Agency (TICA)
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Tel. +66 (2) 203 5000 ext. 43305, 43306 Fax: +66 (2) 143 8451
E-mail: tipp@mfa.mail.go.th

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Course Detail

Master of Science Program in Pharmacology

Course Title:	Master of Science Program in Pharmacology (International Program)
Master Degree:	Master of Science (Pharmacology) M.Sc. (Pharmacology)
Academic Institution:	Department of Pharmacology, Faculty of Medicine, Khon Kaen University
Duration:	2 years (July 2022 – July 2024)

Background and Rational:

The graduate program in Pharmacology has commenced since 1991. The program has supplied highly qualified academics to place in various academic institutes and business bodies around the country. The program emphasizes graduates to be knowledgeable in drug and chemical actions on biological systems and develops acritical thinking with life-long self-directed learning.

Objectives:

The course expects the **MSc** students acquire knowledge in drug and chemical actions and capability in performing research in pharmacology and related fields and create high-quality research.

Course Synopsis and Methodology:

a. Master's Degree:

- i. Complete an English Proficiency
- ii. Pass Thesis defense
- iii. At least one publication in international or Thailand Citation Index journal (TCI) the publication or proceeding
- iv. At least one research presentation (oral/poster) in a scientific conference.

Plan 1: At least two publications in 1 international publication and 1 TCI or 2 in international publications

Plan 2: At least one international publication

Course Content

Study Programs

Master Degree Program in Pharmacology

Plan A 1 Thesis work only with no less than 36 credits, but some course works without credit count, or activities may be prescribed to students by the program.

Plan A 2 Thesis work of no less than 12 credits and course works of no less than 24 credits consisting of molecular biology, physiology, pharmacology, research methodology laboratory techniques, and other relevant elective modules.

Course Title for Master Degree Program in Pharmacology**1) Plan A 1**

MD667 898 Thesis	36 credits
MD667 891 (366 891) Seminar in Pharmacology I	(audit)
MD667 892 (366 892) Seminar in Pharmacology II	(audit)

2) Plan A 2

MD667 899 Thesis	12 credits
Core Modules	11 credits minimum
Elective Modules	13 credits minimum
Total	36 credits minimum

A. Core Modules Is the main subject that students are required to enroll these modules of no less than 11 credits along with the recommendation of the program committee, consisting of the following courses

MD567 712 Cells and Molecular biology	3(3-0-6)
MD567 714 Medical Science Research Methodology	3(2-3-6)
MD667 722 Advanced Pharmacology	3(3-0-6)
MD667 891 Seminar in Pharmacology I	1(1-0-2)
MD667 892 Seminar in Pharmacology II	1(1-0-2)
XXX XXX Others with recommended from the program's curriculum committee	

B. Elective Modules is a subject that students are required to enroll in according to the recommendations of the program committee and the suggestion of the main advisor. Students must choose to register for not less than 13 credits.

MD567 713 Laboratory Techniques in Medical Sciences	2(0-6-3)
MD587 703 Neuropharmacology	3(3-0-6)
MD587 704 Neurotoxicology	1(1-0-2)
MD627 701 Infection and Immunity	4(4-0-8)
MD627 732 Bioinformatics	2(1-3-4)
MD637 703 Basic Laboratory skills in Medical Biochemistry and Molecular Biology	2(0-6-3)
MD637 716 Applied Biotechnology in Medicine	2(2-0-4)
MD637 718 Advanced Techniques in Medical Biochemistry and Molecular Biology	2(0-6-3)
MD667 713 Clinical Pharmacology	2(2-0-4)
MD667 721 Advanced Cancer Therapy	2(2-0-4)
MD667 723 Omics Technology in Medicine	1(1-0-2)
MD667 724 Pharmacogenomics and Precision Medicine	1(1-0-2)
MD667 725 Cardiovascular Pharmacology	2(2-0-4)
MD667 726 Free Radicals in Biological Sciences	2(2-0-4)
MD667 727 Xenobiotic Metabolism	2(2-0-4)
MD667 728 Molecular Pharmacology	2(2-0-4)
MD667 731 Pharmacology I	3(3-0-6)
MD667 732 Pharmacology II	3(3-0-6)
MD677 703 Physiology for Health Sciences Students	3(3-0-6)
MDXXX XXX Others with recommended from the program's curriculum committee	

Applicant Qualifications:

Master degree Program

Applicant must hold a Bachelor of Science or equivalent qualification with the GPA of 2.5 or above.

Document Required:

- Transcript
- English test (please follow the KKU-English qualification for admission)
- Recommendation Letter

Contact:

Chairman of the Postgraduate Study Committee or the Head of the Department of Pharmacology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand 40002.

Phone: +66-4334-8397

Website: <http://pharmacology.md.kku.ac.th>

E-mail : sarinyako@kku.ac.th หรือ <http://pharmacology.md.kku.ac.th/>

For more information:

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Course Detail

Master of Science in Medical Biochemistry and Molecular Biology

Course Title:	Master of Science in Medical Biochemistry and Molecular Biology
Master Degree:	Ms.C. (Medical Biochemistry and Molecular Biology)
Academic Institution:	Department of Biochemistry, Faculty of Medicine, Khon Kaen University
Duration:	2 years (4 semesters) (July 2022 – July 2024)

Background and Rational:

The Medical Biochemistry and Molecular Biology (MBMB) Program is active under the Department of Biochemistry, Faculty of Medicine, Khon Kaen University that focuses on molecular mechanisms of non-communicable and infectious diseases. The coursework covers basic knowledge and current advanced topics in medical biochemistry and molecular biology. Students can choose their thesis topic based on their interest, such as, cholangiocarcinoma (bile duct cancer), chronic kidney disease, metabolic syndrome, and melioidosis which are the important health problems in northeastern Thailand.

Objectives:

This program aims to produce independent and high-quality researchers in medical biochemistry and molecular biology with well-equipped skills in research methodology and professionalism that meet the international standard in 21st century.

Course Synopsis and Methodology:

1.Study plan

International students are required to choose plan A2 (research and coursework plan).

Course Requirement

1.1 Coursework (compulsory)	12 credits
1.2 Coursework (elective)	6 credits
1.3 Thesis	18 credits
Total	36 credit

2. Course Content/Study Topic

PLAN A2

YEAR 1 SEMESTER 1		credits
MD 567 712	Cells and Molecular Biology	3
MD 567 713	Laboratory Techniques in Medical Sciences	2
MD 637 701	Biochemistry for Graduate Students	2
MD 637 711	Modern Nutrition	2
	Total credits enrolled	9
	Total cumulative credits	9

YEAR 1 SEMESTER 2		credits
MD 637 702	Medical Biochemistry and Molecular Biology	2
MD 637 703	Basic Laboratory Skills in Medical Biochemistry & Molecular Biology	2
MD 637 718	Advanced Techniques in Medical Biochemistry & Molecular Biology	2
MD 637 894	Selected Topics in Medical Biochemistry & Molecular Biology	1
MD 637 712	System Biology	1
MD 567 714	Medical Science Research Methodology	3
	Total credits enrolled	11
	Total cumulative credits	20

YEAR 2 SEMESTER 1		credits
MD 637 899	Thesis	8
MD 637 891	Seminar in Medical Biochemistry and Molecular Biology I	1
	Total credits enrolled	9
	Total cumulative credits	29

YEAR 2 SEMESTER 2		Credits
MD 637 899	Thesis	8
MD 637 892	Seminar in Medical Biochemistry and Molecular Biology II	1
	Total credits enrolled	9
	Total cumulative credits	38

DESCRIPTION OF COURSES

MD 567 712 Cells and Molecular Biology

3(3-0-6)

Biomolecules and molecular organization within cell, cellular energy and metabolisms, genome structure and gene regulation, molecular structures of the cell and their functions, cell cycle, growth and differentiation, cellular interactions and communication, the immune system, molecular and cellular basis of diseases, cancer biology, maintenance of life and control mechanisms

MD 567 713 Laboratory Techniques in Medical Sciences

2(0-6-3)

Principles and laboratory techniques in medical sciences, basic techniques in biochemistry, microbiology, immunology, molecular biology, parasitology, pathology, anatomy, physiology, neurosciences and pharmacology including laboratory animal handling

MD 567 714 Medical Science Research Methodology

3(2-3-6)

Principles, research design and methodology in medical science, practical and appropriate biostatistical analysis in medical sciences, including various presentations of research outcome, moral of researcher, human ethics and animal ethics

MD 627 732 Bioinformatics

2(1-3-4)

The internet and the new biology, human genome project and bioinformatics, bioinformatics in post genomic era, nucleic acid and protein databases, searching and retrieval of data from various public databases, analysis of DNA and amino acid sequence data, comparative genomics, gene prediction, analysis of the structure and function of genes and proteins, microarray data analysis, phylogenetic analysis, pharmacogenomics, and system biology

MD 637 701 Biochemistry for Graduate Students

2(2-0-4)

Basic concepts in chemical compositions of cell, structures and metabolisms of biomolecules, enzyme actions, vitamins, coenzymes, hormones, integration and control of energy metabolism, molecular genetic information, group discussion on assigned topics

MD 637 702 Medical Biochemistry and Molecular Biology

2(2-0-4)

Current concepts in advanced biochemistry, the regulations of gene expressions, post-transcriptional and post-translational processes, protein targeting, signal transduction, oxidative stress, roles of molecular cell biology in medicine, pathogenesis of the diseases, applications for the developments of disease diagnoses and treatments and paper appraisal

MD 637703 Basic Laboratory Skills in Medical Biochemistry & Molecular Biology 2(0-6-3)

Basic laboratory skills in medical biochemistry and molecular biology, solution preparation, cell culture, protein extraction and purification, chromatography, protein concentration determination, protein analysis, enzyme kinetics, western blotting, immunohistochemistry, nucleotide extraction and quantification, polymerase chain reaction and reverse transcriptase polymerase chain reaction

MD 637 711 Modern Nutrition 2(2-0-4)

Aspects of nutrition, integration of carbohydrate, lipid, and protein metabolisms, role of molecular micronutrients, body composition and energy expenditure, nutritional assessment, food as a drug, food related to life cycle, sport nutrition, nutrigenomics, microbiome, metabolome, nutritional related diseases, dietary supplement, phytochemicals, functional foods, experimental design in post-genomic nutrition research, and critical interpretation of research

MD 637 712 Systems Biology 1(1-0-2)

Basic concepts of computational and systems biology, principles of cellular- and organism-systems biology, genetic and biological networks, integrative DNA, RNA, and Protein data analysis, using of internet software and bioinformatics tools in systems biology, application of computational and systems biology for the research in basic biological and biomedical sciences. study, analyze, and criticize research data in computational and systems biology, group discussions on the assigned topics

MD 637 718 Advanced Techniques in Medical Biochemistry & Molecular Biology 2(0-6-3)

Advanced laboratory skills in medical biochemistry and molecular biology, advanced techniques for analyzing biomolecules, experimental design of animal models, high-throughput gene expression analysis, functional analysis of genes by knockout and knockdown methods, gene overexpression, gene editing, DNA technology, DNA cloning, DNA sequencing genome scan, determination of types of biomolecules by NMR spectroscopy

MD 637 891 Seminar in Medical Biochemistry and Molecular Biology I 1(1-0-2)

Presentation and participation in discussion of research articles in medical biochemistry and molecular biology related to student's thesis, to be able to present and clarify the knowledge for audiences who are distinguished in languages and cultures, generation of the research question(s) related to the selected articles

MD 637 892 Seminar in Medical Biochemistry and Molecular Biology II **1(1-0-2)**

Presentation and participation in discussion on progress report of MSc thesis in medical biochemistry and molecular biology, to be able to present and clarify the knowledge for audiences who are distinguished in languages and cultures

MD 637 894 Selected topics in Medical Biochemistry and Molecular Biology **1(1-0-2)**

A literature review of current research topics in medical biochemistry and molecular biology, analysis and synthesis for searching new knowledge, and presentation relevant to the selected topic

MD 637 899 Thesis **18 Credits**

Conducting scientific research, writing the research results in the form of thesis with the ability to conduct research in order to explore the new knowledge and find solutions to the problems in medicine and public health related to the northeastern Thailand such as cholangiocarcinoma, chronic kidney diseases, nutrition, metabolic disorders, inborn error diseases and infectious diseases, moral of researcher and human ethics, the thesis or a part of the thesis is published or accepted for publication or be presented as a proceeding of a scientific meeting in a peer review journal for at least 1 research article

Applicants Qualifications:

- 1) The applicant must fit with the program listed below:

Type A 2 program, the applicant must hold a bachelor's degree or be a senior student in a Bachelor of Science program or other science-related disciplines with a grade point average of not less than 2.50.

- 2) The applicant must be in good physical and mental health and have no serious illness which may interrupt his/her studies. A notarized medical certificate is required;

- 3) The applicant must be of good behavior; and

- 4) The applicant must have one of the following English competencies:

- a. Passing the English examination held by the Graduate Studies at 50% or more; or
- b. Having a TOEFL score (within two years) of not less than 475 or more; or
- c. Having a IELTS (within two years) of not less than 5.0 or more

- 5) If the applicant fails to meet any of the above qualifications, admission to the program requires approval from the Program Executive Committee and the Graduate School, Khon Kaen University.

- 6) Find the information of TIPP and Medical Report at: <https://tica-thaigov.mfa.go.th/en/page/75500-tipp-application-form?menu=605b13dbb6f1b76ed31778b3>

Document Required:

1. Copy of academic transcript in English
2. Copy of degree certificate in English
3. Recent photo (less than 3 months)
4. Two letters of recommendation (2 academic referees or 1 academic referee with 1 employment referee)
5. Copy of national passport

Contacts:

Assoc.Prof.Dr. Watcharin Loilome and Dr.Jutarop Phetcharaburanin

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Thailand

Tel: +66 (0) 43 363265

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Course Detail

Master of Science in Program Parasitology

Course Title:	Master of Science Program in Parasitology (International Program)
Master Degree:	Master of Science (Parasitology)
Academic Institution:	Faculty of Medicine, Khon Kaen University
Duration:	2 years (4 semesters) (July 2022 – July 2024)

Background and Rational:

The MSc in Parasitology is an international program in Medical Parasitology. The program offers students the chance to expand their professional opportunities. The program provides core training in the theoretical and practical aspects of medical parasitology, and research opportunities in both basic and advanced in Parasitology and in related field such as in tropical diseases, public health, medical science and translational medicine, covering the protozoan and metazoan parasites of humans and the vectors which transmit them. Entry requires a Bachelor Degree in Science (B.Sc.) or related degree.

The program generally takes 2 years, one year for course work and another for the research project. Students will gain specialized skills to enable them to pursue a career in research, control or teaching related to medical parasitology, product managers and product specialists in private companies and the government sector.

Co-operating Faculty:

1. Faculty of Medicine, Mahasarakrm university
2. Faculty of Allied Health Sciences, Thammasat University
3. Faculty of Tropical Medicine, Mahidol University
4. Faculty of Science, Silpakorn University
5. Genome Institute 113, Thailand Science Park
6. Faculty of Veterinary Medicine, Mahasarakrm university
7. Faculty of Science, Mahidol University
8. Faculty of Science, Udon Thani Rajabhat University
9. Faculty of Natural Resources, Rajamangala University of Technology Isan, Sakon Nakhon Campus

Co-operating Institutes:

1. George Washington University, USA
2. Gifu University, Japan
3. Karlsruhe Institute of Technology, Germany
4. MIE University, Japan

5. National Institute of Infectious Diseases
6. Chungbuk National University, Republic of Korea

Objectives:

The program is intended to produce master degree graduates of international standard in Parasitology. Graduates will gain knowledge in the field and are proficient in researches. The mission of study programs is to improve health by focusing on the major parasitic diseases in the Greater Mekong Subregion and Southeast Asia countries.

Course Synopsis and Methodology:

1. Study plan (Study in Thai only)

Students are required to either choose plan A1 (research plan) or A2 (research and coursework plan).

- **Plan A1** is research only option. Student who enrolls in this program have to complete a thesis which is equivalent to 36 credits. Enrolment in Plan A1 requires a Bachelor Degree in Science (B.Sc.) or equivalent or have research experience at least 3 years. Applicants must also have a record of publication in international journals as first author or corresponding author of at least one paper.
 - Course requirement

▪ Coursework	2 credits (non-credit)
▪ Thesis	36 credits
▪ Total	36 credits
- **Plan A2** is a coursework and thesis option. Student must take subjects worth at least 19 credits. The thesis component is worth 17 credits. Enrolment in plan A2 requires a Bachelor Degree in Science (B.Sc.) or related subjects with a GPA of at least 2.5 or 65% or have research experience at least 2 years.
 - Course requirement

▪ Coursework (compulsory)	11 credits
▪ Coursework (elective)	8 credits
▪ Thesis	17 credits
▪ Total	36 credits

2. Course Content/Study Topic

Course (2 non-credits)

MD648 891 Seminar Parasitology I	1 (1-0-2) non-credit
MD648 892 Seminar Parasitology II	1 (1-0-2) non-credit

Thesis 36 credits

MD648 898 Thesis	36 credits
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COURSEWORK FOR TYPE A2**Course (compulsory) 11 credits**

MD567 713	Laboratory Techniques in Medical Sciences	2(0-6-3)
MD567 714	Medical Science Research Methodology	3(2-3-6)
MD647 701	Medical Parasitology	4(3-3-8)
MD648 891	Seminar in Parasitology I	1(1-0-2)
MD648 892	Seminar in Parasitology II	1(1-0-2)

Course (elective), a minimum of 8 credits

MD567 712	Cells and Molecular Biology	3(3-0-6)
MD647 703	Experimental Parasitology	3(1-6-5)
MD647 702	Advanced Parasitology	3(3-0-6)
MD647 708	Medical Entomology	2(1-3-4)
MD647 707	Medical Malacology	2(1-3-4)
MD647 706	Immunology of Parasitic Infections	2(2-0-4)
MD647 705	Special Topics in Parasitology	2(2-0-4)
MD647 704	Molecular Technique in Parasitology	2(0-6-3)

Thesis 17 credits

MD648 899	Thesis	17 credits
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STUDY PLAN**PLAN A1**

YEAR 1 SEMESTER 1		credits
MD648 898	Thesis	9
	Total credits enrolled	9
	Total cumulative credits	9

YEAR 1 SEMESTER 2		credits
MD648 891	Seminar Parasitology 1	1 non-credit
MD648 898	Thesis	9
	Total credits enrolled	9
	Total cumulative credits	18

YEAR 2 SEMESTER 1		credits
MD648 892	Seminar Parasitology 2	1 non-credit
MD648 898	Thesis	9
	Total credits enrolled	9
	Total cumulative credits	27

YEAR 2 SEMESTER 2		Credits
MD648 898	Thesis	9
	Total credits enrolled	9
	Total cumulative credits	36

PLAN A2

YEAR 1 SEMESTER 1		credits
MD567 713	Laboratory Techniques in Medical Sciences	2(0-6-3)
MD647 701	Medical Parasitology	4(3-3-8)
MDxxx xxx	Elective course	3
	Total credits enrolled	9
	Total cumulative credits	9

