

## **MASTER OF SCIENCE PROGRAM IN SYSTEM APPROACHES IN AGRICULTURE (SYSTEMS AGRICULTURE)**

**Academic Institution:** Khon Kaen University

**Duration:** Two (2) years program (academic year 2012 - 2013).

**Eligible Countries:**

Afghanistan, Bangladesh, Bhutan, Cambodia, Fiji, Gambia, India, Indonesia, Iran, Kenya, Kuwait, Laos, Lesotho, Malaysia, Malawi, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Palestine, Papua New Guinea, Philippines, Solomon Island, Sri Lanka, Timor-Leste, Vanuatu, and Vietnam.

**Objectives:** To produce M.Sc. graduates with the following qualifications:

1. Having knowledge of system concepts and methodologies and skill in their use.
2. Capable of analyzing and diagnosing problems in agriculture and natural resources management
3. Capable of conducting interdisciplinary system research to find solutions that are appropriated to farmers' conditions and circumstances at different hierarchical levels.
4. Having deeper knowledge in their specialized and/or related fields.
5. Having knowledge of world agricultural systems.
6. Able to appropriately utilize and transfer their research findings.

**Course Synopsis & Methodology:**

Agricultural development in the developing countries must overcome multiple interrelated problems that cannot be solved by traditional disciplinary-based approaches alone. As the economic development of these countries accelerates their natural resources and environments are suffering degradation that threatens the sustainability of their agriculture. In response, a shift of attention from increasing production to improving natural resource management is called for. At the same time, however, the increasing integration of these countries into the international economy demands that productivity and economic efficiency be increased if their agriculture is to be competitive. Measures to protect resources or boost productivity, however, may adversely affect the equitability with which the benefits and costs of agriculture are distributed among the rural population. Resolving conflicts among the multiple competing goals of agricultural development may best be achieved by employing a system perspective that integrates the biophysical and social aspects of agriculture into a single analytic framework. Consequently, academics, researchers, and staff of government agencies and NGOs concerned with agricultural development require not only knowledge of agricultural technologies, the interactions between the biophysical components that make up the resource systems, and socio-cultural factors influencing the behavior of farmers; they also need to understand system concepts and their application to agriculture and have well-developed skills in the special methodologies of system research. Individuals with a strong knowledge of system approaches to agriculture are badly needed by universities, government agencies, and NGOs. In response to this need Khon Kaen University's International Post Graduate Degree Program on System Approaches in Agriculture ("Systems Agriculture") offers English-language education at the M.Sc. and Ph.D. levels. This program is intended for international students, particularly from countries in the Mekong sub-region, as well as Thai students who want to do their graduate study in English. Our program aims to produce graduates who have broad understanding of system concepts and methodologies as well as in-depth knowledge of a specialized field. Our international faculty includes members from a wide range of natural and social science disciplines. They have long experience in using interdisciplinary, system-oriented, and participatory approaches in research, particularly in farming systems research, not only in Thailand but in other Southeast Asian countries as well. They have conducted numerous short-term training courses

on concepts and methodologies of this research and development approach for both local and international trainees.

**Course Content and Study Topic:**

**1. Course Code and Title**

124 701 System Theories and Concepts 3(2-3-3)

**2. Credit Hours**

3 credits (Number of hours per week: lecture 2 hrs. Practice 3 hrs. Self-study 3 hrs) 3(2-3-3)

**3. Course Description**

General system theories and derived system concepts; characteristics, behavior and properties of a system and system control; types of systems and examples; system concepts related to agricultural systems, e.g. human ecology, agro-ecosystem, farming system, and others; concepts in system analysis and their applications in agricultural research and development at different hierarchical levels.

**1. Course Code and Title**

124 702 Methods for Data Collection and Analysis in Systems Agriculture 3(1-6-3)

**2. Credit Hours**

3 credits (Number of hours per week : lecture 1 hrs., Practice 6 hrs. Self-study 3 hrs.) 3(1-6-3)

**3. Course Description**

Methods of Agro-ecosystem Analysis and Rapid Rural Appraisal (RRA): conceptual framework building, source of data, methods of data collection, including semi-structure interview, group and focus group interview, questionnaires and in-depth case interview and Participatory Rural Appraisal (PRA); data management and analysis: temporal analysis, spatial analysis, pattern analysis and relevant statistical analysis including descriptive statistics, indicator analysis, marginal analysis and sensitivity analysis; synthesis of the findings.

**1. Course Code and Title**

124 703 Case Study of Agricultural Systems 3(0-9-3)

**2. Credit Hours**

3 credits (Number of hours per week: lecture - hrs., Practice 9 hrs. Self-study 3 hrs.) 3(0-9-3)

**3. Course Description**

A case study applying theories, approaches and methodologies related to agricultural system analysis. Students are allowed to choose an agricultural system of their interest for in depth analysis, utilizing both secondary and primary data, with the aim to identify constraints, opportunities, and to formulate and validate alternative recommendations and development strategies for the intended system.

**1. Course Code and Title**

124 781 Selected Topics in Systems Agriculture 3( 1-6-6)

**2. Credit Hours**

3 credits (Number of hours per week: lecture 1 hr., Practice 6 hrs. Self-study 6 hrs.) 3(1-6-6)

**3. Course Description**

Review, presentation and discussion on selected topics of interest in Systems Agriculture. Topics may be changed in each semester.

