Course Detail

Master of Science Program in Science (International Program)

1. Course Title:	Master of Science Program in Science (International Program)
2. Master Degree:	Master of Science Program in Science (International Program)
3. Academic Institution:	School of Science, Walailak University

4. Duration:

- 2 years for type A1 (Research only) from June 2025 – May 2027
- 2 years for type A2 (Research and course works) from June 2025 - May 2027
- Semester 1 starts June – October, semester 2 starts November - May
- Application opens throughout the year

5. Background and Rational:

The Master of Science Program (International Program), School of Science, Walailak University has been established in 2020. It is a unique cooperation among our renowned life science departments. The program offers a multidisciplinary research in the integrated physical and biological sciences. This program is designed based on the European model, which the candidates could produce high quality research and graduate in 1.5-2.0 years. The Master of Science Program (International Program) aims to produce graduates to meet the requirements of various organizations. Students who choose to study with us can expect an enhanced learning and training environment, excellent facilities, and interaction with students from around the globe. The M.Sc. students benefit from excellent research training and a wide range of choice for their research projects with appropriate principles and research methodology under the supervision of the thesis advisory committee.

The School of Science is one of the most dynamic and creative faculties in Walailak University. It offers a unique cooperation among our renowned life science departments. Our dedicated faculty and staffs are committed to educating tomorrow's leaders in science and mathematics. School of Science has strengths in research, innovation and publication. International publication records a high standard both in terms of quantity (2 Scopus papers per capita) and quality (ranked in the Nature Index). Consequently the Ph.D. staffs are capable of supervising the learning and research process for both undergraduate and graduate students. Students have the opportunity to enhance their learning experience by participating in our distinctive research experience.

6. Objectives:

The Master of Science Program (International Program) aims to produce independent researchers. It offers an excellence opportunity for students who wish to pursue advanced studies in multidisciplinary sciences in close cooperation with local and international agencies. It is ideal for Thai and international students who are interested in oversea studies and cross-cultural learning.

7. Course Synopsis and Methodology:

7.1 Study plan

Program of Study

Type A1(Type Academic 1) : Research (Total 36 credits)	
Required courses:	
Seminar I-II	4 (non-credits)
Thesis	36 credits
Duration	1.5-2.0 years
Type A2 (Type Academic 2): Research and Coursework (Total 36 credits)	
Required courses:	
Seminar I-II	4 (non-credits)
Core courses	9 credits
Major Course	15 credits
Thesis	12 credits
Duration	1.5-2.0 years

Type A1 Study Plan (Research)

Year	**Semester 1**			**Semester 2**		
1	SCI68-941	Seminar I	2 (non-credits)	SCI68-942	Seminar II	2 (non-credits)
	SCI68-981	Thesis (Plan A1)	3 credit	SCI68-981	Thesis (Plan A1)	9 credit

	CGS68-001	Research Ethics and Research Planning for Graduate Study		CGS68-002	Creation of Media and Academic Presentations	
	Total 3 credits			**Total 9 credits**		
2	SCI68-981	Thesis (Plan A1)	12 credit	SCI68-981	Thesis (Plan A1)	12 credit
	CGS68-003	References and Prevention of Plagiarism and Infringement in Academic Work				
	Total 12 credits			**Total 12 credits**		

*Non-credits

Type A2 Study Plan (Research and Coursework)

Year	**Semester 1**			**Semester 2**		
1	SCI68-511	Research Methodology	3 credit	SCI68-941	Seminar I	2 (non-credits)
	SCI68-512	Statistical Data Analytics	3 credit	SCI68-521	Scientific Research Framework	3 credit
	SCI68-513	Scientific Writing	3 credit	SCI68-522	Impact of Science and Technological Research	3 credit
	CGS68-001	Research Ethics and Research Planning for Graduate Study		SCI68-523	Application of Artificial Intelligence	3 credit

					for Science Research	
				CGS68-002	Creation of Media and Academic Presentations	
	Total 9 credits			**Total 9 credits**		
2	SCI68-942	Seminar II	2 (non-credits)	SCI68-982	Thesis (Plan A2)	9 credit
	SCI68-621	Integrated Science	3 credit			
	SCI68-622	Special Topics in Science	3 credit			
	SCI68-982	Thesis (Plan A2)	3 credit			
	CGS68-003	References and Prevention of Plagiarism and Infringement in Academic Work				
	Total 9 credits			**Total 9 credits**		