YEAR 1 SEMESTER 2		credits
MD648 891	Seminar in Parasitology I	1(1-0-2)
MD567 714	Medical Science Research Methodology	3(2-3-6)
MDxxx xxx	Elective course	5
MD648 899	Thesis	3
	Total credits enrolled	12
	Total cumulative credits	21

YEAR 2 SEMESTER 1		credits
MD648 892	Seminar in Parasitology II	1(1-0-2)
MD648 899	Thesis	9
	Total credits enrolled	10
	Total cumulative credits	31

YEAR 2 SEMESTER 2		Credits
MD648 899	Thesis	9
	Total credits enrolled	5
	Total cumulative credits	36

DESCRIPTION OF COURSES**MD567 712 Cells and Molecular Biology****3(3-0-6)**

Biomolecules and molecular organization within cell, cellular energy and metabolisms, genome structure and gene regulation, molecular structures of the cell and their functions, cell cycle, growth and differentiation, cellular interactions and communication, the immune system, molecular and cellular basis of diseases, cancer biology, maintenance of life and control mechanisms

MD567 713 Laboratory Techniques in Medical Sciences 2(0-6-3)

Principles and laboratory techniques in medical sciences, basic techniques in biochemistry, molecular biology, microbiology, immunology, parasitology, pathology, anatomy, physiology, neurosciences and pharmacology including laboratory animal handling

MD567 714 Medical Science Research Methodology 3(2-3-6)

Principles, research design and methodology in medical sciences, practical and appropriate biostatistical analysis in medical sciences, including various presentations of research outcome, moral of researcher, human ethics and animal ethics

MD647 701 Medical Parasitology 4(3-3-8)

Geographical distribution, morphology, biology, life cycle, transmission, pathogenesis, pathology and symptom, diagnosis, treatment, prevention and control, immunology and epidemiology of parasitic infection, arthropod of medical importance

MD647 702 Advanced Parasitology 3(3-0-6)

Ultrastructure of parasite, taxonomy, parasite ecology, molecular systematics, population genetics, immunopathology, molecular biology, parasite-associated cancer, antiparasitic drug, emerging parasite, current research in parasitology

MD647 703 Experimental Parasitology 3(1-6-5)

Good laboratory practice, photography of parasite, *In vitro* and *in vivo* cultivation of parasites, special techniques for parasitological specimens for identification, serodiagnosis, electron microscopy, genetic markers, drawing of parasite, conducting experimental research project

MD647 708 Medical Entomology 2(1-3-4)

Taxonomy, morphology, biology, ecology and control of arthropod vectors, laboratory practice for identification of various stages of medically important arthropods, collection and preservation of parasite specimens and examination for infectious agents in these arthropods

MD647 707 Medical Malacology 2(1-3-4)

Taxonomy, morphology, physiology, ecology, molecular biology, field survey, host-parasite relationship and methods for cultivation of medically important snails

MD647 706 Immunology of Parasitic Infections 2(2-0-4)

Roles of molecular and cellular immune responses against parasitic infection, basic mechanism, functions of the effector cells and molecules in inflammation, repairing process, and apoptosis, mucosal and tissue immunology, immunopathology, and methods for determination and interpretation

MD647 705 Special Topics in Parasitology 2(2-0-4)

A systematic literature review, searching, reading, analysis and interpretation of research information in parasitology and related biological sciences with critical appraisal, discussion with the advisor(s), presentation of the selected topics by oral presentation and report submission

MD647 704 Molecular Techniques in Parasitology 2(0-6-3)

Practice in molecular biological techniques common used in parasitology research including DNA, RNA and protein extraction, purification, analysis, amplification, DNA sequencing, phylogenetic analysis, gene and protein profiles and immunohistostaining

MD648 891 Seminar in Parasitology I**1(1-0-2)**

Searching, topic selection of the scientific articles, systematic review, reading, presentation and discussions on research works in parasitology and related subjects; skills in self-directed learning, presentation, leadership training, using information technology and moral of researcher

MD648 892 Seminar in Parasitology II**1(1-0-2)**

Searching, topic selection of the scientific articles, systematic review, reading, presentation and discussions on research works in parasitology and related subjects; skills in self-directed learning, presentation, leadership training, using information technology and moral of researcher

MD648 898 Thesis**36 credit**

Conducting research on a special topic for development of new knowledge in parasitology and related subjects, training for skills in scientific thinking, reasoning, planning of advanced research study, problem solving and using information technology to be capable in conducting research, skills in self-directed learning, leadership training, human ethics and animal ethics and writing manuscript for publication in national or international journal under the supervision of thesis advisory committee

MD648 899 Thesis**17 credit**

Conducting research in parasitology, training for skills in scientific thinking, reasoning, planning of advanced research study, problem solving and using information technology to be capable in conducting research, skills in self-directed learning, leadership training, human ethics and animal ethics and report writing and presentation of thesis for publication in national or international journal under the supervision of thesis advisory committee

Applicants Qualifications:**Entry Pre-requisites**

Qualification (Bachelor's Degree): Bachelor degree of Medicine Medical Science, Biological Science or other related fields Grade/GPA score: Plan A1, GPA above 3.0 or have research experience at least 3 years with at least 1 publication in peer-reviewed international journal. Plan A2, GPA above 2.5 or have research experience at least 2 years.

Document Required:**Required documents are:**

1. Copy of academic transcript
2. Copy of degree certificate in English
3. Recent photo
4. Supporting documents
 - Letter of Recommendation
 - English Test Result (Applicants from a country where English is not the first language must enclose a TOEFL or IELTS test result. In all cases, the result must not be more than two years.

		Passed score
TOEFL	(Paper Based)	470
TOEFL	(Computer Based)	150
TOEFL	(Internet Based)	52
TOEFL	(Institutional Testing Program)	470
IELTS	(Academic Based)	5.0
TU-GET	(1000)	500
CU-TEP	(120)	60

- Research proposal

5. Copy of passport (if available)

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Science Program in Environmental Management and Technology

Course Title: Master of Science Program in Environmental Management and Technology (International Program)

Master Degree: Master of Science (Environmental Management and Technology)

Academic Institution: Faculty of Environment and Resource Studies, Mahidol University, Thailand

Duration: 2 years (August 2022 – May 2024)

Background and Rational:

In highly competitive job market internationally, graduates with the environmental management skills and knowledge have distinctive vision and interdisciplinary approach to harnessing the sustainability of natural resources and environmentally friendly. Several international conventions relevant to environmental exploitation across the globe have been embedded into a single national policy for further implementation including climate change or UNFCCC. Those evolve aspects of sharing resources and technologies including responsibilities and accountabilities on environmental problems among countries all over the world. In particular the environmental transboundary problems that become a common debate in the international meetings with an attempt to have global cooperation on several kinds of projects such as a goal-set for greenhouse gas reduction. Aside, all societies have similar social problems from local to international level that related to the environment such as pollution, natural resources deterioration, environmental justice, etc. With this respect, the principles of environmental management and technology can help graduates to learn how to systematically think and integrate all disciplinary to achieve sustainability in environmental exploitation.

The program of environmental management and technology is a pathway for graduates to learn and eventually transfer their knowledge and apply their skills to internationally enhance the better environmental conditions. Especially, the program also aware on the global paradigm shift with sustainable development goals (17 SDGs) which is embedded in the National Strategic Plan 20 years for Thailand (B.E. 2560-2580) and the National Plan of Economic and Social Development 13 (B.E. 2565-2569). Thus, courses provided by our program have been developed based on multidisciplinary approach by integrating between scientific and socio-economic approach from strong experience experts both at the faculty and from other international organizations. Students will learn how to plan, collect data in the field, analyze

data statistically and reliably, as well as well communicate and select appropriate technology to transfer environmental information to all stakeholders.

Our program has well equip and standard certified laboratory as well as other facilities e.g. computer pool, license software for study, a common room for students, etc. In addition, the Covid-19 pandemic has been an experience for a “New Normal” to be concerned along with the development in three major aspects: 1) balancing between human and nature; 2) balancing the relationship among people in societies; and 3) building the sufficient growth. Therefore, we have well adapted to online educational system, in case of locking down against pandemics, with necessary facilities including software for classroom teaching e.g. Microsoft team, Google classroom, Zoom, Webex, etc. We aim to serve environmentalist who have strong disciplines and competencies in environmental management and technology that wish to support the vision of Faculty of Environment and Resource Studies to be the number one institution for environmental study in Thailand by 2025, and the top three in ASEAN by 2031. This is also to full fill Mahidol’s mission to enhance graduates to integrate knowledge and skills of environmental management and technology to excel in health and sciences with integrity for the benefit of humankind.

Remark: The measures for teaching-studying management model under COVID-19 pandemic prevention/control will be followed the regulations and announcements by Faculty of Graduate Study and Mahidol University

Objectives:

To produce graduates who have the characteristics, knowledge and skill as follows:

6.1 They must be leaders with integrity who are devoted to public service and are able to perform their duties professionally;

6.2 They must have knowledge and professional skills in the field of environmental management and technology, system approach, and green industry at both the national and global levels;

6.3 They must have the analytical skills, creative thinking, and cognitive ability to evaluate and contribute to developing the knowledge of environmental management and environmental technology and science-related green industry;

6.4 They must have skills in working on the foundation of knowledge from different fields in order to manage conflicts and continuously improve. They must have a passion for knowledge and believe in lifelong learning;

6.5 They must have skills to apply technology and information technology for greater performance in research as well as presentation.

Course Synopsis and Methodology:**1. Study plan****Table 1 Preparation, Require, and Elective Courses for study in Plan A**

Plan A, A2			
Preparation course			
ENMT 630 1(1-0-2)	Fundamental of Environmental and Natural Resource Management		
Total = audit			
1 st semester/ Year 1		2 nd semester/ Year 1	
ENMT 631 3 (3-0-6)	Industrial Ecology and System Approach	ENMT 635 3 (0-6-3)	Environmental Management and Technology in Practicum
ENMT 632 3 (3-0-6)	Environmental Risk Management	ENMT 636 3 (3-0-6)	Integrated Research for Environmental Management and Technology
ENMT 633 3 (3-0-6)	Applied Economics for Natural Resource Sustainability	ENMT 6XX 3 (3-0-6)	Elective_1
ENMT 634 3 (3-0-6)	Holistic Resources Inventory and Environmental Survey	ENMT 6XX 3 (3-0-6)	Elective_2
Total=12 credits		Total=12 credits	
1 st semester/ Year 2		2 nd semester/ Year 2	
ENMT 698 9 (0-36-0)	Thesis	ENMT 698 3 (0-12-0)	Thesis
Total=9 credits		Total=3 credits	
TOTAL=36 CREDITS			

Table 2 Thesis Plan and Tentative Schedule/Activities

Activities	Year 2							
	Semester 1 (4 months)				Semester 2 (4 months)			
	1	2	3	4	5	6	7	8
1. Appointment for initial advisor	✓							
2. A proposal development	✓	✓						
3. Proposal defense and committee appointment			✓					
4. Data collection			✓	✓	✓			
5. Thesis writing	✓	✓	✓	✓	✓	✓	✓	✓
6. Attending in the international conference and published a full paper proceeding							✓	✓
7. Thesis defense							✓	✓
8. Submission required documents for graduate and other processes							✓	✓

Remark: Thesis is recommended to be in accordance with the philosophy of the program and related to climate change issue but not limited to other environmental issues.

2. Course Content

2.1 Preparation course (Audit)

Audit (lecture-practice-self-study)

ENMT630 Fundamental of Environmental and Natural Resource Management 1(1-0-2)

Fundamental of natural resources and environmental management, critical issues or problems, limitation of the natural resources exploitation, environmental management edges, ASEAN and international development impact on regional natural resources and environment, measures for sustainable development of natural resources and environment

2.2 Require course

Credit (lecture-practice-self-study)

ENMT 631 Industry Ecology and System Approach

3 (3-0-6)

Concept and principle of industrial ecology, natural system dynamic, components and functions of system, goal of system; boundary and characteristics of a system, system dynamics, system analysis, relationships of society to industry and development, material and energy flows in industrial and ecological systems, material flow analysis, life cycle assessment, supply chain management, clean technology, waste minimization, eco-efficiency; eco-design; carbon label and carbon footprint; eco-industry; green in industry

ENMT 632 Environmental Risk Management

3 (3-0-6)

Environmental risk assessment concepts and processes; risks affecting environment, community, stakeholder analysis; organizations; economic performance and professional reputation; risk assessment techniques; framework and a process for managing risk; risk control and treatment; risk management standard and clauses; related standards, guidelines for internal or external audit programs; principles for effective management and corporate governance; risk management practices

ENMT 633 Applied Economics for Natural Resource Sustainability

3 (3-0-6)

Concept of economics for natural resources; population and environment, agriculture and food; scarcity and abundance of resources; energy sector; renewable resources using in the fisheries and forestry sector; policy and industrial ecology; trade and development impacts to water resource; institutions for sustainable development and sufficiency economy; sustainable development goals; application of the principles of sustainable economic management to environmental and resource issues

ENMT 634 Holistic Resources Inventory and Environmental Survey

3 (3-0-6)

Learning process and integration of multidisciplinary and interdisciplinary; integration of theory and resources inventory and environmental survey; geography, geology and geomorphology; pedology; hydro- meteorology; forest and wildlife; socio- economic and population; sustainability of resource use issues; integrated approaches and survey methods; practical exercise

ENMT 635 Environmental Management and Technology in Practicum 3 (0-6-3)

Learning process and integration of concepts, principle and theory approach to environmental management and technology; field investigation and survey; natural resources and environmental quality analysis; investigation of the growth and development or change in the short-term and long-term of human and ecology; Instrument approach; procedure; systematic survey; analysis of natural resources and environment quality; field study

ENMT 636 Integrated Research for Environmental Management and Technology 3 (3-0-6)

Multi-disciplinary of research methodology for environmental management and technology; types of research, observational research, experimental research, qualitative research; research design; problem analysis; research question and hypothesis; data collection, data management and analysis; research proposal development; literature review; research ethics; ethics of environmentalist; the art of communication and presentation

2.3 Elective course

Credit (lecture-practice-self-study)

ENMT 637 Environmental Management Systems 3 (3-0-6)

Principle of environmental management systems (EMS); environmental aspect assessment; environmental legislation; environmental management systems standard and clauses; related standards; audits-definition and principles; audit planning; pre-audit process; audit review; conducting the main audit; audit report and follow-up; accreditation; certification and auditor competence; eco management and audit scheme regulation requirements

ENMT 638 Energy Management System Standard 3 (3-0-6)

Energy use and consumption; Tackle climate change; Conserve resources and integrated energy management; Development of an energy management system; Efficient use of energy policy development; Energy performance; Energy efficiency; Energy management systems standard and clause, related standards; Guidance for small and medium enterprises/ SMEs implementing energy management and efficiency measures; Management system model

ENMT 639 Occupational and Health Management System**3 (3-0-6)**

International occupational and health/ OH&S management system and development; importance and benefits; organizational performance enhancing challenges and improvement of stakeholder satisfaction; occupational and health management systems standard and clauses; related standards; an apply occupational and health management system for organization

ENMT 640 Food Safety Management System**3 (3-0-6)**

Food chain and aspects; the safety of the global food supply chain; food safety and its stated food safety policy; planning, implementation, operating; maintenance and updating a food safety management system; evaluating and assessment of customer requirements and satisfaction; effective communicating food safety issues to their suppliers; customers and relevant interested parties in the food chain; food safety management systems standard and clauses; related standards

ENMT 641 Sustainable Forest Management Standard System**3 (3-0-6)**

Concept of sustainable forest management standard system; the core values of the forest management or forest management system/ FM; systems and performance approach to FM certification; benefits of forest certification; indigenous peoples' rights; social and environmental impacts; high conservation value forests; stakeholder identifying and analysis; forest management systems standard and clauses; related standards, the role of auditors; auditing work; relating findings to standard elements; selecting sites for the field audit; compiling the audit documentation and the FM certification report; raising corrective action requests/ CARs; controlled wood in forest management; audit planning; follow up on CARs

ENMT 642 Social Responsibility Standardization and Sustainable Development Goals**3 (3-0-6)**

Concepts, terms and definitions related to social responsibility; background, trends and characteristics of social responsibility; principles and practice; the core subjects and issues of social responsibility; integrating, implementing and promoting socially responsible; identifying and engaging with stakeholders; internal and external communication; performance and other information related to social responsibility; sustainable development goals; social responsibility contribute to the sustainable development goals

ENMT 643 Sustainable Events Standard**3 (3-0-6)**

Concept and benefit of sustainable events; green meetings guideline and sustainable events; managing and communicating sustainable events; implementing sustainable events; Climate neutral and climate friendly events; generating of significant waste impact to local communities; socio-economic and environmental impact from sustainable events; sustainable events standard, clause and approach; sustainable events checklists and report; best practice of sustainable events

ENMT 644 Environmental communication for Social Change**3 (3-0-6)**

Concepts and elements in environmental communication; relationships between communication and environment; environmental communication psychology; communication for environmental and social change; sustainability communication; diffusion and adoption of environmental innovations; communication for low carbon society; climate change communication; integrated marketing communication and green industry; communication for environmental and natural resources conflict resolution

ENMT 645 Solid and Hazardous Waste Management**3 (3-0-6)**

Characteristics of solid and hazardous waste; principles of integrated waste management; waste minimization; reuse/ recycle, collection, storage, transfer and transport, separation, incineration, composting; disposal, landfill site selection; design, operation, monitoring; landfill closure; treatment processes for hazardous waste; regulation and techniques associated with the management of solid and hazardous waste; special waste management; construction and demolition waste management; disaster waste management

ENMT 646 Technology for Water Quality Management**3 (3-0-6)**

Fundamentals of organic chemistry in the environment; water quality and problems; water quality standard; laws and regulations for water quality management; water treatment system and design; wastewater treatment; technologies for water quality management; advance of wastewater treatment technologies; innovation treatment technologies

ENMT 647 Soil Resource and Land Use for Sustainable Industry**3 (3-0-6)**

Problems of soil resources; soil forming factors and processes; the human impact on soils; theories of land use; industrial location models; structure and location; Industry change; the

effects of rapid industrialization; industry and the environment; ecological and environmental impact of industrial land use; the concept of sustainable industrial land use; modeling of industrial land use planning; analysis and evaluation process of sustainable industrial land use

ENMT 648 Biodiversity Conservation and Management

3 (3-0-6)

Concepts and theories of biodiversity; biodiversity value; threats to biodiversity; habitat loss; exotic species; disease; population ecology overexploitation, small population; biodiversity management, protected area management and establishing, biodiversity conservation outside protected areas; biodiversity conventions, laws and regulations

ENMT 649 Ecosystem Restoration

3 (3-0-6)

Concepts and theories of ecosystem restoration; impacts of human on ecosystems; habitat destruction, degradation, and pollution in ecosystems; measurement and monitoring on ecosystem changes; rehabilitation in aquatic; forest and wetland ecosystems; wildlife captive breeding techniques and reintroduction; techniques in reforestation and corridor construction; project measurement and monitoring; synthesis on case study of ecosystem restoration

ENMT 650 Sustainability and Ecosystem Health

3 (3-0-6)

Principle conceptual of ecosystem health and sustainable human society based on the fluctuation of ecosystem health; flexibility of sustainable development by monitoring ecosystem health under the complex social adaptability; social adaptation to the vulnerable and changes in ecosystem health; indicators of human society sustainability reflected by the good health ecosystem

ENMT 651 Climate Change and its Impact

3 (3-0-6)

Climate change; natural forcing and human activities; industrial evolution, climate rapidly changed, natural phenomena; El Niño-La Niña; volcanic eruption, convention and protocol; impact on climate change to human being, natural resources and environment, mitigation options, adaptation and vulnerability

ENMT 652 Disaster Management

3 (3-0-6)

The evolving approaches in disaster management; global disaster trends; natural disaster trends, technological disaster trends, factors influencing disaster trends; paradigm shifts in

understanding and managing disasters; disaster management models; ethics; values and accountability; hazard assessment; vulnerability and capacity assessment; early warning system; disaster risk information system; public awareness and disaster risk communication; disaster management and development

2.4 Thesis

Credit (lecture-practice-self-study)

ENMT 698 Thesis

12 (0-48-0)

Research topic identification for environmental management and technology of research objectives; literature review; research design; validity and reliability of the research; data collection, data analysis and synthesis; research writhing; research presenting and publishing in standard journal or academic publication or presenting on the academic conference; ethics of academic presentation

Graduation Conditions:

8.1.1 Total time of study should not exceed the study plan.

8.1.2 Students must complete at least 24 course credits as stated in the curriculum as well as a thesis (12 credits) for a total of 36 credits with a minimum CUM-GPA of 3.00.

