

## **Course Detail**

### **Master of Science Program in Agricultural and Environmental Science**

|                              |   |
|------------------------------|---|
| <b>Course Title:</b>         | Master of Science Program in Agricultural and Environmental Science (International Program) |
| <b>Master Degree:</b>        | Master of Science (Agriculture)   |
| <b>Academic Institution:</b> | Faculty of Agriculture, Khon Kaen University  |
| <b>Duration:</b>             | 2 Years (June 2024 - May 2026)  |

#### **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 Agricultural and Environmental Science (International Program) (Curriculum revised in 2022) 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.

## 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            |

## Course Content

### Required Courses

- Statistical Methods in Agriculture
- Seminar in Agricultural Science and Environment I
- Seminar in Agricultural Science and Environment II
- Thesis

### Elective Courses

- |  |   |
|--|---|
| - Soil Water and Plant Relationships                                   | - Fish Diseases and Diagnosis                                   |
| - Problem Soils and Integrated Management                              | - Fish Disease Control and Health Management                    |
| - Remote Sensing and Image Processing in - Agriculture and Environment | - Fish Nutrition  |
| - Ecological Risk Assessment and Remediation of Contaminated Land      | - Fish Feed and Alternatives                                    |
| - Water Security and Climate Change                                    | - Post-harvest Technology for Aquatic Animal                    |
| - Geographic Information System in Agriculture and Environment         | - Preservation and Value-addition Technology for Aquatic Animal |
| - Agricultural Pollution and Management                                | - Introduction to Precision Agriculture                         |
| - Soil Biotechnology   | - Precision Farming Hardware                                    |
| - Advanced Agribusiness Management                                     | - Soil, Water, Nutrient and Yield Variability                   |
| - Agribusiness Economics   | - Essentials in Molecular Biology                               |
| - Problem Solving and Decision Making in Agribusiness                  | - Agricultural Biotechnology                                    |
| - Statistics for Agribusiness  | - Applied Plant Breeding  |
| - Agricultural Extension Methodology                                   | - Applied Animal Breeding                                       |
| - Development and Administration in Agriculture                        | - Population Structure and Quantitative Genetics                |
| - System Theory and Community Analysis for Agricultural Development    | - Gene Mapping  |
| - Communication and Psychology for Agricultural Development            | - Fundamental of OMICS  |
| - Biological Control of Insect Pests                                   | - Agriculture Bioinformatics                                    |
| - Biological Control of Plant Diseases                                 | - Animal Cell Biotechnology                                     |
| - Organic Agriculture  | - Plant Cell Biotechnology                                      |
| - Ecosystem Management in Organic Agriculture                          |   |
| - Sustainable Aquaculture Fish Breeding and Production Planning        |   |

**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 (Download at: <https://tica-thaigov.mfa.go.th/en/page/75500-tipp-application-form?menu=605b13dbb6f1b76ed31778b3>)

- Medical Report (If candidates had submitted other health certificates without the TICA medical report form, their application will not be accepted for consideration)

- Transcript of Bachelor's degree (to show the courses that you have learnt throughout Bachelor's degree)

- Certificate of Bachelor's degree

- English test score (e.g. TOEFL (PBT 400) (IBT 64) or IELTS (4.5))

- Recommendation Letter (At least 3 people)

- Thesis proposal or other documents (As university request)

**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.