Type A1 Study Plan (Research)

Activities	**Month**					
	1-3	**4-6**	**7-9**	**10-12**	**13-15**	**16-18**
1. Students submit the concept proposal						
2. Students do the preliminary study and submit a full thesis proposal to the committee						
3. Thesis proposal defense						
4. Students complete the experiment						

5. Writing up the manuscript						
6. Writing up thesis						
7. Thesis submission to the advisor						
8. Thesis submission to the committee						
9. Thesis defense						
10. Thesis correction						
11. Thesis submission to the Center for Educational Services						
12. Thesis submission to the graduate school and School of Science						

Type A2 Study Plan (Research and Coursework)

Activities	Month						
	1-3	4-6	7-9	10-12	13-15	16-18	19-24
1. Students attend the coursework							
2. Students submit the concept proposal							
3. Students do the preliminary study and submit a full thesis proposal to the committee							
4. Thesis proposal defense							
5. Students complete the experiment							
6. Writing up the manuscript							
7. Writing up thesis							
8. Thesis submission to the advisor							
9. Thesis submission to the committee							
10. Thesis defense							
11. Thesis correction							
12. Thesis submission to the Center for Educational Services							
13. Thesis submission to the graduate school and School of Science							

7.2 Course Content

SCI68-941 **สัมมนาทางวิทยาศาสตร์ 1** **2(0-4-2)***

Seminar in Science 1

This course is designed to encourage students to apply scientific research articles for developing thesis proposal in accordance with the ethics and code of conduct for researcher. The course aims to encourage students to select the up-to-date papers, search for information, collect research processes, techniques, and relevant principles from scientific journals focusing on topics related with thesis. The activities include oral presentation, discussion, asking, answering questions and accepting opinions from other participants.

SCI68-942 **สัมมนาทางวิทยาศาสตร์ 2** **2(0-4-2)***

Seminar in Science 2

This course aims to encourage students to analyze the research problem, hypothesis according to ethics and code of conduct of researchers. The students are able to analyze, synthesize the key concepts and complex techniques used in the scientific research articles. The students are obliged to integrate the knowledge with related fields and develop a thesis research proposal. The activities include oral presentation, discussion, asking, answering questions and accepting opinions from other participants.

SCI68-981 **วิทยานิพนธ์ (แบบวิชาการ 1)** **36 หน่วยกิต**

Thesis (Type Academic 1)

This course aims the students to study, conduct, collect information related to science research in subjects of interest based on scientific research principles and ethics under supervision of thesis advisor. The activity aims students to analyze, synthesize, criticize, present the progress, writing the reports and thesis in English and publish research finding in the international academic journals in accordance with research ethics principles.

SCI68-982 **วิทยานิพนธ์ (แบบวิชาการ 2)** **12 หน่วยกิต**

Thesis (Type Academic 2)

This course aims the students to study, conduct, collect information related to science research in subjects of interest based on scientific research principles and ethics under supervision of thesis advisor. The activity aims students to analyze, synthesize, criticize, present the progress, writing the reports and thesis in English and publish research finding in the international academic journals in accordance with research ethics principles.

CGS68-001 **จริยธรรมการวิจัยและการวางแผนวิจัยสำหรับบัณฑิตศึกษา**

Research Ethics and Research Planning for Graduate Study

This course activity focuses on giving students an understanding of research ethics for research at the graduate level. The contents cover the principles of research ethics, ethics in conducting human research, ethics in raising and using animals for research, and research planning that complies with research ethics.

This activity aims students to practice in analyzing research ethics principles from case studies, research design and planning that complies with research ethics, and training to apply for ethics consideration in human and animal research.