8.1.3 Students must meet the English Competence Standard of Graduate Students, Mahidol University defined by the Faculty of Graduate Studies, Mahidol University.

8.1.4 Students must participate in soft skill development activities of the Graduate Studies, Mahidol University.

8.1.5 Students must submit a thesis and pass a thesis defense by following the Regulations of Mahidol University on Graduate Studies.

8.1.6 These are required to be published in an international academic journal or a full paper of proceeding in international conference that is listed and accepted by the Faculty of Graduate Studies, Mahidol University.

Applicant Qualifications:

9.1 Hold a Bachelor's degree in any field of study;

9.2 Have a cumulative GPA not less than 2.50;

9.3 Have an English Proficiency Examination score as the requirement of Faculty of Graduate Studies;

9.4 Applicants with other qualifications may be considered by the Program Director, committee, and the Dean of Faculty of Graduate Studies.

Document Required:

Additional required documents for the program application are as follows:

1. A concept paper expected to do research (should be relevant to the philosophy of the program and/or Climate Change issues)
2. A motivation letter or purpose of study
3. A job expectation after graduate
4. Expectation from the program excluding financial issues
5. IELTS or TOEFL scores (If any)
6. Transcript (provide by TICA)
7. Recommendation Letter (provide by TICA)
8. English proficiency test (provide by TICA)
9. Application form (provide by TICA)

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Science Program in Innovative Food Science and Technology

Course Title: Master of Science Program in Innovative Food Science and Technology

Master Degree: Master of Science (Innovative Food Science and Technology)

Academic Institution: School of Agro-Industry, Mae Fah Luang University

Duration: 2 years (August 2022 – May 2024)

Background and Rationale:

Agricultural and food industry is the basic source of the food supply of all the countries in the world. The demand for food is increasing at a fast rate, therefore, it is one of the important industries in the world and especially in Thailand. The prosperity of this industrial sector contributed considerably to fostering the economic advancement of the countries. It engenders income for the population who work in the relevant parts of the supply chain. Thailand aims to be the center of food production in ASEAN and has a gross food product of 1.42 trillion Baht or an increase of 4% per year. Currently, the total economic value of the food processing industry is more than 5 trillion baht each year. In 2019, Thailand was the 11th largest food exporter in the world. Throughout our history we can trace back development and research for better food supply, management, and safety as the world population has risen while our access to resources remains the same or in some areas has even decreased. In recent years, the world has witnessed a global food crisis which creates a knock-on effect on people, society, and the environment. Being aware of the importance of the issues, the United Nations has announced Sustainable Development Goal 2: to “end hunger, achieve food security, improve nutrition and promote sustainable agriculture”, all of this reflects well how the agricultural and food industry is a prerequisite for people’s wellbeing. Therefore, promoting research and development that requires knowledge in food science and technology will not only ensure food security but more importantly will drive the agricultural and food industry in Thailand to become a global market leader in the future.

Surrounded by flourishing agricultural communities, Mae Fah Luang University takes an active role in the agro-industry with pride. The Master of Science Program in Innovative Food Science and Technology focuses on applying basic scientific knowledge to strengthen the agricultural and food industry of the country through research, development, and innovation. Therefore, the curriculum has been designed and developed according to the constructivist educational approach where knowledge and skills of learners will be developed from within the learner through real practices. Therefore, the Master of Science program in Innovative Food Science and Technology aims to create and develop human resources in the agricultural and food industry with professional morals and ethics. Students can apply the knowledge to solve problems in industry or work with others to further develop the agricultural and food industry.

The Master of Science Program in Innovative Food Science and Technology provides you with an understanding of modern food production and prepares you to work in various aspects of food research and development. A wide range of learning environments is available to students, including lectures (small degree programs with an excellent student-teacher ratio), tutorials, modern laboratory, and pilot plant practicals, factory visits, visiting scholars, and academic activities. This degree has strong links to Thailand's food industry leaders. With input from industry partners, you’ll create new products, develop manufacturing processes, or design foods of the future with a focus on taste, health, sustainability, food quality, and food safety. Lecturers are active researchers who'll share the latest knowledge in food safety and quality management, food chemistry, food microbiology, functional food and nutrition, food processing technology,

food product development, future food, and Geographical Indications (GI) products. In order to further expand and improve successful ongoing research projects as well as to create sustainable synergies, the program is engaged in successful and intense cooperation with excellent partners in both the national and global academic realm, including; Chiba University, Shinshu University, Tokyo University of Marine Science and Technology, Kagoshima University, Japan; Korea University, Sejong University, Kyungnam University, Korea, Bogor Agricultural University, Indonesia; Universiti Teknologi Mara, Malaysia; Universiti Putra Malaysia, Malaysia; Hohenheim University, Germany; Mendel University in Brno, Czech Republic, and IUT Lyon 1 - site de Bourg en Bresse, AgroSup Dijon, France.

Objectives:

The aims of this program are to educate the students to have the knowledge, expertise, and potency in food science and technology; and to be able to apply their skills and advanced knowledge to a food-related workplace situation, as well as create knowledge, innovation, research and development of food products to the global challenges associated with feeding the world by contributing to meet the provision of high-quality, safe and nutritionally valuable food and food products; and be able to work with others in a multicultural society, realize morality, ethics, and professional ethics.

Course Synopsis and Methodology:

1. Study plan

Study Plan for Master of Science (Innovative Food Science and Technology) for Academic Year 2022

Plan A1 (Research only)

Year 1					
Semester 1 (Aug-Dec, 2022)			Semester 2 (Jan-May, 2023)		
Course code	Course title	Credit	Course code	Course title	Credit
1403798	Thesis	6 (0-18-6)	1403794	Seminar 1	0 (1-0-2)
			1403798	Thesis	12 (0-36-12)
Total (credits)		6	Total (credits)		12

Year 2					
Semester 1 (Aug-Dec, 2023)			Semester 2 (Jan-May, 2024)		
Course code	Course title	Credit	Course code	Course title	Credit
1403798	Thesis	12 (0-36-12)	1403798	Thesis	6 (0-18-6)
1403896	Seminar 2	0 (1-0-2)			
Total (credits)		12	Total (credits)		6

** Submit and present thesis proposal within Dec, 2022 and start conducting research from Jan, 2023 to April, 2024. Defend thesis within May, 2024*

Plan A2 (Course works and research)

Year 1					
Semester 1 (Aug-Dec, 2022)			Semester 2 (Jan-May, 2023)		
Course code	Course title	Credit	Course code	Course title	Credit
1401704	Advanced Statistics and Experimental Design for Agro-Industry	3 (3-0-6)	1403799	Thesis	3 (0-9-3)
1401705	Research Methodology for Agro-Industry	3 (3-0-6)	140xxxx	Elective 1	3 (x-x-x)
1402813	Advanced Food Analytical Techniques	3 (2-3-5)	140xxxx	Elective 2	3 (x-x-x)
1403801	Emerging Food Processing Technologies	3 (3-0-6)	140xxxx	Elective 3	3 (x-x-x)
1403794	Seminar 1	0 (1-0-2)			
Total (credits)		12	Total (credits)		12

Year 2					
Semester 1 (Aug-Dec, 2023)			Semester 2 (Jan-May, 2024)		
Course code	Course title	Credit	Course code	Course title	Credit
1403799	Thesis	6 (0-18-6)	1403799	Thesis	3 (0-9-3)
1403896	Seminar 2	0 (1-0-2)			
140xxxx	Elective 4	3 (x-x-x)			
Total (credits)		9	Total (credits)		3

* Submit and present thesis proposal within May, 2023 and start conducting research from June, 2023 to April, 2024. Defend thesis within May, 2024.

Plan B (Course works and research by independent study)

Year 1					
Semester 1 (Aug-Dec, 2022)			Semester 2 (Jan-May, 2023)		
Course code	Course title	Credit	Course code	Course title	Credit
1401704	Advanced Statistics and Experimental Design for Agro-Industry	3 (3-0-6)	140xxxx	Elective 3	3 (x-x-x)
1403801	Research Methodology for Agro-Industry	3 (3-0-6)	140xxxx	Elective 4	3 (x-x-x)
1403794	Seminar 1	0 (1-0-2)	140xxxx	Elective 5	3 (x-x-x)
140xxxx	Elective 1	3 (x-x-x)	140xxxx	Elective 6	3 (x-x-x)
140xxxx	Elective 2	3 (x-x-x)			
Total (credits)		12	Total (credits)		12

Year 2					
Semester 1 (Aug-Dec, 2023)			Semester 2 (Jan-May, 2024)		
Course code	Course title	Credit	Course code	Course title	Credit
1402813	Advanced Food Analytical Techniques	3 (3-0-6)	1403898	Independent Study in Food Science and Technology	6 (0-18-18)
1403801	Emerging Food Processing Technologies	3 (2-3-5)			
1403896	Seminar 2	0 (1-0-2)			
Total (credits)		6	Total (credits)		6

2. Course Content

1) Thesis

1403799 Thesis 12 (0-36-12)

Research on a food science and technology topic pertinent to individual interest under the supervision and approval of advisory committee; research progress presentation every semester of the thesis enrollment; thesis defense; thesis submission; thesis or part of the thesis published in an academic conference proceeding or accepted for publication in an academic journal with peer review.

1403898 Independent Study in Food Science and Technology 6 (0-18-18)

Independent study on an approved food science and technology related topic pertinent to individual interest under the supervision and approval of advisory committee; research defense and submit after completion; prepare research output for publishing in the proceedings format of national/international conference and/or manuscript for peer review national/international journal publication.

2) Core courses

1401704 Advanced Statistics and Experimental Design for Agro-Industry 3 (3-0-6)

Principles of experimental design and statistical analysis for Agro-Industry; techniques in experimental design including completely randomized design (CRD), randomized complete block design (RCBD), factorial design, fractional factorial design, Latin square design, split plot design, and balance incomplete block design (BIB); multiple linear regression, discrete model regression, multivariate analysis, principal component analysis, and cluster analysis.

1401705 Research Methodology for Agro-Industry 3 (3-0-6)

Concepts and approaches for research project for food industry; research ethics; planning and management of the research project; research process and techniques; industrial problem-based proposal development; data collection, analysis and assessment; intellectual property management; report and article writing for publication; technology transfer to manufacturers; review and evaluate innovation and advance for food industry; presentation and report submission.

1403801 Emerging Food Processing Technologies 3 (3-0-6)

Principles of recently developed food processing including thermal processes e.g. ohmic heating, radio frequency, infrared frequency, pressure assisted temperature sterilization and microwave assisted thermal sterilization; non-thermal processes e.g. high pressure processing, cold plasma, pulse electrical fields, electron beam, membrane separation, supercritical fluid extraction, aseptic system; automatic control and artificial intelligence for food industry; industrial visit.

1402813 Advanced Food Analytical Techniques 3 (2-3-5)

Theory and advanced concept of food analysis by modern analytical techniques; electrochemistry; biosensor; spectrophotometry, Fourier transform infrared, near infrared, UV-visible, atomic spectrophotometry, inductively couple plasma; mass spectrometry; chromatography, liquid chromatography, gas chromatography; hyphenated techniques; comprehensive chromatography, recent and trends of modern analytical techniques.

1403794 Seminar 1 0 (1-0-2)

Study and selection of currently interesting research issues in food science and technology or related area; scientific data searching; oral presentation; report submission.

1403896 Seminar 2 0 (1-0-2)

Literature search, discussion and thesis progress presentation.

3) Elective courses can be divided into 3 groups of subjects. Student can choose.**3.1) Food Industrial Technology and Innovation****1403701 Food Industrial Research Project 6 (0-18-6)**

Study, analyze, and find the source of problems in agri-food business; literature review for designing an experiment; solve the problems related to food science and technology under guidance of the student's advisor; equivalent of a 6-credit laboratory subject workload for all activities.

1403702 Professional Experience in Agro-Industry 3 (0-9-3)

Experienced in a food factory, government sector or other organizations related to agro-industry for at least 1 year; a written report and oral presentation to the committee on the topic related to students' knowledge and experiences.

1403703 Advanced Professional Experience in Agro-Industry 6 (0-18-6)

Experienced in a food factory, government sector or other organizations related to agro-industry for at least 3 years; a written report and oral presentation to the committee on the topic related to students' knowledge and experiences.

1403704 Big Data Analytics for Agro-Industry 3 (3-0-6)

Big data definition; collection of big data; data storage analysis; data visualization; application of big data in food safety; application of big data in food processing and engineering; application of big data in food product development and marketing.

1403705 Project Management Professional for Agro-Industry 3 (3-0-6)

Project initiation and planning; plan and define project scope; validate and control scope; define and sequence activities; develop the project schedule; creating a project budget; planning quality management; quality methodologies and standards for project management; plan and acquire resources; plan and manage communications; monitor project communications; project risk analysis; planning stakeholder; managing stakeholder engagement.

1406702 Food Business Management 3 (3-0-6)

Supply chain and logistic management in food business; consumer insight and analytics; food business model development and creativity; business model canvas; strategic marketing management; cost structure and strategy management; global food business trade and retail marketing management; business pitching strategy; entrepreneurship and food business startup; e-commerce.

1405701 Quality Control Design in Food Industry 3 (3-0-6)

Overview of food quality; concepts of quality management systems; quality control; quality design; quality policy and business strategy; quality audit; quality cost; patterns of quality control and management in food industry; trends in food quality control.

1405702 Food Safety and Standards for Global Market 3 (3-0-6)

General and global food standards; standards related with export and import food products; Free Trade Area (FTA); food safety and standard trends, The Global Food Safety Initiative (GFSI), The Safe Quality Food (SQF), Global Aquaculture Alliance Seafood Processing, Global Red Meat Standard (GRMS), Japan Food Safety Management Association (JFSM), etc.

1403706 Valorization of Food Processing By-products 3 (3-0-6)

The most recent advances in the field of food processing by-products; the urgent need for sustainability within the food industry; wastes in food sector and how to minimize; the handling and management of by-products; waste and by-products valorization; value added ingredients recovered from by-products; the success stories and solutions of different food processing by-products utilization as food and feed ingredients; regulatory issues and concerns of valorization of food processing by-products.

1403795 Advanced Food Product Innovation 3 (2-3-5)

Consumer concept for food product development; accelerating food product design and development; new tools for food product development; appropriate design strategy; optimizing new food product design, design quality in food product development process; business plan.

1404760 Shelf Life Prediction of Food Products 3 (2-3-5)

Quality of food and shelf life stability; quality tests; factors affecting shelf life of food products; diffusion theory of particles; role of water activity and accelerated food shelf life testing techniques; sorption isotherm; reaction kinetics occurring in foods; testing and prediction of product shelf life using mathematical models.

1404761 Innovations in Food Packaging 3 (2-3-5)

New technologies in food packaging; mass transfer of gas and solute through packaging materials; quality of packed foods; active packaging research and development; smart packaging technologies; edible and biodegradable coating and films; commercial aspects of new packaging technologies.

1406770 Consumer Trends and Technology 3 (3-0-6)

Principles of consumer science; consumer behavioral models; consumer perception, learning, memory, motivation, and attitude; consumer decision making process and group influence; effect of income, social class, subculture and culture on consumption; methods of data collection; application of qualitative, quantitative and mixed method for designing and planning of consumer data collection; use of consumer questionnaires; consumer study design; case study for food industry.

1403707 Tea Science and Innovation**3 (2-3-5)**

Tea processing, tea biochemistry and analysis, tea and health benefit, tea flavor, tea brewing, tea tasting, tea extract process, tea extract innovation and its application.

1403708 Coffee Technology**3 (2-3-5)**

History of coffee; types and coffee variety; coffee planting and farm management; primary coffee processing; secondary coffee processing; roasting; brewing; storage and packaging; flavor profile and cupping; coffee chemistry; quality control and analysis; global trends and marketing; emerging technology and current issues.

1403709 Economical Northern Fruits and Vegetables Technology**3 (2-3-5)**

Important economical Northern fruits and vegetables in Thailand, garlic, potato, onion, shallot, longan, pomelo, tangerine, pineapple; production situation; consumption trends; problems and obstacles in the global market; important postharvest technology, current and novel technology; related quality systems and standards; principles of logistics management; case studies in the production and processing; industrial visit.

1403710 Future Foods**3 (3-0-6)**

Future trends in food consumption; innovative food formulations (synthetic food, genetic engineering, 3D food printing, biotechnology approaches); alternative protein source (plant-, insect- and cell-based protein); food for specific needs; brain and beauty foods; regulation for novel foods; challenges of food science and technology in future foods.

1403719 Nanotechnology in Food**3 (3-0-6)**

The fundamentals of nanotechnology from historical development; concepts and principles to nanomaterial; property characterization; the application of nanotechnology in food.

1406759 Perception and the Chemical Senses of Food Products**3 (3-0-6)**

Anatomy, physiology, psychophysics and genetics of the chemical senses related to food perception; relation between the chemical senses and food intake; chemical senses in special populations (infants, children, elderly, athletes and clinical populations).

1403720 Starch and Hydrocolloids in Designing Food Products**3 (2-3-5)**

Role of starch and hydrocolloids in designing food products; functionality and molecular structure of starch and hydrocolloids; interactions of starch and hydrocolloids in food systems; structure-function relationship of starch and hydrocolloids in food products; modification of food properties using starch and hydrocolloids; factors influencing properties of starch-hydrocolloids blended systems; starch and hydrocolloids applications in designing the desirable food product properties.

1402703 Trends in Food Science and Technology**3 (3-0-6)**

Review and evaluate critical current issues in food science and technology; presentation, discussion and report submission.

1402702 Principles of Food Science and Technology**3 (3-0-6)**

Introduction; principles in food chemistry, food microbiology, food engineering and food processing; related issues in food science and technology; case studies.

