Course Detail

Master of Science in Bioscience for Sustainable Agriculture (International Program)

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 2020 – October 2022)

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		
1st Semester		
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 shell be conducted before the first semester of the second year.

The second year

1st 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

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:

Dr. Chaowanee Laosutthipong
Faculty of Animal Sciences and Agricultural Technology,
Silpakorn University, Phetchaburi IT campus,
Cha-Am, Phetchaburi,
Thailand 76120
Mobile (66) 898006338
Email: laosutthipong_c@silpakorn.edu

Dr. Panida Duangkaew
Faculty of Animal Sciences and Agricultural Technology,
Silpakorn University, Phetchaburi IT campus,
Cha-Am, Phetchaburi,
Thailand 76120
Mobile (66) 894599698
Email: duangkaew_p@silpakorn.edu

For administrative contact:

Miss Suchanuch Klongjai
Faculty of Animal Sciences and Agricultural Technology,
Silpakorn University, Phetchaburi IT campus,
Cha-Am, Phetchaburi,
Thailand 76120
Tel. (66) 32594037
Email: klongjai_s@silpakorn.edu

For more information:

Bureau of International Cooperation on Human Resources Development
Thailand International Cooperation Agency (TICA)
Government Complex, Building B (South Zone), 8th Floor,
Chaengwattana Rd. Laksi District, Bangkok 10210 THAILAND
Tel. +66 (2) 203 5000 ext. 43305, 43306 Fax: +66 (2) 143 8451
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.