CGS68-002 **การสร้างสรรค์สื่อและการนำเสนอทางวิชาการ**

Creation of Media and Academic Presentations

This course activity aims to encourage students to design media for academic presentations and oral presentations of academic work. This activity covers principles and techniques of media design and oral presentations to communicate academic information for understanding and principles of persuasive speaking in order to attract listeners and communicate to gain understanding.

This activity uses various case studies to students practice in media design and oral presentation skills, and practice persuasive speaking skills to attract listeners and communicate to gain understanding. In addition, this activity emphasizes students to practice using reference principles in media preparation and presentation.

CGS68-003 **การอ้างอิงและการป้องกันการลอกเลียนและละเมิดผลงานทางวิชาการ**

References and Prevention of Plagiarism and Infringement in Academic Work

This course activity focuses on giving students an understanding of referencing and prevention of plagiarism and infringement of academic work for writing articles or research reports at the graduate level. The contents cover the principles of reference and prevention of plagiarism and infringement of academic work.

This activity aims students to practice citing skills in articles or research reports and practice analyzing plagiarism and infringement of academic work from case studies.

Core course for Plan A2:

SCI68-511 **ระเบียบวิธีวิจัย** **3(3-0-6)**

Research Methodology

This course is designed to enable students to apply the research methodology as a tool in conducting research according to ethical principles. This course has topics related to concept, philosophy, theory, research type, design, planning, research methodology, interpreting scientific data, and research ethics. This course aims to enable students to use research methods as a tool for planning thesis research correctly according to the principles of the scientific process.

SCI68-512 **การวิเคราะห์ข้อมูลเชิงสถิติ** **3(2-3-6)**

Statistical Data Analytics

This course is designed for students to apply the statistical data analyses in planning and analyzing data obtained from experiments. The course aims to ensure that students understand these principles and can accurately conduct statistical analyses in accordance with ethical research standards. The lecture topics include type of statistics, statistical technical terms, data collection, probability, estimation and hypothesis testing, ffrequency analysis, one way and multi-way analysis of variance, and multiple linear regression. There will also be a demonstration and practicing related technologies

SCI68-513 **การเขียนบทความทางวิทยาศาสตร์** **3(2-3-6)**

Scientific Writing

This course is designed for students to apply the principles of scientific writing for publication in academic journal. The topics include the essential rules for publishing scientific articles, methods for writing abstract, introduction, literature reviews, research methodology, discussion and conclusion. Students will learn how to present research findings in various formats, including graphs, tables, pictures. Additionally, students will learn how to use software tools to check for plagiarism and duplication, ensuring proper citation practices that adhere to ethical standards, respecting intellectual property rights. The course also includes the study of examples from international journals relevant to the students' fields of expertise. Students will be equipped to write research papers suitable for publication, following scientific principles and research ethics

Major Course for Plan A2:

SCI68-521 กรอบการวิจัยเชิงวิทยาศาสตร์ **3(3-0-6)**
Scientific Research Framework

This research is designed to enable students to analyze and apply the research framework to their research. The topics include definition of research framework, conceptual framework, how to propose the research framework, and benefits of research framework. Students will also analyze, criticize the examples of research frameworks and design their own related to the thesis according to scientific processes and ethics.

SCI68-522 ผลกระทบของงานวิจัยทางวิทยาศาสตร์และเทคโนโลยี **3(3-0-6)**
Impact of Science and Technological Research

This course is designed for students to apply methods for analyzing the impact of scientific and technological research. The topics include the research impact assessment path, inputs, outputs, and outcomes, rationale of research, worthiness of research investment. Students will learn how to analyze the impacts of scientific research on the economy, society, and the environment, guidelines and regulations regarding intellectual property. In addition, it includes the discussion of examples from international journals related to their field of expertise and involves hypothetical scenarios to design the impact of scientific research. The goal is for students to understand the impacts of scientific research accurately according to scientific principles and research ethics.