1403721 Global Food Industry**3 (3-0-6)**

Food industry overview; important food industry sectors (cereal and bakery, meats, fish, poultry, fruits and vegetables, sugars and other sweets, non-alcoholic and alcoholic beverages, fats and oils and dairy products); world leaders in food industry; current situation and trends in food industry; industrial visit.

1409701 Agricultural Logistics Management**3 (3-0-6)**

Agricultural supply chain; agricultural forecasting; crop planning and scheduling; warehousing and inventory management for perishable products; transportation management and material handling systems; partnership systems in the agricultural supply chain; information management in the agricultural supply chain.

3.2) Food Chemistry and Nutrition**1402732 Chemistry of Food Macronutrients****3 (2-3-5)**

Composition, structures, reactions and functional properties of proteins, carbohydrates and lipids in food systems; analytical techniques, isolating, identifying, quantifying of these compositions; mechanisms of the effect of processing and storage conditions on the properties of proteins, carbohydrates and lipids; interactions among these components in foods; roles on interactions on food stabilization; related current technology.

1402814 Functional Foods and Nutraceuticals**3 (3-0-6)**

Definition and classification of functional foods and nutraceuticals; sources, and health benefits of bioactive components; nutraceutical extraction and isolation; impact of processing on the bioavailability of functional and nutraceutical ingredients in foods; novel technology to retain activity in the food; development and marketing of functional foods; efficacy and safety of functional foods and nutraceuticals; functional foods and nutraceuticals regulations.

1402815 Applied Food Proteins Chemistry**3 (2-3-5)**

Food proteins; amino acids, peptides, and proteins; physical, chemical and processing-induced changes in proteins; functional properties of food proteins; biologically active peptides from food proteins; protein and peptide-based antioxidants; nutraceutical aspects of food proteins.

1402704 Alternative Protein Food**3 (2-3-5)**

Overview of food proteins; alternative protein sources; the issue of protein fractionation and isolation; technofunctionality and application scenarios; mimicking fat systems, texture and mouthfeel; nutritional aspects; the consumer view and adoption behavior; current status and future trends of alternative protein food.

1402705 Dietary Phytochemicals and Chemopreventive Role**3 (3-0-6)**

Phytochemicals in food; bioaccessibility and bioavailability of phytochemicals; carcinogenesis; cancer chemoprevention mechanisms (in vitro and in vivo study); chemopreventive role of phytochemicals; drug interaction; current research of dietary phytochemicals.

1402706 Metabolomics in Food Research**3 (2-3-5)**

GC/MS-, LC/MS- and NMR- based metabolomics; Experimental design; sample preparation; data acquisition; pre-processing; metabolite analysis; chemometrics; practical laboratory on plants and microbial metabolite analysis.

1402707 Lifecycle, Nutrigenetics and Personalized Nutrition**3 (3-0-6)**

Nutrition throughout the life cycle; introduction of nutrigenetics; the effects of nutrients on genome, proteome and metabolome; the relation between the genetic factors and disease development such as chronic-degenerative, osteoporosis, neurological, obesity, insulin resistance and cardiovascular disease; the role of lifestyle factors in various chronic diseases, including cancer, bone disease, obesity and diabetes; personalized nutrition; current issues.

1402708 Food Structures, Digestion and Health**3 (2-3-5)**

Food structures in natural and processed foods and their behavior during processing; impact of food structures and matrices on nutrient uptake and bioavailability; modelling of the gastrointestinal tract; food development to meet the modern challenges of human health.

Graduation Conditions:

- Complete all required courses
- Thesis oral defense
- Thesis submission
- English language: MFU-TEP 65 / TOEFL (IBT) 72 / TOEFL (ITP) 543 / IELTS 6 or English score from other sources (see the MFU announcement)
- Publication (s): Journal (with peer review) or Proceedings in the International Conference or Patent

Applicant Qualifications:

Students with a bachelor's degree in Food Science, Biology, Chemistry, Biochemistry, Nutrition, Biotechnology, Agricultural and related fields with cumulative undergraduate GPA ≥ 2.5 and TOFEL score ≥ 450 are encouraged to join the program. The program admissions committee makes all admission considerations on a case-by-case basis.

Document Required:

- Application affixed with photographs;
- A copy of transcript from attended institutions
- Evidence of English proficiency, TOEFL exam or others
- Statement of purpose
- Letters of recommendation from referee
- A copy of passport

Contact:

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E-mail: tipp@mfa.mail.go.th

***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Science in Agricultural Research and Development

Course Title: Master of Science in Agricultural Research and Development
(International Program)

Master Degree: Master of Science (Agricultural Research and Development)

Academic Institution: Faculty of Agriculture at Kamphaeng Saen, Kasetsart University,
Kamphaeng Saen Campus

Duration: 2 years (4 semesters) (August 2022 – July 2024)

Background and Rational

1. Agricultural Research and Development Program is the research study which response to national and international development strategy for food security and sustainable agricultural development

2. Agricultural development

Global climate change affects soil fertility, water shortage, the reduction of agricultural product quality, pest outbreak. These cause effects to food security, health, energy and the reduction in a strategy of self-reliance. Thus, we need to develop human resources with agricultural knowledge and research skill.

Objectives:

1. To develop human resources with knowledge and research skill in agricultural development in relation to industrial agriculture, sustainable agriculture, self-sufficient agriculture, application of traditional knowledge in agriculture and development of a unique agricultural product of a local community.

2. To cover the whole range from agricultural production through consumer need which would lead to the security of food, society, and the country as a whole. Integration of a modern bioscience, agricultural science, and other technologies is emphasized in the learning process.

3. The program consists of various fields including **Entomology, Agricultural Machinery, Soil Science, Agronomy, Horticulture, Plant Pathology, Animal Science and Agricultural Extension and Communication.**

Course Synopsis and Methodology:**1. Study Plan**

Plan A1: total credits minimum of 36

FIRST YEAR / 1st semester		
Course code	Course Title	Credits
02047591	Research Methods in Agricultural Research and Development	(3)
02047599	Thesis	6
	Total	6
FIRST YEAR / 2nd semester		
Course code	Course Title	Credits
02047597	Seminar	(1)
02047599	Thesis	10
	Total	10
SECOND YEAR / 1st semester		
Course code	Course Title	Credits
02047597	Seminar	(1)
02047599	Thesis	10
	Total	10
SECOND YEAR / 2nd semester		
Course code	Course Title	Credits
02047599	Thesis	10
	Total	10

2. Course Content / Study Topics**Curriculum**

Plan A1: A research oriented program

Total credits minimum 36credits

- Major courses minimum 5 audits
(without credits counting in total)

- o Seminar 2 audits

- o Compulsory courses 3 audits

- Thesis minimum 36 credits

Details of the Curriculum

- Major courses minimum 5 audits

02047591 Research Methods in Agricultural Research and Development 3(3-0-6)

02047597 Seminar 1,1

- Thesis minimum 36 credits

02049599 Thesis 1-36 credits

Course Description:

02047591	Research Methods in Agricultural Research and Development	3(3-0-6)
	Research principles and methods in agricultural research and development, problem analysis for research topic identification, data collecting and research planning, identification of samples and techniques, research analysis, result explanation and discussion, report writing, presentation and preparation of journal publication.	
02047597	Seminar	1
	Presentation and discussion on current interesting topics in agricultural research and development at the master's degree level.	
0204599	Thesis	1-36
	Research at the master's degree level and compile into thesis.	

Graduation Conditions:

1. Students are required to submit their thesis and successfully pass a final oral examination conducted by a committee appointed by The Graduate School. The final oral examination must be held openly and interested people can attend the examination.
2. Students achieve either publication, or at least approval for publication of thesis, or parts thereof, in acceptable national or international journals as announced by the Office of the Higher Education Commission on "The Criteria of Academic Journal for Publication Consideration"
3. Students are required to pass the English language examinations set forth by The Graduate School in at least one of the following choices:
 - 3.1 The Graduate School permits a transfer of both written and oral examinations for master's degree students from KU-EPT, TOEFL, IELTS, or other examinations as required by The Graduate School. *or*
 - 3.2 Enrollment in an English class as required by The Graduate School and need to pass the pertinent examinations.

Application Qualifications:

1. Applicant must hold a bachelor's degree in agriculture or the relevant fields with good academic background and a potential to conduct research and meet the university's admission requirements.
2. Qualification requirements of applicants are subject to Kasetsart University Regulations on Graduate Studies of The Graduate School, Kasetsart University.

Document Required:

1. Application form (<http://www.grad.ku.ac.th/en>)
2. Certificate of Bachelor's degree indicating graduate date.
3. Transcript record of Bachelor's degree indicating graduate date.
4. Curriculum Vitae.
5. Conceptual proposal of research interested.
6. Recommendation Letter.

Contact:

Contact persons for Academic

- Asst.Prof. Buppa KONGSAMAI (agrbpk@ku.ac.th)
- Ms. Lalida MASIRI (fagrlm@ku.ac.th)

For more information:

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Thailand International Cooperation Agency (TICA)
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Course Detail

Master of Public Health Program

Course Title:	Master of Public Health Program
Master Degree:	Master of Public Health: MPH
Academic Institution:	College of Public Health Sciences, Chulalongkorn University
Duration:	1 year (August 2022 – July 2023)

Background and Rational:

The Master of Public Health program focuses on the development of public health personnel. And related fields to have knowledge and ability to develop the health system of the population in society, both national and international Have systematic problem solving skills Focus on specialization Which can be applied in conjunction with modern academics Both administrative And research for development Along with co-operation between personnel in various fields Related to public health Leading to problem solving National and international public health Both in the prevention of disease And sustainable promotion of good health of the people By offering specialties in Public Health and Management, Community and Reproductive Health, Urban and Global Health, Environmental and Occupational Health, the trimester-based program provides a variety of types and duration of study to respond to students' needs as follow:

Health Policy and Management Program is committed to training and inspiring the next generation of health care leaders. Our students and faculty are passionate about making the world a better place by improving health and health care. We work on compelling and important problems, from making the delivery of care safer and more efficient, to expanding health insurance coverage and eliminating disparities, to designing and improving the performance of entire health systems

Community Assessment and Reproductive Health is designed to provide an understanding of community health and reproductive health and population issues as well as the knowledge necessary for understanding community health needs and reproductive health interventions. The program will also explore and examine community, national and global challenges relating to the social, cultural and economic context influencing community health and reproductive health.

Community Assessment consists of Basic Concepts of Community, Community Structure, How to Approach Community, Community Mapping, Social Mapping, Social and Cultural Characteristic of the Community , Community Participatory Appraisal, Community Assessment, and Prioritization of Community Problems.

The Reproductive Health is composed of Introduction and Enhancing Access to Reproductive Health, Family Planning, Maternal and Child Health, Adolescent Health, Unwanted Pregnancy and Abortion, Preventing HIV/AIDS in Young People, Cancer of Reproductive system, and Aging Care.

Urban and Global Health puts an effort to gear students, both M.P.H and Ph.D, toward a plethora of urban and global health topics, ranging from economics, politics, social, cultural, and environmental aspects. Specializing in Urban and Global Health key courses will enable the students to become continuing life-long self-learners when coping with public health issues in one's areas of responsibility in an integrated manner.

Environmental and Occupational Health focuses on environmental issues and management that improve public health and minimize adverse human impacts. These impacts of exposure to environmental pollution are the number one public policy issue in the Kingdom of Thailand and several countries. The public, private, and academic sectors are all striving to improve the ability to understand our environments and to protect them. The integrated course consists of Environmental and Occupational Health, Environmental Epidemiology, Exposure Assessment, and Human Impact Assessment. Consequently, the primary goal of the program is to train qualified professionals with expertise in environmental and occupational health. This includes the hazard identification, the recognition of at-risk populations and the prevention of exposure. Many kinds of toxic agents are encountered both in the community and in the workplace, but there are significant differences in the circumstances and magnitude of exposure and, therefore, on the strategies used for controlling exposure and preventing disease. At the CPHS, Master and Doctoral research for the Public Health degree is multidisciplinary and broad, ranging in scope from local to international. Our faculty members are active as advisors on Public Health issues nationally and internationally.

The Health Behavior Branch is designed for research careers in academic, non-profit, and governmental settings and for leadership roles. Students will learn the importance of health behavior contributed to current public health problems, ranges of factors that influence behaviors, nutrition, physical activity, obesity, alcohol drinking, smoking, addictive substance abuse. Concept and theory related to health behavior and risk factors are included.

The students should develop research on health behavior into populations with whom they have worked or will work in the future. They may also conduct research and intervention on alcohol, substance abuse and HIV/AIDS population including developing laboratory techniques in detecting alcohol and substance abuse in body fluid.

Objectives:

1. To produce graduates with knowledge and ability to search, analyze, solve problems, as well as have research capabilities. And empirical knowledge and theory in the development of public health in 5 disciplines to meet the needs of manpower in public health In the era of stepping into the one health And change of the world society And health determinants As well as the medical system And public health adjustments from both the public and private sectors
2. To produce research and create new knowledge in public health for planning in Management level, solving problems, developing organizations and developing public health work of the country and region Effectively

Course Synopsis and Methodology:**1. Curriculum Plan**

Course	Plan A2 (Credits)
Core Courses of public health	15
Major Compulsory Courses	6
Elective Courses	3
Thesis	12
Total (Credits)	36

1.1 Study plan

Plan A2 Trimester System
☒ Aug-Nov ☐ Dec-Mar ☐ Apr-July
Start 1st Admission: Apply: March & April Study: August

1st Semester	2nd Semester	3rd Semester
Health Determinant Health System Dev Public Health Admin Statistic Research Methodology	Elective Course Compulsory Course 1 Compulsory Course 2 Thesis Seminar Thesis Proposal Exam	No Class Thesis Thesis Exam

Minimum 1Year Program Student Study in campus by the Schedule

1.2 Thesis Research Plan

Summited Proposal Request within Feb

Proposal Exam within March

Data Collection During April to July

Thesis Exam within June

Summited full paper within July

Graduated in August

2. Course Content

A. Core courses (15 Credits)	
5300501 Health Problems, Determinants, and Trends	3 Credits
5300505 Health Systems Development	3 Credits
5300506 Research Methodology in Public Health	3 Credits
5300507 Statistics in Public Health Research	3 Credits
5300508 Public Health Administration	3 Credits
5300893 Thesis Seminar	S/U Credit
B. Compulsory Courses for the Major (6 Credits)	
Health Policy and Management	
5300503 Policy and Strategic Planning	3 Credits
5300504 Implementation and Management	3 Credits
Community and Reproductive Health	
5300526 Reproductive Health	3 Credits
5300527 Community Assessment	3 Credits
Urban and Global Health	
5300528 Introduction to Urban and Global Health	3 Credits
5300529 Globalization and Contemporary Public Health	3 Credits
Environmental Health and Occupational Health	
5300538 Introduction to Environmental Health	3 Credits
5300541 Environmental and Health Risk Assessment	3 Credit

Health Behaviors	
5300544 Health Behavior	3 Credits
5300545 Social and Cultural Determinants of Health	3 Credits
C. Electives Course (3 Credits)	
5300503 Policy and Strategic Planning	3 Credits
5300504 Implementation and Management	3 Credits
5300512 Health Development and Change	3 Credits
5300513 Health Financing	3 Credits
5300514 Resource Development	3 Credits
5300515 Seminar in Health Systems Development	3 Credits
5300521 Fundamental Skills in Sciences and Research	3 Credits
5300522 Fundamental Skills in Planning and Management	3 Credits
5300523 Health Services Organization and Management	3 Credits
5300524 Health Insurance System Management	3 Credits
5300525 Community Health Development	3 Credits
5300526 Reproductive Health	3 Credits
5300527 Community Assessment	3 Credits
5300528 Introduction to Urban and Global Health	3 Credits
5300529 Globalization and Contemporary Public Health	3 Credits
5300530 Global Health Impacts on Drug Use 3 Credits	3 Credits
5300534 Behavioral Science Theories as a Basis for Health Promotion	3 Credits
5300536 Urban Health	3 Credits
5300537 Travel Medicine and Public Health	3 Credits
5300538 Introduction to Environmental Health	3 Credits
5300539 Environmental and Occupational Health Epidemiology	3 Credits
5300540 Law and Management of Environmental and Occupational Health	3 Credits

5300541 Environmental and Health Risk Assessment	3 Credits
5300542 English for Public Health	3 Credits
5300543 Sexual Behavior and Socio-cultural Issues in Sexuality and Reproductive Health	3 Credits
5300544 Health Behavior	3 Credits
5300545 Social and Cultural Determinants of Health	3 Credits
5300546 Addictive Behavior	3 Credits
5300547 Health and Social Impact on Addiction	3 Credits
5300548 Community Based and Individual Intervention	3 Credits
5300549 Prevention, Intervention and Evaluation of Health Behavior Module	4 Credits
5300550 Directed Studies	3 Credits
5300570 Field Study	3 Credits
5300571 Business Administration in Health	
5300670 Practical Study I	
5300572 Medical and Public Health Communication	
5300573 Transnationalism and Public Health	

Graduation Conditions:

- Pass Standard of English (CUTEP 45 / IELTS 4.5 / TOEFL 450)
- Pass Proposal & Thesis Examination
- 1 international Publication or Proceeding
- Submitted Full paper & CU I Thesis to Graduate School
- Completed Register of Graduation

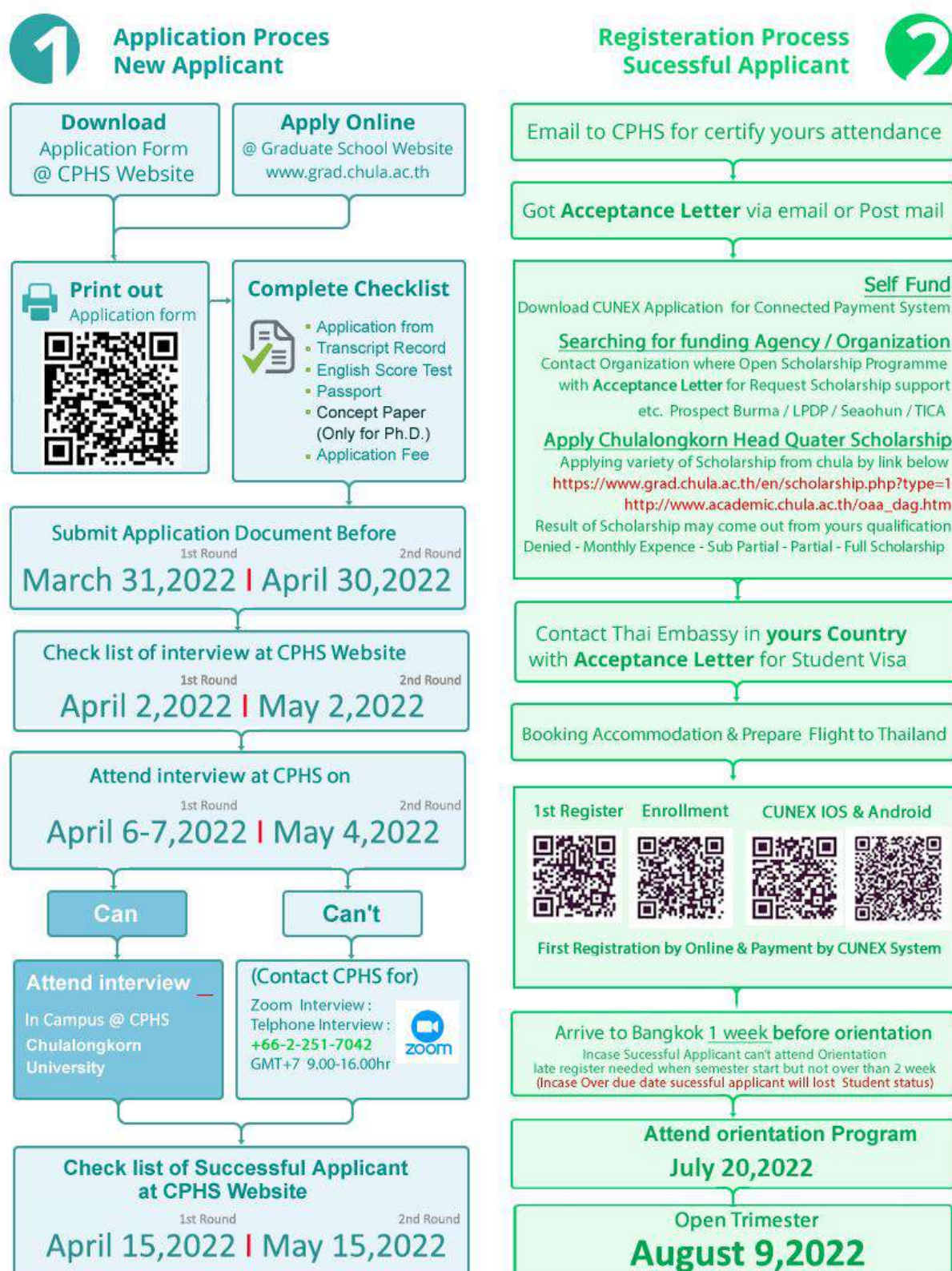
Applicant Qualifications:

An interested person with good command of English and bachelor degree in any fields

Document Required:

- Transcript
- Recommendation Letter
- English Test
 - **CU-TEP 45**
 - **IELTS 4.5**
 - **TOEFL 450**
 - **Certify document Graduated from University where certify by OCSC or Study in English Official Language Country**

- Application form of Chula
<http://www.cphs.chula.ac.th/index.php/component/phocadownload/file/298-application-form>
- Statement of purpose and area(s) of interest (1 page)
- A copy of your identification document (Passport).