**1. Course Code and Title**

124 891 Systems Agriculture Seminar 1(1-0-3)

**2. Credit Hours**

1 credit (Number of hours per week; lecture 1 hr. Practice 0 hr. Self-study 3 hrs) 1(1-0-3)

**3. Course Description**

Discussion and report on literature review or results of Systems Agriculture research relevant to graduate study.

**1. Course Code and Title**

124 892 Systems Agriculture Seminar 2(1-0-3)

**2. Credit Hours**

1 credit (Number of hours per week; lecture 1 hr. Practice 0 hr. Self-study 3 hrs.) 1(1-0-3)

**3. Course Description**

Discussion and report on literature review or results of Systems agriculture research directly relevant to thesis.

**Elective Courses****1. Course Code and Title**

124 801 Current Topics in Systems Agriculture 3(1-6-5)

**2. Credit Hours**

3 credits (Number of hours per week; lecture 1 hr. Practice 6 hrs. Self-study 5 hrs) 3(1-6-5)

**3. Course Description**

Critical new issues in agricultural systems, impact of increasing energy costs on agricultural production, competition between crops grown for food and crops grown for energy, impacts of labor shortages on farm management, understanding of the rapidly changing situation of agriculture in Thailand and the world.

**1. Course Code and Title**

124 894 Special Problems in Systems Agriculture 3(1-6-5)

**2. Credit Hours**

3 credits (Number of hours per week: lecture 3 hrs. Practice 6 hrs. Self-study 5 hrs) 3(1-6-5)

**3. Course Description**

Agricultural system problems, changes in agriculture practices in Thailand, new economic crops and livestock, agricultural pollution, natural resource decline, agriculture related to health, agriculture and sustainable development.

**1. Course Code and Title**

124 762 Cropping System 3(3-0-0)

**2. Credit Hours**

3 credits (Number of hours per week: lecture 3 hr., Practice 0 hr. Self-study 0 hr.) 3(3 -0-0)

**3. Course Description**

Concepts and importance of cropping systems; cropping patterns and related growing conditions; plant interactions and competition in multiple cropping; crop and soil management; weed, insect and plant disease control and management; yield evaluation; economic evaluation; socio-cultural factors relating to farmers' adoption; on-farm research.

**1. Course Code and Title**

122 734 Geographic Information Systems in Land Resource Application 3(2-3-2)

**2. Credit Hours**

3 credits (Number of hours per week: lecture 2 hr., Practice 3 hrs. Self-study 2 hrs) 3(2-3-2)

**3. Course Description**

Geographical concepts, map projections and co-ordinate systems, and spatial data structures; functional elements in geographic information systems including data acquisition, pre-processing, data management, manipulation and analysis, and product generation; remote sensing in relation to geographic information systems; applications of geographic information systems in land resources management.

**1. Course Code and Title**

127 700 Integrated Animal Production in Farming Systems 3(2-3-3)

**2. Credit Hours**

3 credits (Number of hours per week: lecture 2 hr., Practice 3 hrs. Self-study 3 hrs) 3(2-3-3)

**3. Course Description**

Models and management of animal production component in integrated agricultural systems, interactions among crop, animal and fishery production under appropriate agro-ecosystems, housing, environmental pollution and waste management, concepts of system modelling, economic viability and sustainability of the systems.

**Qualifications:**

Hold a bachelor's degree or equivalent in Agriculture or a related field, or be in the final semester of study for the bachelor's degree. The applicant applying for Plan A(1) must have GPA of 2.75 or better from the maximum of 4.0 and at least 3 years of research experience. The applicant applying for Plan A(2) must have GPA of 2.50 or better from the maximum of 4.0 or have at least 2 years of professional experiences in a relevant field.

**Documents Required:**

In order to apply for admission to the Master's degree program, the applicant needs to complete and submit two forms that can be downloaded from the KKU Graduate School website.

**Application form:** Three (3) copies of the TICA Application Form affixed with colored photographs.

The application forms must be completed in duplicate and returned to the Faculty of Agriculture-KKU. Ensure that all supporting documentation is included with the forms when you submit them otherwise your application cannot be processed.

**Reference form:** You are required to submit references from two referees. Each referee should fill out a separate form and return it to you in a sealed envelope. Normally your referees should be college or university lecturers or senior project supervisors who have direct knowledge of your academic work.

Applicants with relevant work experience may use persons with knowledge of their employment activity as their referees.

Remember that it is your responsibility to obtain your references. The two sealed envelopes containing the reference forms' must be enclosed with your application forms sent by post to the Graduate Office.

**Transcripts:** You must submit certified copies of the transcript of your bachelor's degree studies (Official documents setting out details of subjects studied and grades obtained) with your application. If your official transcript is not in English, an official certified translation should also be provided.

**English language competence:** Students whose first language is not English should enclose copies of certificates of their English language qualifications (TOEFL/IELTS). Otherwise, an English Proficiency Test will be required.

**Outcome of your application:** The Program Administrators will consider your application; and the Graduate Office of the Faculty of Agriculture-KKU will notify you of their decision by email within 6-8 weeks of receipt of your complete application.

**Closing Date for Nominations:**

*December 30, 2011*

Late or incomplete applications/documents will not be considered.

**Contact:**

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