SCI68-523 การประยุกต์ใช้ปัญญาประดิษฐ์ในงานวิจัยวิทยาศาสตร์ **3(2-3-6)**
Application of Artificial Intelligence for Science Research

This course aims to encourage students to have analytical thinking skill and apply of artificial intelligence (AI) technology in conducting science research. The course consists of definition, concepts, principles of AI, AI types and machine learning technology, and its applications in writing the scientific articles, limitations, security, and ethics in the use of AI. Students will be able to apply AI such as ChatGTP, ChatBot in writing research articles based on scientific principles and research ethics.

SCI68-621 **วิทยาศาสตร์บูรณาการ** **3(3-0-6)**

Integrated Science

This course is designed to equip students with a scientific and critical thinking to integrate scientific knowledge. Modern science is becoming increasingly interdisciplinary and collaborative. The course provides an advanced background of core concepts in mathematics, physics, chemistry, and life science through lectures, seminars, and sharing by the invited lecturers and researchers. The course activities involve collaborative analysis among students from different fields to jointly design research plans aimed at creating innovative scientific contributions.

SCI68-622 **หัวข้อพิเศษทางวิทยาศาสตร์** **3(3-0-6)**

Special Topics in Science

This course is designed to provide students with the skills to analyze, synthesize, and critique scientific articles. Sample research papers published in international journals related to their field of expertise will be selected and analyzed for the experimental design, objectives, presentation methods, statistical analysis, result evaluation, discussion, strengths, weaknesses. Students will then write concise summaries in English and present selected topics to the audiences. This course enables students to apply their knowledge to develop their own research within their specialized field while adhering to research ethics.

List of the potential advisors and their expertise

Potential Advisors	**Research interests**
BIOLOGY	
Assoc.Prof.Dr. Mullica Jaroensutasinee	Biological Statistical Analysis, Population Genetics, Animal Behavior
Asst.Prof.Dr. Jariya Sakayaroj	Marine Mycology, Molecular Fungal Systematics
Assoc.Prof.Dr. Phitchayapak Wintachai	Molecular Virology, Antimicrobial Drug Discovery, Bacteriophage

Asst.Prof.Dr. Pimchanok Pimton	Embryonic Stem Cell Differentiation
Asst.Prof.Dr.Witsanu Saisorn	plant diversity,plant morphology , pollen morphology,plant anatomy ,molecular phylogeny
Asst.Prof.Dr.Pakpimol Ungcharoenwiwat	Microbial enzymes and applications,antimicrobial activity from medicinal plant
Dr.Curt H. Barnes	animal behavior, ecology, and conservation
Dr. Jiratthi Satthaphorn	Plant systematics, molecular phylogeny, palynology and plant diversity
Dr.Korkhwan Termprayoon	taxonomy and Systematics of Reptiles.
PHYSICS	
Assoc.Prof.Dr. Krisanadej Jaroensutasinee	Ecoinformatics
Assoc.Prof.Dr. Chitnarong Sirisathitkul	Magnetic Materials, Composites and Nanostructures
Assoc.Prof.Dr. Mudtorlep Nisoa	Plasma and Electromagnetic Waves
Asst.Prof.Dr. Punsiri Dam-O	Physics Education
Assoc.Prof.Dr.Phongpichit Channuie	Cosmology and high energy physics
Asst.Prof.Dr.Thammarong Eadkhong	Sound absorption measurement, air pycnometer, creating the prototype physics laboratory, physics video analysis
Asst.Prof.Dr.Chairote Yaiprasert	ecologyMeteorology and oceanography
Asst.Prof.Dr.Sampart Cheedket	Physics of electromagnetic wave and application
Dr.Takol Tangphati	Modified gravity theories, Neutron/quark stars, Black holes, Wormholes
MATHEMATICS	
Assoc.Prof.Dr. Sanae Rujivan	Mathematical Finance. Stochastic Modeling, Parameter Estimation
Assoc.Prof.Dr. Janyarak Tongsomporn	Number Theory, Classical Analysis