Info Graph Flow Process

Contact:

1. **Academic Administrator** : Mr. Poohmerat Kokilakanishtha (Pooh)
Mobile: 66892552395 **email:** Poohmerat.k@chula.ac.th/ Poohmerat@gmail.com
2. **Director, Academic Administrative Section** : Ms. Sukarin Wimuktayon (L)
Tel: 6622188191 **email:** sukarin.w@chula.ac.th / academic_cphs@chula.ac.th

Alliance / Partnership & Network


Rutgers University, USA; The University of Medicine and Dentistry of New Jersey (UMDNJ), USA; University of Health Sciences, LAO PDR; National University of Singapore; Hong Kong Baptist University; Curtin University, Australia; Ottawa University, Canada; University of California at Los Angeles, USA; Johns Hopkins University, USA; Institute of Urban Environment, Chinese academy of Sciences, China, University of Florida, USA; The University of Tokyo, Japan; Kyoto University, Japan; Teikyo University, Japan; Harvard TH Chan School of Public Health, USA; Minnesota University, USA; University of Amsterdam, the Netherlands; Emory University, USA; University of Washington, USA; University of New South Wales, Australia; St. Elisabeth University, Slovakia; Australia; Adelaide University, Australia; University of Indonesia, Indonesia; Faculty of Medicine, University of Yangon, Myanmar; University of the Philippines, the Philippines; Brunei Darussalam University, Brunei Darussalam, World Health Organization (WHO), World Health Organization (WHO / Thailand, World Health Organization (WHO/SEARO), Fogarty International Center, National Institutes of Health (NIH), UNFPA, ILO, FAO, USAID, US NAS, UNICEF, SEAHUN, IOM

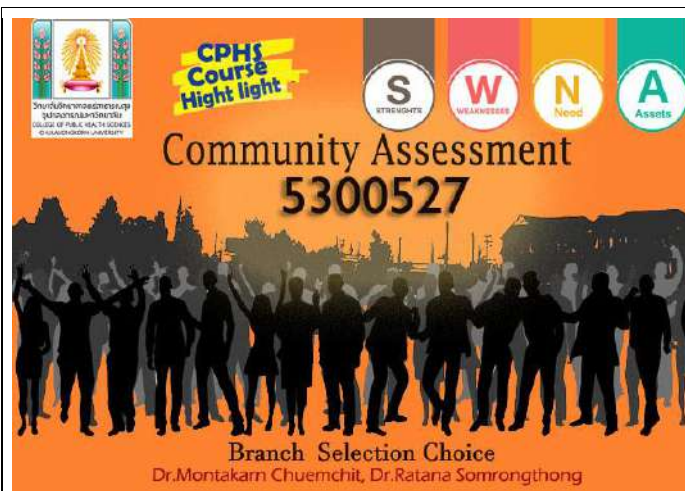
Instructor & Expertise

	Prof. Dr. Sathirakorn Pongpanich Expertise: Health Economics, Health Policy and Management and Health Administration		Prof. Surasak Taneepanichskul, MD. Expertise: Obstetrics and Gynecology, Reproductive Health, Medicine, Clinical Science, Public Health, Preventive Medicine
	Assoc. Prof. Dr. Ratana Somrongthong Expertise: Public Health, Community Health, Adolescent Health, Aging, Reproductive Health		Assoc. Prof. Dr. Wattasit Siri Wong Expertise: Environmental Health, Human Health Risk Assessment, Exposure Science
	Assoc. Prof. Dr. Chitlada Areesantichai Expertise: Substance Abuse including Alcohol and Tobacco, HIV/AIDS		Assoc. Prof. Dr. Khemika Yamarat Expertise: Gender and Sexuality, Reproductive health, Women's Health, Sex education, Elderly

	Asst. Prof. Dr. Nutta Taneepanichskul Expertise: Urban health, Environmental and Occupational Health, Indoor air quality, Housing and built environment, Sleep disorder, Neuropsychiatric disorders		Dr. Montakarn Chuemchit Expertise: Violence Against Women and Children, Intimate Partner Violence, Sexual and Reproductive, Health and Rights, Gender and Sexuality, Women's Health
	Prof. Mark Gregory Robson, Ph.D., M.P.H., Dr.P.H. Expertise: Environmental Health, Exposure Science		Alessio Panza, M.D. Expertise: Adolescent Health, Reproductive Health, Obesity, HIV and AIDS, Health Systems
	Dr. Wandee Sirichokchatchawan Expertise: A One Health approach to – Food safety, AMR, Infectious diseases and Zoonosis		Dr. Pokkate Wongsasuluk Expertise: Environmental Management and Policy, Health Risk Assessment, Biomarkers, Heavy Metals, Technology and Application, Covid-19
	Dr. Pramon Viwattanakulvanid Expertise: Aging populations, patient support group, patient empowerment, traditional Chinese exercise (Qigong), and health care access		Dr. Kraiwuth Kallawicha Expertise: Bioaerosols, Indoor Air Quality, Air Pollution, Environmental and Occupational Health, Environmental and Occupational Epidemiology, GIS and Health

Interesting Course

	<p>5300503 POLICY AND STRATEGIC PLANNING</p> <p>Course Description:</p> <p>Principles, methodologies and techniques for decision making and creative problem solving; principles of policy-making; legal and ethical issues pertaining to public health policy and practice; health care financing; information requirements for policymaking; strategic planning principles, methods, and techniques; strategic planning practice and threats.</p>
	<p>5300504 IMPLEMENTATION AND MANAGEMENT</p> <p>Course Description:</p> <p>Principles, methodologies and techniques for decision making and creative problem solving; principles of policy-making; legal and ethical issues pertaining to public health policy and practice; health care financing; information requirements for policymaking; strategic planning principles, methods, and techniques; strategic planning practice and threats.</p>



5300527 COMMUNITY ASSESSMENT

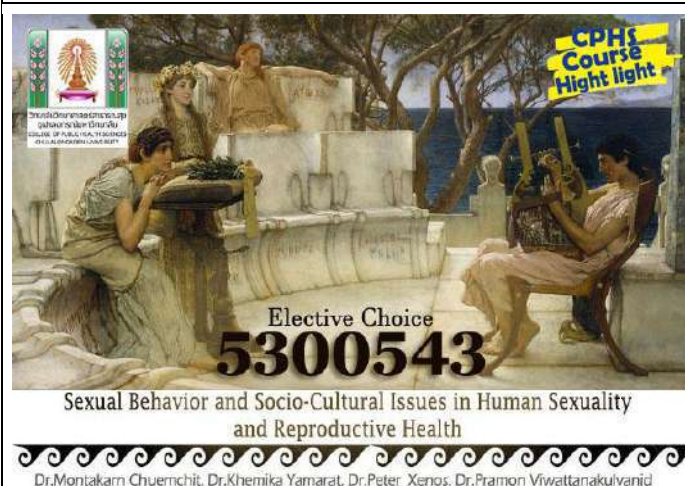
Course Description:

How to identify community's strengths, weaknesses, needs, and assets?

“Community Assessment” is an answer, this course introduces basic concept of community, community structure, how to approach community, community mapping, social mapping, social and cultural of the community, community participatory appraisal, community assessment prioritization of community problems and writing community report.

Course Highlight:

Community visit and guest speaker



5300543 SEXUAL BEHAVIOR AND SOCIO-CULTURAL ISSUES IN SEXUALITY AND REPRODUCTIVE HEALTH

Course Description:

Though biology plays an important role, the way in which behavior and sexuality are expressed and acted upon is highly influenced by social and culture. This course introduces important socio-cultural factors influencing sexual and reproductive behaviours such as norms, values, traditional health beliefs, communication, gender-related issues, sexual diversity, sexual harassment and abuse, sex/gender discrimination, ethics and law related to sexuality and reproductive health.

Course Highlight:

	Learning from discussions, short movies, film, guest speaker and field visit
 <p>5300544 HEALTH BEHAVIOR</p> <p>Course Description:</p> <p>Problems of health behaviors and risk behaviors, range of factors that influence health behaviors, nutrition, physical activity, obesity, alcohol drinking, smoking, addictive substance use, concept and theory related health behavior and risk factors, communication skill, behavior change and self regulation.</p> <p>Branch Selection Choice Assoc. Prof. Chitlada Areesantichai, Ph.D., Asst. Prof. Usaneyya Perhappan, Ph.D.</p>	
 <p>5300545 Social and Cultural Determinants of Health <i>Because We Connect - Because We Care</i></p> <p>Course Description:</p> <p>The context of people's lives determine their health. Social and Cultural determinants of health are conditions that influence one's health and well-being. This course introduces how are social and cultural factors related to personal behavior and health such as gender, race, culture, education, income, housing, environment, access to health care, health disparities, health inequalities, the social gradient etc.</p> <p>Course Highlight:</p> <p>Learning from discussions, short movies, film, guest speaker and field visit</p> <p>Branch Selection Choice Dr.Montakarn Chuemchit, Dr.Khemika Yamarat, Dr.Peter Xenos</p>	

 <p>5300570 Field Study A real field experience without comparable</p> <p>CPHS Course Highlight</p> <p>Elective Choice</p> <p>Dr. Montakorn Chuanmuhit, Dr. Wandee Sirichokehaichawan, Dr. Pokkate Wongsasulak, and Dr. Anuchalee Prasansuklab</p>	<p>5300570 FIELD STUDY</p> <p>Course Description:</p> <p>5-day course in the field to learn Thailand health care system, to know the community better, to observe and conduct a rapid community assessment in the studied areas.</p> <p>Course Highlight:</p> <p>5 days in the field, Team work for community assessment, and better understanding on Thailand health care system</p>
 <p>5300575 Technology in Public Health</p> <p>CPHS Course Highlight</p> <p>Elective Choice</p> <p>Pokkate Wongsasulak, Ph.D.</p>	<p>5300575 TECHNOLOGY IN PUBLIC HEALTH</p> <p>Course Description:</p> <p>Digital Era, Technology and Innovation; Internet Network/Application/AI/Robots/Big Data</p>
 <p>URBAN HEALTH</p>	<p>5300578 INTRODUCTION TO URBAN HEALTH</p>
 <p>5300579: FUNDAMENTAL TO GLOBAL HEALTH</p>	<p>5300579 FUNDAMENTAL OF GLOBAL HEALTH</p>



5300581 FUNDAMENTAL SKILLS IN SCIENCE AND RESEARCH

Course Description:

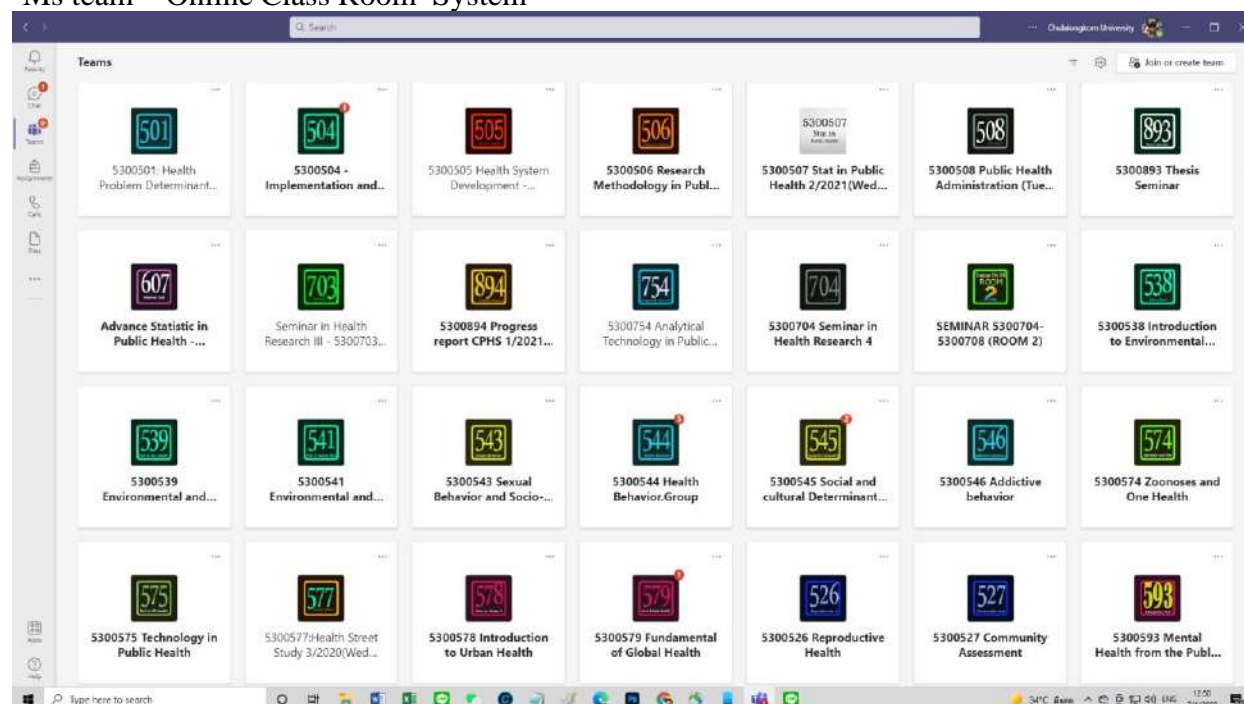
Identifying needs of public health problems for social innovation solutions; designing social innovation in public health through “design thinking” process; designing social innovation appropriate for a specific setting to solve public health problems in a sustainable manner; developing integrated body of knowledge of social entrepreneurs to solve public health problems

Course Highlight:

Social Innovation and Public Health / Marketing in Public He

Online Learning Support

-Ms team – Online Class Room System



Bulletin Board for Class Communication

The screenshot shows a Microsoft Teams chat interface. On the left, the chat title is '5300507 Stat in Public Health 2/...'. The main chat area displays a series of messages:

- A message that has been deleted.
- A message from Pramon Viwatanaakulchai dated 1/12/2021 16:15, edited, with the text: "Welcome to the new batch of students 2nd Semester of Academic Year 2021. Look forward to seeing you on December 8th, 2021 (9.00-12.00 am). Please stay safe and take care." It has 2 replies from Pramon and 1 like.
- A message from Pramon Viwatanaakulchai dated 8/12/2021 08:01, stating: "so we need to wait for TA open the room..." It has 3 replies from Pramon, Kanokkarn, and Chik.
- A notification: "New channel meeting started" with 15 replies from Chik, Kanokkarn, Tay Za Kyi, and 4 others.
- A message from Pramon Viwatanaakulchai dated 8/12/2021 11:09, which is a screenshot of a meeting agenda.

At the bottom of the chat area, there is a button labeled "New conversation".

Hang up Class Material Online

The screenshot shows the same Microsoft Teams chat interface, but the 'Files' tab is selected, displaying a list of documents under the 'Class Materials' section. The list is as follows:

Name	Modified	Modified By
Session 01 Introduction to Statistics	August 11, 2021	Parkpae Tantiwatra...
Session 02 Descriptive statistics	December 14, 2020	Pramon Viwatana...
Session 03 Probability & Sampling Distribut...	December 23, 2020	Budhwan Fawzi
Session 04 Analysis of 1-2 means	December 30, 2020	Pramon Viwatana...
Session 05 Analysis of several means	January 5, 2021	Pramon Viwatana...
Session 06 Non parametric by Aj Chitlada	January 12, 2021	Pramon Viwatana...
Session 07 Non parametric by Aj Chaveen...	January 13, 2021	Pramon Viwatana...
Session 09 Design in Epidemiology	February 3, 2021	Nikita Tenesapich...
Session 10 Linear regression and logistic re...	February 26, 2021	Pramon Viwatana...
Session 12 Sample size calculation	February 25, 2021	Pramon Viwatana...
Session 14&15 STATA	March 9, 2021	Pramon Viwatana...
Session 8 Correlation and Simple regressio...	February 1, 2021	Pramon Viwatana...
342765.jpg	February 3, 2021	Pramon Viwatana...
342766.jpg	February 2, 2021	Pramon Viwatana...
342772.jpg	February 2, 2021	Pramon Viwatana...
73f79ed94212af2f2612d761c10940c.png	February 2, 2021	Pramon Viwatana...
Ch_line_groupChitlada.sav	February 2, 2021	Pramon Viwatana...
Ch_Line_group_Chitlada SPSS_Chitlada.sav	February 2, 2021	Pramon Viwatana...

Live Lecture Broadcast (Thai time GMAT -7) – Study From Everywhere

The screenshot displays a live lecture broadcast interface. The main window shows a Microsoft Excel spreadsheet with the following data:

	A	B	E	F	G
1			FALSE	TRUE	
2		X=#+ve	Pr(X)	Pr(X=<=x)	
3	Phi(π) =.05	0	=BINOM.DIST(B3,10)	Mean of X=n*Phi	0.5000
4	n=10	1		Variance of X=n*Phi*(1-Phi)	0.4750
5		2		SD of X	0.6892
6		3		Median	0
7		4		Mode	0
8		5			
9		6			
10		7			
11		8			
12		9			
13		10			

The 'Function Arguments' dialog box for BINOM.DIST is open, showing the following inputs:

- Number: 1
- Trials: 10
- Probability: 0.05
- Cumulative: checked

The results shown are:

- Mean of X = 0.5000
- Variance of X = 0.4750
- SD of X = 0.6892
- Median = 0
- Mode = 0

The background shows a video feed of the lecturer and other participants.

Recording Lecture Every Class for Re Watch Study

The screenshot displays a OneDrive folder named 'General'. The folder contains the following files:

Name	Modified	Modified By
General-20220105_090434-Meeting Record...	Wednesday at 11:5...	Chi Pyae pyae han
Meeting in _General_ -20211222_085232-M...	December 22, 2021	Chin Hui Aha
Meeting in _General_ -20211222_085232-M...	December 22, 2021	Tay Za Kyi Win
Meeting in _General_ -20211229_090021-M...	December 29, 2021	Chi Pyae pyae han

The folder also contains a file named 'BINOM.DIST'.

Physical Experience When Study in Thailand

VDO Promo updated Old location Dec 2021 – Aug 2022

** CPHS will move to New Building every facility will be more better and very innovation from 2022 Academic Year

<https://www.youtube.com/watch?v=AnCedfsEBC4>

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Science Program in Social, Economic and Administrative Pharmacy

Course Title:	Master of Science Program in Social, Economic and Administrative Pharmacy (International Program)
Master Degree:	Master of Science (Social, Economic and Administrative Pharmacy)
Academic Institution:	Mahidol University, Faculty of Pharmacy, Department of Pharmacy, Division of Social and Administrative Pharmacy
Duration:	2 years (August 2022 – May 2024)

Background and Rational:

The changes in economics, society, and culture affect the social structure and the way of people's lives in every country. These factors contribute to the continual change in health conditions and health system. Accordingly, the management of the public health system must be developed at all times. In this regard, the education system that produces healthcare personnel is required to be active as well as be continuously monitored and developed. The development of this curriculum is mainly based on the development situation of socioeconomic, cultural, and health system. The content of the curriculum focuses to prepare for the changes in the health and drug systems. It also aims to respond to social and cultural issues that affect people and personnel as the social, economic and administration dimensions are substantially important. The curriculum development focuses on the personnel development by integrating related sciences of public policy on drug and health as a whole and the management in both the public and private sectors. This would lead to the drug system development under the health system in the various dimensions and contexts of the society. Students are provided with knowledge related to public policy and health system administration. Students can also build relationships that lead to the development of public policy to influence the health system development in a holistic manner. According to a demand analysis in Thailand and other countries, many overseas pharmacy institutions require the development of pharmacy education in the area of social, economic and administrative pharmacy. These institutes would like to send their personnel to study in this program. Additionally, this program is a part of the supporting project for international postgraduate students, named the Thailand International Postgraduate Program (TIPP).

The program has a plan to accommodate teaching and learning resources according to the students' needs. As a part of planning, there are meetings of related people for analyzing the demand for textbooks, reference books, documents, other instructional equipment, and other electronic media as well as allocating the resources to meet the needs of students and other users.

The program holds student orientation to provide academic advice, teaching plan in the curriculum, suggestions on how to study, and explanation about the advisory schedule of each advisor. There are activities to promote the student development such as welcoming new students by instructors and senior students in each program. The senior students are assigned to run the event in order to practice their management skills.

The student advisory system is provided to advise and assist students in studying and/or suggest students for other possible problems. The number of students per advisor is in accordance with the criteria of the Faculty of Graduate Studies.

Philosophy and Objectives:

Master of Science Program in Social, Economic and Administrative Pharmacy believes in an outcome-based education and active learning. The Program adopts Prince Mahidol's philosophy, "the true success is not in the learning, but in its application to the benefit of mankind". It focuses on inspiring the students to learn, explore, and create the knowledge for the broad society with philanthropic mind and strong passion. Real experiential learning is the key concern. This program emphasizes on producing high-quality graduates with knowledge of social, economic, and management who possess moral, academic ethics, and professional ethics. The graduates must be able to integrate the knowledge of social, economic, and management for improving drug and healthcare systems.

After completion their study, students will have characteristics, which comply with Thailand Quality Framework standard as follows:

1. Have appropriate behavior and commit to upholding and embracing the highest ethical and professional standard in academic and practice.
2. Possess knowledge in implementing policy. Provide evidence-based information for policy formulation, management, and administration, and be able to understand, describe, define and explain relevant knowledge related to economic and drug policy leading to an improvement in the drug and health systems.
3. Be able to analyze, apply and design social science, economic, epidemiology and management research, which lead to the development of drug and health care systems.
4. Have good human relation, social responsibility, and leadership skill.
5. Have numerical analysis skills, and information technology skills, which can be applied for drug and health systems

Program Learning Outcomes (PLOs)

1. Ethics

- 1.1 Respect the principle of intellectual property rights.
- 1.2 Embrace ethics and professional ethics.

2. Knowledge

- 2.1 Understand, describe, define and explain the principle and method of public health, social sciences, and management related to drug and health systems.
- 2.2 Understand, describe, define and explain research techniques that are accepted in the development of drug and health systems.

3. Intellectual skill

3.1 Analyze the socio-economic and administrative issues related to drug and health systems.

3.2 Apply knowledge in the context of drug and health systems.

3.3 Design a research related to social pharmacy, economics and administration by using an appropriate research methodology.

4. Interpersonal skill and responsibility

4.1 Interact (persuade) properly with colleagues and stakeholders.

4.2 Enthusiastically work as a team member and demonstrate leadership attributes.

4.3 Perform and participate in socially responsible activities.

4.4 Have a responsibility in achieving an assignment.

5. Numerical analysis skills, communication, and information technology

5.1 Use IT to search, manage, analyze and present qualitative/ quantitative academic data.

Course Synopsis and Methodology:**Course Content/ Study topic:****Program Structure***Credit Requirements*

Credit requirements of the program were set according to the Ministry of Education Announcement titled “Standard Criteria for Graduate Studies 2005,” with specified plan 2 curriculum.

1. Required Courses	12 credits
2. Elective Courses (at least)	12 credits
3. Thesis	12 credits
Total no less than	36 credits

Courses in the curriculum**(1) Required Courses 15 credits****Credits (Lecture-Practice-Self Study)**

GRID 603	Biostatistics	3(3-0-6)
PYSP 671	Research Methodology in Social Science I	2(2-0-4)
PYSP 674	Drug and Health System Management	2(2-0-4)
PYSP 675	Health Economic Evaluation	2(2-0-4)
PYSP 676	Pharmacoepidemiology in Public Health	2(2-0-4)
PYSP 688	Seminar in Current Research on Social, Economic and Administrative Pharmacy	1(1-0-2)
PYSP 690	Seminar in Research Methods on Social, Economic and Administrative Pharmacy	1(1-0-2)
PYSP 710	Strategic Management in Health System	2(2-0-4)

(2) Elective Courses: Not less than 9 credits

Apart from the elective courses mentioned below, students are allowed to register for other courses offered by the Faculty of Graduate Studies, Mahidol University, or other universities based on students' interests. However, it must be approved by their academic advisors or the program administrative committee.

PYSP 672	Social and Cultural Aspects Relating to Health	3(3-0-6)
PYSP 677	Health Outcome Assessment	3(3-0-6)
PYSP 678	Pharmaceutical Anthropology	3(3-0-6)
PYSP 679	Cost Analysis in Health Care	3(3-0-6)
PYSP 680	Hospital Pharmacy Administration and Practice	3(3-0-6)
PYSP 683	Cost-Effectiveness Modelling in Health	3(3-0-6)
PYSP 695	Evaluation of Pharmacy and Health Care Program	3(3-0-6)

5

(3) Thesis 12 credits**Credits (Lecture-Practice-Self Study)**

PYSP 698	Thesis	12(0-36-0)
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Course Synopsis & Methodology:**Study Plan; Plan 2 (A2) (Course work and thesis)**

Year	Semester 1	Semester 2
1	GRID 603 Biostatistics 3(3-0-6) PYSP 671 Research Methodology 2(2-0-4) in Social Science I PYSP 674 Drug System 2(2-0-4) Management PYSP 675 Health Economic 2(2-0-4) Evaluation	PYSY 676 Pharmacoepidemiology 2(2-0-4) in Public Health PYSY 710 Strategic Management 2(2-0-4) in Health System PYSY 690 Seminar in Research 1(1-0-2) Methods on Social, Economic and Administrative Pharmacy Elective courses 6 credits

Year	Semester 1	Semester 2
	PYSP 688 Seminar in Current Research on Social, Economic and Administrative Pharmacy Elective courses 3 credits Total 13 credits	 Total 11 credits
2	PYSP 698 Thesis 6(0-18-0) Total 6 credits	PYSP 698 Thesis 6(0-18-0) Total 6 credits

Remark: Students have to pay for the field-trip study fee as part of PYSP 674 Drug and Health System Management.

Research Projects of the Program

Guidelines for conducting a research project are as follows:

- (1) Research in social sciences and humanities related to drug and health systems
- (2) Pharmacoepidemiological studies
- (3) Health outcomes research
- (4) Cost analysis in health care
- (5) Health economics and health technology assessment
- (6) Drug and system management at international, national, and hospital levels
- (7) Drug and health policy analysis
- (8) Analyzing, planning, and managing of health care personnel
- (9) Strategic planning and organization management
- (10) Development of tools and methodology for drug and health systems
- (11) Research on consumer protection and laws at national and international levels

Applicants Qualifications:

1. Hold a Bachelor's degree in the area of medical and public health from institutions of Higher Education in Thailand or foreign countries accredited by the Office of the Higher Education Commission (OHEC) with a minimum cumulative GPA of 2.50 or equivalent.

A candidate with the degree specified above but has a GPA less than 2.50, the candidate must have experience in management related to drug and health systems, be involved with drug management in public or private sectors or has research publications related to drug system.

2. Have an English proficiency test score as the requirement of Faculty of Graduate Studies

3. Other exceptions may be considered by the Program Director and the Dean of the Faculty of Graduate Studies, Mahidol University.

Document Required:

1. Application form
2. Transcript
3. Certificate of English of proficiency
4. Statement of purpose

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Course Detail

Master of Science Program in Nutraceuticals and Functional Foods (International Program)

Course Title:	Master of Science Program in Nutraceuticals and Functional Foods (International Program)
Master Degree:	Master of Science (Nutraceuticals and Functional Foods)
Academic Institution:	Departments of Pharmacy, Faculty of Pharmacy, Mahidol University
Duration:	2 years (August 2022 – May 2024)

Background and Rational:

Nutraceuticals and Functional Foods are the group of products which gain increasing popularity every year. There was a report on the growth of global market for Functional Foods at 6% between 2011-2015. Kasikorn Research Center reported on August 24, 2015 that the value of the market of Functional Foods in Thailand was 161,000 million THB and continues to grow at 6% per year. The market of Functional Foods shares approximately 60% of health food market. For nutraceuticals, or generally assigned to dietary supplements, the value of the global market was 122,080 million USD in 2015. The major target customer is adult around 55.5%. The value continues to grow at 7.4% per year. The same trend is occurred worldwide including Thailand. The industries related to Nutraceuticals and Functional Foods are important for the countries which have rich sources of herbal plants. At present, many countries around the world are facing the health problems from the growing number of aging societies. These population are one of the groups of customers looking for the health products especially nutraceuticals and functional foods in order to maintain good health or lower the risk of chronic diseases. Thus, it is a great opportunity for all-level of entrepreneurs in these industries. However, there was an urgent need for personnel with knowledge in Nutraceuticals and Functional Foods products in order to fill the positions in production, analysis, importing, exporting or quality controlling of the products. And since herbs with potentials were available in Thailand, with the expertise in herbs, foods, and modern drugs, Faculty of Pharmacy should be a good institute to research and produce Nutraceuticals or Functional Foods products with supported evidence in relevant activities and analyses.

The program was submitted for approval, as a new graduate program in 2012, and was approved in principle by the Mahidol University Board on July 18, 2012. And the first semester started on Semester I, Academic Year 2013. Since then, the program has been creating the successful graduates to fulfil the positions in production, analysis, importing, exporting or quality controlling of the products in the related industries. The philosophy of the program is to create the graduate in Nutraceuticals and Functional Foods who has quality, morality, ethics, and knowledge concerning research, development, and delivery academic information of Nutraceuticals and Functional Foods.

Objectives:

After completion their study, students will have characteristics which comply with Thailand Quality Framework standard as follows:

1. Possess moral, ethics and professional ethics, including ethics for human research and research code of conduct
2. Possess knowledge that is relevant to Nutraceuticals and Functional Foods
3. Possess cognitive skills in searching, analyzing, synthesizing relevant information and effectively conducting research relevant to Nutraceuticals and Functional Foods
4. Possess social responsibility, interpersonal and interactive skills, express opinions, possess creative ideas and time-management skills
5. Possess appropriate communication skill and informative technology utilization for various groups in both academic and professional sectors along with ability to use information technology to analyze and present research data effectively at international level

Expected Learning Outcomes

On successful completion of the program students will be able to:

1. Understand and describe principles and theories regarding Nutraceuticals and Functional Foods.
2. Able to apply and update the knowledge in the field of Nutraceuticals and Functional Foods.
3. Develop, analyze, and solve problems and make decision systematically. Conclude the principle and synthesize the content of Nutraceuticals and Functional Foods.
4. Understand and select methods in the processing, analyzing and searching information of Nutraceuticals and Functional Foods.
5. Design experiments/ research work, discuss and conclude the results, create new knowledge or new product in Nutraceuticals and Functional Foods.
6. Be responsible to his/her assigned work, also those as a group. Co-operate with others as a team, show different creative opinion. Organize and manage the time efficiently. Develop his/her potential and colleagues, share knowledge and experience.
7. Use new technology to search information, collect, analyze, and interpret data, using scientific principles or tools correctly and appropriately. Communicate, transfer, and present the results both in the form of scientific article, lecture, and discussion correctly at the international level.
8. Refer to sources of information, carry out the production of Nutraceuticals and Functional Foods honestly and fairly. Obey and follow the rules and regulations of MU.

Course Synopsis & Methodology:

Study plan:

Year	Semester 1	Semester 2
1	PYFC 602 Functional Foods I 3(3-0-6) PYFC 603 Bioactive compounds 3(3-0-6) PYID 685 Research Methodology in Pharmacy I 2(2-0-4) PYFC 607 Biological, Pharmacological, Epidemiological, and Clinical Studies 3(2-3-5) Elective course 0-4 credits Total credit 11-15 credits	PYFC 601 Nutraceuticals I 3(3-0-6) PYFC 605 Product Development of Nutraceuticals and Functional Foods 3(2-3-5) PYFC 676 Seminar in Nutraceuticals and Functional Foods I 1(1-0-2) Elective course 2-6 credits Total credit 9-13 credits

2	PYID 698 Research M.Sc.	PYID 698 Research M.Sc.
	Thesis 6(0-18-0)	Thesis 6(0-18-0)
	Total credit 6 credits	Total credit 6 credits
Thesis examination		

Course Content/Study Topic:**Program Structure***Credit Requirements*

Credit requirements of the program were set according to the Ministry of Education Announcement titled “Standard Criteria for Graduate Studies 2005,” with specified plan 2 curriculum.

- | | |
|--------------------------------|-------------------|
| 1. Required Courses | 18 credits |
| 2. Elective Courses (at least) | 6 credits |
| 3. Thesis | 12 credits |
| Total not less than | 36 credits |

Required Courses

<u>Course ID</u>	<u>Course Name</u>	<u>Credit(s)</u>
PYFC 601	Nutraceuticals I	3 (3-0-6)
PYFC 602	Functional Foods I	3 (3-0-6)
PYFC 603	Bioactive Compounds	3 (3-0-6)
PYFC 605	Product Development of Nutraceuticals and Functional Foods	3 (2-3-5)
PYFC 607	Biological, Pharmacological, Epidemiological, and Clinical Studies	3 (2-3-5)
PYFC 676	Seminar in Nutraceuticals and Functional Foods I	1 (1-0-2)
PYID 685	Research Methodology in Pharmacy I	2 (2-0-4)

Elective Courses

Elective courses can be any graduate-level courses offered within Mahidol University or other universities with approval from the program director, major advisor, or program administrative committee. Listed below are examples of elective courses offered by the Faculty of Pharmacy, Mahidol University.

<u>Course ID</u>	<u>Course Name</u>	<u>Credit(s)</u>
GRID 603	Biostatistics	3 (3-0-6)
PYFC 604	Food Chemistry	2 (2-0-4)
PYFC 606	Sensory Evaluation Methods	2 (1-3-3)
PYFC 608	Nutraceuticals II	2 (2-0-4)
PYFC 609	Functional Foods II	2 (2-0-4)
PYFC 610	Quality Assurance in the Industries of Nutraceuticals and Functional Foods	2 (1-3-3)
PYFC 611	Processing of Functional Foods	2 (1-3-3)
PYFC 612	Packaging for Nutraceuticals and Functional Foods	2 (2-0-4)
PYFC 615	Marketing Principles of Nutraceuticals and Functional Foods	2 (2-0-4)
PYFC 617	Special Problems in Nutraceuticals and Functional Foods	2 (0-6-2)

Thesis

<u>Course ID</u>	<u>Course Name</u>	<u>Credit(s)</u>
PYFC 698	Thesis	12 (0-36-0)

Applicants Qualifications:

1. Degree holding and cumulative GPA Graduated with Bachelor Degrees in Science or related fields from programs accredited by the Office of Higher Education Commission (OHEC) with GPA of at least 2.50
2. Have an English proficiency test score as the requirement of Faculty of Graduate Studies
3. Other exceptions will be considered by the Program Director and the Dean of Faculty of Graduate Studies, Mahidol University.

Document Required:

1. Application form
2. Transcript
3. Certificate of English of proficiency
4. Statement of purpose

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Arts Program in Asia Pacific Studies

Course Title:	Master of Arts Program in Asia Pacific Studies (International Program)
Master Degree:	Master of Arts (Asia Pacific Studies)
Academic Institution:	Thammasat Institute of Area Studies (TIARA), Thammasat University
Duration:	18 months (August 2022 - January 2024) 3 semesters + 1 summer semester

Background and Rational:

Master of Arts in Asia-Pacific Studies (MAPS) Program is an interdisciplinary graduate program that is designed for internationally – focused students who wish to obtain an in-depth understanding of the Asia-Pacific region through multi-faceted and inter-disciplinary lenses.

MAPS is the first graduate program in Thailand which examines the entire Asia-Pacific region in all its complexities. The Asia-Pacific region is one of the most dynamic and diverse regions in the world. It is the home of more than 4.3 billion people and accounts for more than half of global economic activities. Trade and development have given rise to international economic cooperation, ranging from small regional forums to large-scale collaborations such as APEC (Asia-Pacific Economic Cooperation) and ASEAN.