Asst.Prof.Dr. Wanida Limmun	Regression Analysis, Mixture Experimental Design
Assoc.Prof.Dr. Kittipong Laipaporn	Central Limit Theorem
Assoc.Prof.Dr. Prathomjit Khachorncharoenkul	Linear Algebra
Assoc.Prof.Dr.Bundit Unyong	1) Mathematical Model, Epidemic Model and Applications 2) Mathematical Analysis 3) Teaching techniques for secondary and higher education mathematics
Asst.Prof.Dr.Phichet Jitjankarn	Transformation Semigroups, Coding Theory
Asst.Prof.Dr.Rasimate Maungchang	Geometric Topology and Visualization
Asst.Prof.Dr.Suttida Sangpum	Probability,Applied Statistics
Asst.Dr.Nopporn Thamrongrat	Probability,Stochastic Process
Asst.Prof.Dr.Kiattisak Prathom	Dynamical systems,Cell dynamics,Number theory
CHEMISTRY	
Asst.Prof.Dr. Upsorn Boonyang	Inorganic Chemistry
Asst.Prof.Dr. Kotchaphan Kanjana	Chemical Kinetics
Assoc.Prof.Dr.Montra Chairat	-Adsorption and thermodynamic studies for dyeing of textileswith natural dyes -Structural modification of natural dyes and/or surface modification of fibers for improving the dye uptake onto fibers -Biosorption of dye removal from textile effluents using low cost absorbents
Asst.Prof.Dr.Cholpisut Tantapakul	-Natural Products Chemistry -Biological Activity (Antioxidant, Antibacterial, Alpha-Glucosidase Inhibition)
Asst.Prof.Dr.Piyaluk Nurerk	-Development of sample preparation techniques and chemical sensors for the analysis of trace organic contaminants.
Asst.Prof.Dr.Parawee Rattanakit	-Miniaturized flow system -Biosensor -Environmental analysis

Asst.Prof.Dr.Apirak Payaka	-Hydration structure and dynamics of ions in aqueous solution by QM/MM MD simulations -Theoretical study of molecular structures of metal oxide complexes -Molecular interactions of protein-substrate complexes
Dr.Narongrit Sosa	1) Synthesis of porous materials including mesoporous and microporous zeolites and carbon-based materials 2) Surface functionalization of porous materials for heterogeneous catalysis, the development of antibacterial products, and the removal of heavy metals.
Asst.Prof.Dr.Theanchai Wiwasuku	1. Metal-organic frameworks (MOFs): design, synthesis, and crystal structure 2. MOF-based fluorescent sensor for environmental, agricultural, and medical monitoring.
Dr.Arreerat Jiamprasertboon	Advanced functional inorganic materials chemistry: the design of new functional materials and establish the structure-property relationship Photocatalysts for applications in environmental remediation, such as deNOx, organic dyes decomposition, and antibiotics neutralization, and energy conversion, such as H2 production via photocatalytic or photoelectrochemical water splitting Thin film preparation for self-cleaning and transparent conductive surfaces
Asst.Prof.Dr.Sujittra Poorahong	-Electrochemical sensors and biosensors -Electrocatalyst for water splitting -Nanomaterials -2D and 3D materials
MARINE SCIENCE	

Asst.Prof. Jantira Rattanarat	Geographic Information Technology, Remote Sensing
Asst.Prof.Dr.Amonsak Sawusdee	Fishery biology and restoration, coastal ecosystems

8. Graduation Conditions:

1. The student must fulfill all graduation requirements specified in the Walailak University Graduate Study Regulation B.E. 2563.
2. One paper of international standard must be published.

9. Applicant Qualifications

1. Holding a Bachelor's degree in Science or an equivalent in related fields.
2. Having a GPA of at least 3.25 out of 4.00 (or lower with sufficient research experience).
3. Demonstrating strong reading, writing, and communication skills in English.
4. To obtain the M.Sc. in Science, a TOEFL score of 450 or equivalent must be achieved during the study period.

10. Document Required

- Transcript
- Recommendation Letter
- English Test
- Proposed thesis proposal
- Name of potential advisor

11. Contact:

11.1 Assoc.Prof.Dr. Mullica Jaroensutasinee, a program chairman, Email: mullica.jn@gmail.com

11.2 Asst.Prof.Dr. Jariya Sakayaroj, a program coordinator**,** Email: jariya.sa@wu.ac.th