MAPS program provides students with the opportunity to deepen their knowledge not only on the said academic disciplines. Students will also study various contemporary issues related to sustainable development in the region. The program adopts multidisciplinary approach that allows them to integrate study of economics, law, international relations, and public policies to give students an understanding of contemporary regional issues. These issues are directly related to the following ***Sustainable Development Goals***: Goal 2 (Zero hunger), Goal 4 (Quality education), Goal 5 (Gender equality), Goal 8 (Decent work and economic growth), Goal 9 (Industry, innovation and infrastructure), Goal 10 (Reduced inequalities) and Goal 13 (Climate change).

The Asia-Pacific region is also the home of 700 million youth whose ambitions and abilities can contribute to the prosperous, peaceful, and sustainable future of the region. Investing in youth is an investment for the future. Our students will be trained and empowered for a sustainable future that requires a better understanding of their needs, interests, challenges, and potential may it be domestically or internationally.

MAPS is a truly international program with more than 80 per cent of international students. Students at MAPS program come from ASEAN member states and countries in the Asia-Pacific such as Bhutan, Japan, and China. The majority of them works in public and higher education sectors, that is, civil service officers at Ministry of Foreign Affairs and university lecturers. When they graduate, they will go back and become the driving force for sustainable developments in their countries.

Followings are examples of the Thesis studies by MAPS graduates. These theses are related to SDGs Goal.

- **Goal 2—Zero hunger:** End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
 - The Evaluation of Japanese ODA to Vietnamese Farmers
 - Effects of Agricultural Policies on Rice Industry in Myanmar
- **Goal 4—Quality education:** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
 - Education Reform in Myanmar: A Case of Two Technological Universities
- **Goal 5—Gender equality:** Achieve gender equality and empower all women and girls.
 - Study on the Role of Entrepreneurship in the Textile Sector Industry in Bhutan
 - Women and Career Advancement in Brunei Darussalam: A Case Study of Women Working in Brunei Darussalam Government Sectors
- **Goal 8—Decent work and economic growth:** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
 - Community- based Tourism in Creating Impacts for Rural Communities: A Case Studies Nglanggeran Tourist Village in Yogyakarta, Indonesia
 - Challenges Faced by Brunei's Micro and Small Entrepreneurs on the Utilization of Social Media as Online Marketing
 - The Effect of the Royal Decree on Managing the Work of Aliens B.E. 2560 (2017) on Myanmar Migrant Workers in Factories: Case Study of Four Selected Companies in Samut Sakhon Province
 - Factors Affecting Foreign Direct Investment (FDI Inflows to Lao PDR
 - Factors Attracting Investors to Invest in Laos: Case Study of Savan Seno Special Economic Zone
 - Corporate Social Responsibility in Vietnam State-owned Enterprises: A Comparative Analysis of PVEP and VTC
 - The Influence of Government Policy on the Return of Overseas Vietnamese in the Information and Communication Technology Sector
- **Goal 9—Industry, innovation and infrastructure:** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
 - Determinant Factors of Tuna Canneries Performance in Indonesia and Thailand: A Comparative Perspective
 - Analysis of the Effect of the Trans-Pacific Partnership Free Trade Agreement on the Vietnamese Apparel Industry
- **Goal 10—Reduced inequalities:** Reduce inequality in and among countries.
 - Refugee Status Determination (RSD) Practices in Thailand
 - Inequality and Economic Development in Lao PDR since the 1986 Economic Reform
- **Goal 13—Climate change:** Take urgent action to combat climate change and its impacts.
 - Disaster Management in Cambodia: Community- based Disaster Risk Management in the Case of Drought in Oral District

MAPS program allows the exchange of first-hand knowledge and experiences from international students particularly from APEC and ASEAN member countries. After graduation, graduates are equipped with knowledge of situations, phenomena, contemporary issues, and sustainable development in the Asia-Pacific region which can be applied to their careers in the public sector, diplomatic service, academic consultancies, international organizations, and sustainable development related career domestically and internationally.

MAPS Program are offered and administered by Thammasat Institute of Area Studies or TIARA at Thammasat University. TIARA starts off from a single center namely Thai APEC Study Center which works to foster research and academic discussions supporting the broader APEC mission of regional economic integration and a means to building networks of academic professionals in the region. TIARA has developed not only experience, but it also extends in term of networks, collaborations, academic exchanges and many more. At present, TIARA is a home to five Area Studies Centers – Thai APEC Study Center, the Australian Studies Centre, India Studies Center, Russia and CIS Study Center, and the ASEAN Study Center. These centers have their own academic focuses and networks. This gives TIARA more resources and room to do academic activities within the context of ‘Area Studies’ and not limited to country or regional studies. For that reasons, TIARA becomes the institution with expertise in conducting academic and policy research, organizing seminars, trainings, workshops, and international conferences on issues in the Asia-Pacific region. Our knowledge and expertise have been continuously building up since the year 2000.

With its networks in Thailand and around the world, TIARA utilizes all resources and networks to benefit MAPS program. The program regularly welcomes visiting professors and guest lecturers as well as experts in the field to teach our students especially those institutes that signed MOUs with TIARA. These become a unique characteristic and strong point of the program in terms of teaching and research making MAPS a quality program that produce international standard quality graduates to fulfill MAPS’s mission and vision, that is, to provide high quality graduate education, academic resources, training and professional developments as well as foster cultural learning and exchanging opportunities for graduate students and professional in the intellectual diverse environment.

The MAPS curriculum emphasizes interdisciplinary studies from professors, scholars, and professionals with high expertise in their fields. Students will learn to look deeper into topics from all aspects and perspectives, foster critical thinking and analytical ideas including to tackle topics from new directions, which will transform into a lifelong learning. Please see an attachment named List of MAPS Guest Lecturers (*attachment 1*) for your reference.

In addition to our human resources, MAPS had its own facilities. MAPS students are given the access to a dedicated research and study space to help fostering intellectual exchange and collaboration beyond the classroom.

1. Asia-Pacific Resource Center – the Resource Center, as our students called it, houses a relevant and accessible collection of Asia-Pacific related resource materials. The center provides space for information and cultural exhibition as well as acquired information and dissemination manuals, information and research about countries in the Asia-Pacific region. The center also provides modern, adequate, and efficient information center services, appropriate and comfortable learning environment on the use of resources for individual and group study for individual and group study.

2. MAPS Common Room – MAPS Common Room located at the 1st Floor of the Social Science Complex next to the Asia-Pacific Resource Center, is designed specially for MAPS students. It is primary space for students to hang out – whether for work on project or to spend time with each other. The MAPS Common Room is created with comfortable and welcoming environment features wireless internet access and lockers for student use. MAPS Common Room is divided into three Zones with different functions; 1 small classroom seated classroom style with the capacity of 40 people, 2 rooms with flexible furniture configuration with capacity for 20 people for group gathering or informal group meeting.

3. MAPS Classroom – a small fully equipped classroom with capacity for 20-25 students

4. MAPS co-working space – located in front of MAPS Classroom with capacity for 20-25 students

For more information about MAPS Program, course syllabus, and other related matters, please see an attachment named Introduction to MAPS Program (*attachment 2*).

Previous record of the graduation of students under MAPS Program are shown in the Table below.

Academic Year	Total number of Students	Total number of Students who graduated	%
2015	13	12	93
2016	17	13	77
2017	12	11	92
2018	11	11	100
2019	9	5	55

Objectives:

Master of Arts in Asia- Pacific Program aims to prepare students for future challenges in sustainable manners and integrate knowledge of international economics, international relations, and international laws to the sustainable development as well as to promote sustainability mindset and encourage students and graduates to play their roles in fulfilling UN' SDG Goals, may it be in the domestic or international arena.

Course Synopsis and Methodology:

1. Program Information

Program Length	18 months full-time/ 3 full semesters and 1 summer semester
Medium of Instruction	English Language
Class Size	20
Campus	Most courses are taught at Rangsit Center
Facilities	Asia-Pacific Resource Center and MAPS Common Room. Students will be given the access to dedicated research and study space to help foster intellectual exchange and collaboration beyond the classroom

2. Program Plan

Plan A	Credit	Plan B	Credit
Required courses	21	Required courses	21
Elective Courses	6	Elective Courses	12
Thesis	12	Independent Studies	6
Thesis Defense	-	Written Comprehensive Exam	-
Postgraduate International Conference (TU-CAPS)	-	Postgraduate International Conference (TU-CAPS)	-
Total	39	Total	39

Plan A**Semester 1 Year 1: 4 Subjects 12 credits**

APS600	Foundation Asia-Pacific Studies	3 credits
APS612	Economic Development in ASEAN	3 credits
APS621	Political, Security, and Defense Strategies in the Asia-Pacific Region	3 credits
APS6xx	Elective Course: between Comparative Politics and Governments in the Asia-Pacific Region/ International Relations and Foreign Policy in the Asia-Pacific Region	3 credits

Semester 2 Year 1: 4 Subjects 12 credits

APS611	Economic Integration in the Asia-Pacific Region	3 credits
APS631	International Law and Regional Architecture in the Asia-Pacific Region	3 credits
APS681	Research Methodology	3 credits
APS6xx	Elective Core Course: choose between Contemporary Issues in the Asia-Pacific Studies/ Public Policy Studies	3 credits

Summer Semester: 1 Subject 3 credits

APS800	Thesis	3 credits
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Semester 1 Year 2: 2 Subjects 12 credits

APS6xx	Elective Course: between Comparative Politics and Governments in the Asia-Pacific Region/ International Relations and Foreign Policy in the Asia-Pacific Region	3 credits
APS800	Thesis	9 credits

Plan B**Semester 1 Year 1: 4 Subjects 12 credits**

APS600	Foundation Asia-Pacific Studies	3 credits
APS612	Economic Development in ASEAN	3 credits
APS621	Political, Security, and Defense Strategies in the Asia-Pacific Region	3 credits
APS6xx	Elective Course: between Comparative Politics and Governments in the Asia-Pacific Region/ International Relations and Foreign Policy in the Asia-Pacific Region	3 credits

Semester 2 Year 1: 4 Subjects 12 credits

APS611	Economic Integration in the Asia-Pacific Region	3 credits
APS631	International Law and Regional Architecture in the Asia-Pacific Region	3 credits
APS681	Research Methodology	3 credits
APS6xx	Elective Core Course: choose between Contemporary Issues in the Asia-Pacific Studies/ Public Policy Studies	3 credits

Summer Semester: 1 Subjects 3 credits

APS6xx	Elective Course: Selected Topics in Asia-Pacific Studies (Countries Studies)	3 credits
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Semester 1 Year 2: 2 Subjects 6 credits

APS6xx	Elective Course: between Comparative Politics and Governments in the Asia-Pacific Region/ International Relations and Foreign Policy in the Asia-Pacific Region	3 credits
APS6xx	Elective Course:	3 credits

Semester 2 Year 2: 1 Subjects 6 credits

APS6xx	Independent Studies	6 credits
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Applicants Qualifications:

- A bachelor's degree in any field with a cumulative GPA of 2.5 and above from an accredited university. For those who wish to apply for a scholarship, applicants should at least have a cumulative GPA of 3.00 with an above average grade on the relevant subjects.
- Requirement for English Proficiency

No.	English requirements	Minimum score
1	Paper based TOEFL	500
2	Internet-based TOEFL	61
3	International English language Testing System (IELTS)	6.0
4	Paper based Thammasat University Graduate English Test (TU-GET)	500
5	Computer-based Thammasat University Graduate English Test (TU-GET)	61

- Applicants can be accepted with conditions in the case of
 - IELTS: $6.0 \geq 4.5$
 - TOEFL: $500 \geq 400$
 - TU-GETS: $500 \geq 400$
- Applicants who cannot meet the minimum score of the above can reply to the program and submit the required score to the university before the registration day. English test results must not exceed 2 years by the time the applicants submit the results to the university.

- Test results submitted with the admission application are valid evidence for graduation.
- Please note that Thammasat University requires all students who have not submitted their English Proficiency Test Score to meet the minimum requirement score to submit their Official English Proficiency Test score before the final Thesis defense
- 4th year bachelor students who expect to graduate may apply by submitting a certified letter of expected date of graduation.
- Complete applications and submitting all required documents.
- As one of graduate requirement from Thammasat University, graduate students are required to present their thesis work at the International Conference. MAPS students are entitled to present their works at TU-CAPS, the annual international conference hosted by Thammasat Institute of Area Studies, Thammasat University.

Document Required:

- Completed Online Application Form (at www.maps-tu.org)
- Official Academic Transcript (English version only)
- Statement of Purpose (as appear in Online Application Form)
- Proof of English Language Proficiency (IELTS, TOEFL, TU-GETS)
- Two letters of Reference
- Copy of Passport
- ID Photo (Passport size)
- Other additional supporting documents an applicant may want to submit such as certificates of training, letter of employment, etc.

Contact:

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Programme Coordinator:

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MAPS Program Coordinator
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For more information:

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Course Detail
Master of Arts Program in Diplomacy and International Studies

Course Title:	Master of Arts Program in Diplomacy and International Studies (International Program)
Master Degree:	Master of Arts (Diplomacy and International Studies)
Academic Institution:	The Institute of Diplomacy and International Studies (IDIS), School of Politics, Economics, and Globalization, Rangsit University
Duration:	2 years (August 2022- December 2024)

Background and Rational:

IDIS was established on 22 of March, 2006, with an aim to meet the challenge of globalization and the increasing demand for world-class professionals in International affairs in Thailand and the Asian region.

IDIS with its multi-disciplinary approach, became the first institute of its kind in Southeast Asia. The establishment of IDIS is an important step in the implementation of Rangsit University's Road Map to excellence strategy, which created qualified graduates for the region and the world at large.

Objective:

Many career opportunities are open to IDIS graduates, especially in Southeast Asia and broader Asia where there is significant demand for graduates knowledgeable in politics, international relations and development studies. Opportunities include positions in government ministries, international organizations, non-governmental organizations, think tanks, the media, international businesses and educational institutions. To increase their opportunities many of our undergraduate students progress to postgraduate study at IDIS or at other universities across the globe.

Course Synopsis and Methodology:

Master of Arts Program in Diplomacy and International Studies (International Program)

1st Year

PLAN A (Academic subjects, and Thesis)	PIAN B (Academic subjects, and Interdepend Studies)
Semester 1 IDS 602 Foreign Policy Analysis 3(3-0-6) IDS 603 International Politics and Security 3(3-0-6) IDS 607 Negotiations and Conflict Resolution 3(3-0-6) IDS 661 Research Methodology 3(3-0-6) Total 12 credits	Semester 1 IDS 602 Foreign Policy Analysis 3(3-0-6) IDS 603 International Politics and Security 3(3-0-6) IDS 607 Negotiations and Conflict Resolution 3(3-0-6) IDS 661 Research Methodology 3(3-0-6) Total 12 credits
Semester 2 IDS 605 International Economics and 3(3-0-6) International Business IDS 608 Political Economy of Asia 3(3-0-6) IDS 611 Asia Diplomacy 3(3-0-6) IDS 612 International Organizations and 3(3-0-6) Human Rights Total 12 credits	Semester 2 IDS 605 International Economics and 3(3-0-6) International Business IDS 608 Political Economy of Asia 3(3-0-6) IDS 611 Asia Diplomacy 3(3-0-6) IDS 612 International Organizations and 3(3-0-6) Human Rights Total 12 credits

2nd Year

PLAN A (Academic subjects, and Thesis)	PIAN B (Academic subjects, and Interdepend Studies)
Semester 1	Semester 1
IDS 699 Thesis 6(0-12-6)	IDS xxx Elective 3(x-x-x)
	IDS xxx Elective 3(x-x-x)
Total 6 credits	Total 6 credits
Semester 2	Semester 2
IDS 699 Thesis 6(0-12-6)	IDS 697 Comprehensive Examination 0(0-0-0)
	IDS 698 Independent Studies 6(0-12-6)
Total 6 credits	Total 6 credits
Total 36 Credits	Total 36 Credits

Applicant Qualifications:

The program is open to students with or without prior knowledge of politics and international studies who wish to increase their understanding of globalization and current events in international affairs. Students will gain a comprehensive understanding of various aspects of diplomacy and international relations, and also have the option to write a thesis/ an Independent Study in their chosen area of research.

Document Required:

Identification Card	House Registration
Passport (for foreign)	4 Photographs (1 Inch size)
Certificates Degrees	Transcripts

English Language Requirement (TOEIC score minimum 640, IELTS score minimum 5.5)

Contacts:

The Institute of Diplomacy and International Studies, Rangsit University 52/347 Muang Ake, Paholyothin Road, Lakhok, Pathumthani 12000 Thailand

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Course Detail

Masters of Arts Program in Social Innovation and Sustainability

Course Title:	Masters of Arts Program in Social Innovation and Sustainability (International Program)
Master Degree:	Masters of Arts (Social Innovation and Sustainability)
Academic Institution:	School of Global Studies, Thammasat University
Duration:	1 year (August 2022 – July 2023) Semester 1 August – December Semester 2 January – May Summer June - July

Background and Rational:

The Masters of Arts in Social Innovation and Sustainability is a unique graduate-level program that defines sustainability and social innovation from a socio-political perspective. It combines innovation, sustainability analysis and business management within the context of cross-sector collaboration and inter-regional and international capacity building.

The program is administered by the School of Global Studies, which is committed to the promotion of international collaboration in education and research by creating and sustaining partnerships based on the principles of equity, transparency, inquiry, mutual interest and respect, all of which are embedded in the master's program.

Using the case study method, the principles of sound business management and the development of practical applications to real-world problems, the program is tailor-made for collaborative learners and innovative thinkers who appreciate cultural diversity, interdisciplinary understanding and creative problem-solving. The program has as its focus on global sustainability, development, management and the challenges of human security through social innovation and human-centred design.

The Master's program in Social Innovation and Sustainability has been specifically designed to enhance the learner's knowledge, ability and skills to navigate and succeed in today's increasingly complex and interconnected world.

In a rapidly changing and interconnected world, students will gain critical skills to increase your competitive edge for employment mobility in the future global job market. Our classroom and non-classroom environments ensure learning that instils competencies, including critical thinking, leadership, communication, time management, teamwork ability, problem-solving, creativity, adaptability, and business skills.

The School of Global Studies is a new and innovative academic initiative within Thammasat University and a front-runner in global health and social innovation within Thailand, Southeast Asia and beyond. It has a track record of excellent research on determinants of the public's health, student-centred teaching, and academic service relevant to community needs.

The school enjoys a unique position of being a national, regional and global focal point for global studies, human security and wellbeing with collaborative relationships with academic and professional communities.

Instructors in the program are experienced academics, mostly holding PhDs in their field of expertise. They have a wide range of backgrounds and draw on extensive research as well as professional experience.

The program will be held at the Tha Prachan campus of Thammasat on the weekend and evenings to enable working professionals to join the program as students.

Objectives:

1. The program has the following objectives:
2. Understand the challenges facing the world from a global and local level.
3. Learn how to apply approaches to social innovation to address pressing social issues.
4. Develop the necessary critical thinking skills to identify and solve social problems.
5. Develop skills in sustainability analysis and learn how to develop and implement sustainability in practices in organizations.
6. Learn how to apply human-centred design to develop products and services that respond to social needs and sustainable development goals.
7. Develop leadership, management and collaboration skills necessary for creating cultures of innovation.

Course Synopsis and Methodology:**1. Study plan****Study Plan for Plan A (A2)**

The first year: Semester 1	
GS601 Sustainability and the Global Political Economy	3 Credit
GS603 Approaches to Social Innovation	3 Credit
GS611 Research and Design Thinking	3 Credit
GS613 Designing Organizations for Impact	3 Credit
GS621 Seminar on Social Innovation and Sustainability	3 Credit
Total	15 Credit

The first year: Semester 2	
GS741 Research Method for Social Innovation and Sustainability	3 Credit
GS742 Prospectus Development	3 Credit
GS743 Introduction to Philosophy of Social Science	3 Credit
GS800 Thesis	6 Credit
Total	15 Credit

Summer	
GS800 Thesis	6 Credit
Total	36 Credit

Study Plan for Plan B

The first year: Semester 1	
GS601 Sustainability and the Global Political Economy	3 Credit
GS603 Approaches to Social Innovation	3 Credit
GS611 Research and Design Thinking	3 Credit
GS613 Designing Organizations for Impact	3 Credit
GS621 Seminar on Social Innovation and Sustainability	3 Credit
Total	15 Credit

The first year: Semester 2	
GS731 Project Management and Impact Assessment	3 Credit
GS752 Behavioral Economics for Sustainability	3 Credit
GS753 Strategic Leadership for Social Transformation	3 Credit
2 Subject of Prescribed Elective Course	6 Credit
Total	15 Credit

Summer	
GS790 Independent Study	6 Credit
Total	36 Credit

2. Course Content

Course Descriptions

1) Compulsory Courses

GS601 Sustainability and the Global Political Economy 3 (3-0-9)

Using the UN SDG framework, the course examines the major global and local sustainability challenges and pathways towards achieving the SDGs. Students examine the role of various state and non-state actors in creating a sustainable world. Moreover, students learn to apply theories and frameworks to understand the political-economic dimensions of global and local sustainability challenges and how state and non-state actors can navigate them to achieve the SDGs. Strong consideration is given to the challenges and opportunities that emerge from global interconnection.

GS603 Approaches to Social Innovation 3 (3-0-9)

This course introduces students to the theories, strategies, and processes of social innovation and social change. Students learn about sociological and anthropological theories of social change while also learning about various strategic approaches to societal change. Importantly, the course also draws on business theories of innovation such as disruptive innovation and platform business models and examines their potential for driving social change through market mechanisms. Through case studies, students study individuals, groups and organizations who have catalyzed positive social change through the market, government, and non-profit organizational channels.

GS611 Research and Design Thinking 3 (3-0-9)

This course provides students with the foundational skills of social science research and design thinking to prepare students to conduct academic research as well as research for practical social innovation research projects. Students learn about qualitative and quantitative research methods and tools to design and execute research projects. Students develop skills in ethnographic methods and conceptual tools used to engage in place-based social inquiry. The course will also provide a theoretical and practical explanation about the research, sampling, data collection, field-visit, interviewing, and details about ethical issues, questionnaires, data analysis and other relevant issues.

GS613 Designing Organizations for Impact**3 (3-0-9)**

Students study the structure and dynamics of organizational systems and learn to design organization structures and create impactful cultures aligned with strategic goals. Consideration is given to the external environment, technology, organizational structure (and their interrelationship), organizational culture and change management. The course also covers innovative business models, financing organizations, and innovation culture. Students learn to recognize, manage and overcome bottlenecks hampering organizational growth, achievement of strategic organizational, and delivering social impact. Students also learn about enterprise models and innovative financing mechanisms that support social impact projects.

GS621 Seminar on Social Innovation and Sustainability**3 (3-0-9)**

In this course, students develop practical skills for understanding sustainability challenges and developing social innovations through a variety of workshops and practical experience. To complement the academic and theoretical knowledge and skills acquired in other courses, students engage in practical design and entrepreneurial workshops to produce social innovation and sustainable solutions. They have the opportunity to engage with and learn first-hand from social entrepreneurs and innovators who are active in creating solutions for pressing societal and environmental challenges.

2) Only for students Plan A**GS741 Research Method for Social Innovation and Sustainability****3 (3-0-9)**

The goal of 'Research Methods for social innovation and sustainability' is to learn how research is being done, and to put that knowledge into practice. Students will learn how to apply a great number of tools and techniques, draw conclusions from the research. It will describe both qualitative and quantitative research, their design, problems and tools to investigate. As a general course on research methodology, it will provide the theoretical and practical explanation about the research, sampling, data collection, field-visit, interviewing, and details about ethical issues, questionnaires, data analysis and other relevant issues. It is expected that this course will enable the participants to take advanced research with sound technical knowledge about methodology.

GS742 Prospectus Development**3 (3-0-9)**

Prospectus Development enables students to read and discuss academic publications of their choice related to their thesis topic. Readings are analyzed and critiqued through regular class discussions and presentations. Students learn to move from analysis of literature to the development of research questions and the formulation of a research proposal.

GS743 Introduction to Philosophy of Social Science**3(3-0-9)**

The introductory course provides an overview of ontological and epistemological traditions and their implications for contemporary social science. It covers paradigmatic traditions-programmatic and methodological standpoints. The course also provides an overview of methodological implications and strategies. The course illustrates the building blocks of social science, descriptive strategies, traditions of interpretation, forms of aggregation and strategies of inference, forms of explanation and explanatory strategies. The course concludes with the controversies within the field of philosophy of science.

3) Only for students Plan B

GS731 Project Management and Impact Assessment 3 (3-0-9)

This course equips students with the fundamentals skills, tools and concepts of project management so students can successfully develop, execute and manage an impactful project. Students learn to skillfully manage their resources, schedules, risks, and scope to produce the desired outcome. In this course, students explore project management with a practical, hands-on approach through case studies and class exercises. Students also learn various methods of monitoring and evaluating projects. Moreover, they develop a critical understanding of environmental and social impact assessment tools so the outcome of social innovation projects can be anticipated and measured.

GS752 Behavioral Economics for Sustainability 3 (3-0-9)

In this course, students are introduced to Behavior Economics and learn how to apply to shape sustainable practices at an individual, community and organisational level. Through this course, students also develop skills in applied social psychology and cross-cultural communication. Case studies of successful interventions are examined. For the course project and major assessment, students develop a sustainable behaviour change intervention using concepts and tactics studied in the course.

GS753 Strategic Leadership for Social Transformation 3 (3-0-9)

In this course, students develop strategic leadership skills. They learn how to create and articulate a strategic vision for organisational and social change. The course examines the tasks, skills and strategic competencies that enable a strategic leader to guide social transformation while navigating the tensions between stakeholders and short and long term needs and goals.

4) Prescribed Elective Course

GS762 Seminar on Sustainability Practices 3 (3-0-9)

In this course, students acquire competencies in sustainability defined as “the capability of an organization to transparently manage its responsibilities for environmental stewardship, social well-being, and economic prosperity over the long-term while being held accountable to its stakeholders.” Through this course, students learn how to develop and execute sustainable organisational practices through studying a range of case studies. Students are expected to study local enterprises and learn first-hand from corporate leaders endeavouring to develop sustainable enterprises.

GS763 Technology for Sustainable Development 3 (3-0-9)

The aim of this course is to examine the role of technology in fostering sustainable development in emerging economies. The course focuses on digital technologies and new enterprise models powered by digital technologies. Students examine digital divides and how to create more inclusive digital economies. Additionally, through various case studies, students learn how to leverage digital technologies such as new media, blockchain and platform technologies to solve various societal and environmental challenges. Students will examine how various Thai and Southeast Asian NGOs, social enterprises and start-ups use technology to achieve their impact goals.

GS772 Design Skills for Projects**3 (3-0-9)**

This course is a dive deep into the personal and cultural leadership essentials required to implement effective innovation and design thinking initiatives. Students will explore transferable tools and contemporary conversations about the opportunities and challenges of driving change in the 21st century. This course will specifically focus on internal and external dimensions for design and innovation leadership including: the role of self-awareness and empathy, creative innovation mindsets, effective facilitation methods to unlock insights among stakeholders, creative confidence, and project management for complex organizational systems (from hyper-local to globally distributed teams). Students will gain a sharpened set of strategic skills and insights ready for immediate application to their daily life at work and home.

GS773 Design for Impact and Disruption**3 (3-0-9)**

Designers can contribute to the social and environmental challenges. In this course, the students will be exposed to and applied methods that are utilized to expand creative possibilities in products, services and systems in a responsible manner. Students will be equipped with design tools in a train-the-trainer format across a series of workshop style classrooms with real-world case studies.

GS782 Reengineering CSR**3 (3-0-9)**

CSR assumes many forms from shared value, social and corporate governance (ESG), corporate citizenship, ethical corporation and etc. It has a significant role in sustainability in a globalized world not only within the organization but extends to national context and beyond. This course will trace how the concept of CSR has evolved and adopted in the business sector as well as viewed by society at large. This course will explore how CSR can fulfill its landscape in the sustainability arena for the greater goods among practitioners in private sector, government and non-governmental organization.

GS783 Ethical Decision Making**3 (3-0-9)**

Poor moral judgment can ruin a manager's career. It can even sink an entire company. Accordingly, in today's volatile and fiercely competitive business environment, a manager must possess not only technical and communication skills. He or she must also be able to identify and effectively resolve ethical issues that inevitably arise in the pursuit of business (and career) objectives. That is, a manager must be able to make business decisions that are defensible ethically as well as economically. This course is designed to enhance students' skills in moral reasoning as it applies to managerial decision-making. This course will also include issues of ethics and corporate culture. In many cases, the unethical behavior is due in part to a "toxic" corporate culture. The attitudes, values, and practices that prevail in the organizations induce otherwise ethical employees to take actions that violate widely shared norms of conduct. The course will bring concepts of behavior, its impact and alternative to the attitude of "only results matter".

5) Elective subject**GS666 Digital and Social Media Strategy****3 (3-0-9)**

Digital/social platforms present firms with enormous opportunities for creating and enhancing value for both themselves and stakeholders such as customers. How these communications technologies can—and should—be used for strategic value-generating purposes, however, is not straightforward. This course grapples with this challenge, with the primary aim being to help students understand how to unlock the value in digital/social platforms across a variety of business contexts and for a number of markedly different purposes. The role that digital/social platforms can play goes well beyond marketing, or as a new vehicle for (or substitute to) advertising. Thus, this is not, strictly speaking, a “marketing” course. Rather, it is a course about how digital and social media can be used to enhance business value.

GS677 Communication for Innovation**3 (3-0-9)**

This course will examine the relationships between communication and innovation and highlights the importance of communication as a precursor to innovation and sustainable change. The course will also structure the principles of communications and relate with the global changes. In a specific way, it will link with marketing and entrepreneurship while emphasizing the techniques and principles of human relations, leadership and business communication both oral and written and new communication tools. Through the use of active learning tools, students will enhance their skills in communicating the designing processes to their stakeholders including the skills in conversations.

GS685 Dialogues for Competitive Advantage**3 (3-0-9)**

Creating change that disrupts the status quo may pose challenges in leveraging its influence among key stakeholders. Communicating the outcomes and their impact requires a set of skills beyond the common communication techniques. This course will equip the students with negotiation techniques in order to engage in effective dialogues with stakeholders. Through the use of verbal communication, problem solving and interpersonal skills, the students will learn to be an effective influencer. Adopting active learning tools, the students will develop negotiation skills across different scenarios.

GS688 Managing the Nonprofit Sector and Philanthropy**3 (3-0-9)**

The course includes the management of Nonprofit Sector. Managing an NGO is an especially challenging endeavor as it requires not only interpersonal skills to deal with a wide range of people (stakeholders), but it also requires a broad knowledge of how communities and society work. It is not just about doing good, but also making sure actions do not cause unintended consequences and the organization remains sustainable. This course will give you an overview of 31 the many facets an NGO manager must face each day. The course is divided into two basic sections: Theory and Practice. Theory will cover a broad range of topics to give you a firm understanding of how things go wrong, the different sectors in society, how managers prioritize requests on their time and resources (stakeholder theory), and lastly how to apply business planning to an NGO.

6) Thesis
GS800 Thesis

12
Credit

The thesis, under Plan A, is an individual student project to demonstrate his/her ability to formulate, investigate, and analyse a problem in a practice setting. Students choose a topic, relevant to the field of sustainability, social innovation, development or business. The research with specific study focus, will be advised and approved by the advisors, who would agree to supervise and evaluate the students' work. The thesis project includes research design, field level research, desk research, application of various research methodologies and tools, and extensive analysis of acquired data. Participation in seminars and academic conference is an integral part of students' thesis work. Students need to defend their thesis proposal prior to conduct the research. The project has to meet the academic criteria of clear knowledge contribution, neutral framing, objective investigation and ethical approach.

7) Independent Study
GS790 Independent Study

6 Credit

The independent study is a continuation of the capstone experience for students in Plan-B of the MASS program, which uses the knowledge and skills acquired during the course of study leading to the Master's degree. This study is designed to introduce students to the process of reporting on their independent study projects and practical activities. Students will formulate an appropriate report on their independent study project. Seminars will afford students the opportunity for peer review and instructors' feedback.

Graduation Conditions:

Plan A (A2)

- 1) Complete all subjects following the course structure and have cumulative credits at least 36 credits.
- 2) GPA not less than 3.00
- 3) Pass (P) an English language exam following Thammasat University criteria before thesis examination.
- 4) Thesis proposed and passed the interview session (speaking test) by School of Global Studies committee upon opening system for people who interested.
- 5) Get "S" level for thesis exam and submit the complete thesis which following a university regulation concerning thesis, thesis paper and independent research.
- 6) Thesis or part of thesis must be published or implementing thesis or part of thesis to be accepted for publication in qualify international journal, following Office of Higher Education Commission announcement entitled "Consideration criteria for academic journal for academic work publication or nominated to international academic conference" with full-paper article which published in the conference report.
- 7) Following both School of Global Studies and Thammasat University regulations.
- 8) All the payment being paid to a university.

Plan B

1) Complete all subjects following the course structure and have cumulative credits at least 36 credits

2) GPA not less than 3.00

3) Pass (P) the Comprehensive Examination

4) Pass (P) an English language exam following Thammasat University criteria before independent research interview (speaking session)

5) Independent research proposed and passed the interview session (speaking test) by School of Global Studies committee upon opening system for people who interested

6) Get “S” level (Fair) for independent research exam and submit complete independent research which following a university regulation concerning thesis, thesis paper and independent research.

7) Independent research report or part of independent research report must publish on website or some way that can be reached

8) Following both School of Global Studies and Thammasat University regulations.

9) All the payment being paid to a university

Applicant Qualifications:

1. Bachelor's degree in all branches of social sciences, humanities, science and technology, applied science and hygiene in Thailand or educational institutions abroad which endorsed by the university council.

2. GPA at least 2.75

3. Applicants must qualify as appeared in Thammasat University Regulations on Graduate Studies, 2018.

4. English efficiency: can be obtained from one of the following criteria.

1) TOEFL paper-based (PBT) 550

2) TOEFL Internet-based (IBT) 79

3) TOEFL Institutional Testing Program (ITP) 550

4) IELTS 6.5

5) TU-GET paper-based (PBT) 550

6) TU-GET computer-based (CBT) 79

5. Internship and education support experiences would be appreciated.

Document Required:

- TIPP Application and Medical Report: <https://tica-thaigov.mfa.go.th/en/page/75500-tipp-application-form?menu=605b13dbb6f1b76ed31778b3>

- Transcript

- Recommendation Letter

- English Test

- Financial Statement (only for international applicants)

- Visa (only for international applicants)

- identification (copy of a passport)

Contact:

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***The application procedure will complete when TICA has received the hard copy of the application form and other related documents through the Royal Thai Embassy/Permanent Mission of Thailand to the United Nations/Royal Thai Consulate – General accredited to eligible countries/territories.

Course Detail

Master of Arts in Environment, Development and Sustainability

Course Title:	Master of Arts in Environment Development and Sustainability (International Program)
Master Degree:	Master of Arts (M.A.) in Environment, Development and Sustainability
Academic Institution:	Graduate School, Chulalongkorn University
Duration:	2 years (August 2022 – 2024)

Background and Rational:

EDS Program, Chulalongkorn University is unique among degrees from post-graduate institutions in both country and regional levels that provides an integrated approach to topics like sustainable development and relevant aspects (i.e. environmental and socio-economic development). Regarding to the Twelfth National Economic and Social Development Plan (2017-2021) which is designed based on the 20-year National Strategy framework (2017- 2036) and the country's Sustainable Development Goals (SDGs), the directions and strategies of country development are to achieve the objectives of "Security, Prosperity, and Sustainability" as the Thailand 4.0 national policy. In this context, instead of focusing only on environment and development studies, the EDS studies also cover the following research areas: Sustainable Development Goals (SDGs) and its Challenges, Business and trade strategies for Environmental Management, Self Sufficiency Economy, Energy Planning, Poverty Reduction, Natural Resource Management, Sustainable Consumption and Production, Waste Management, Green Building and Urban Development in addition to core Climate Change Mitigation, Resilience and Adaptation even as all Ecosystem related topics like Green Industry, Soil degradation, Biological Diversity , Pollution, and so on. Apart from this, looking at the global, regional, and local scales of development, lecturers from universities and institutions from around the world share their experiences from working with groups as large as the United Nations and as small as community-driven initiatives.

Objectives

The EDS Program's objective is to broaden the horizons of students to integrate their studies across various sub-disciplines in both the natural and social sciences so that their results lead to sound public policy and good governance in driving the SDGs in all national, regional and global levels.

Course Synopsis and Methodology:**Study Plan**

A Required Minimum of 36 Credits	
Course Work	24 Credits
- Compulsory Course	12 Credits
- Elective Course	12 Credits
Thesis	12 Credits
Totally	36 Credits

Course Content/ Study Topic**Required Courses (12 Credits)**

2023601 Research Methodology in Environment, Development and Sustainability	(3)
2023602 Understanding Environment, Development and Sustainability	(3)
2023603 Sustainable Resource Management	(3)
2023605 Development: History, Theory, Policy and Practice	(3)

Elective Courses (12 Credits)

For 4 Elective Course student have to choose form Courses list in 2nd Semester -

Thesis (12)

2023811 Thesis (12 Credits)

Graduation Conditions:

Completed all credits of EDS Course works (See 7.1 - 7.2)

The research has been published according to the requirements of Graduate school Chulalongkorn University

The EDS thesis has been published according to the requirements of Graduate school Chulalongkorn University

Applicants Qualifications:

1. Hold a Bachelor's degree in any discipline
2. An English proficiency test of a CU-TEP, IELTS or TOEFL score is at least 60, 5.0 or 500
3. Other particular qualifications will be based on an approval of the program committee

Document Required:

One-page statement of intent in English (~200 words), describing present activities, publications, research interests, academic achievements, and future plans

A printed application form with a 1-inch photograph attached*

An official transcript of academic records

A photocopy of identification card/passport

A score of English proficiency test CU-TEP, IELTS or TOEFL f22-26

Two letters of recommendation

Contacts:

Academic Lecturers:

Asst. Prof. Suthirat Kittipongvises (Director)

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