Souphanouvong University

Review Date

___04_/_March__/_22__

2nd round Review Date ___05_/06/_22__

# Course Syllabus

## 1 Program

Title of the study programme: M.Sc. on Agriculture and Environmental Forestry

## 2 Course details

Course name: Sustainable Agricultural Production systems

Course code: ME 103 1102

Number of credits (hours/week): 2 (1-2-3); 10 hrs/week

Course type (tick the appropriate box): ☒ Required, ☐ Elective, ☐ Other, if other please explain:

Prerequisites courses: Agricultural Production systems (XXX)

Eco-agriculture XXX

Environment systems XXX

Semester, in which the course is taught: *tick the appropriate box below*

| Year 1 | | Year 2 | |
|---|---|---|---|
| **Semester 1** | **Semester 2** | **Semester 1** | **Semester 2** |
| ☒ | ☐ | ☐ | ☐ |

## 3 Responsible unit

### 3.1 Department:

Names and affiliations of lecturer(s): Dr. Phonesavanh PHOUTHAXAY, Department of Plant Science, Agriculture and Forest Resources, Souphanouvong University.

## 4 Course description

This course brings capacity, knowledge and understanding to ecosystem and sustainable agriculture, with a focus on the application of agroecology approaches for agriculture production. Moreover, students will learn to understand the patterns, procedures, and processing products in sustainability, they can apply their knowledge to develop skills in crop diseases and protection (pesticides use). They will learn more about the system of production in agriculture and associated socio-economic aspects related to product development.

## 5 Course objectives

- To improve student's knowledge in the system production of agro-ecology for sustainable production.
- To build capacity of students for understanding the patterns, procedures and processing of production through agro-ecological approaches.
- To understand relevant policies, strategies and approaches related to the promotion of farmers
- To teach students to critically assess the problems and potential of agro-ecological production.

**Knowledge**:
After completing this course, students will have knowledge on agroecology systems and be able to adopt this knowledge in daily activities, and

**Skills:**
After completing this course, students will have the ability to apply their new knowledge to conduct research, assessments of agro ecological systems and sustainable agriculture production.

**Application of theories to practice:**
After completing this course, students will understand the principles of sustainable agro-ecological production, and adopt knowledge and lessons for agriculture sustainability.

**Social knowledge and skills:**

After completing this course, students can obtain the principles of sustainable agro-ecological production, understand different perspectives (farmer, government, private sector), and apply them to action plans and Government strategies.

### 5.1 Learning objectives of particular modules

*If the course is divided into sections or modules, please state the learning objectives for the specific sections/modules taught within the course*

*NA*

## 6 Course teaching methods

This course will provide lectures with PPT presentations, show images and Videos of lessons, Q and A; and practical sessions ('Practice') including a field survey with data collection, and group and individual presentations.

## 7 Teaching plan

*Specify the teaching plan for each week of the course, including the methods used to relay information to the students and the number of hours spent on the subjects*

| Week | Content | Method/activity | Hours |
|---|---|---|---|
| 1 | **Lecture 1: Agricultural p roduction s ystems**<br>- Definition and Significance of Learning<br>- Keywords<br>- History of agricultural production systems<br>- Performance and patterns of production<br>- Assessing agriculture production<br>- Criteria for socio-economic assessments<br>- Identify the production in agriculture (using questionnaire) | - Lecture<br>- Group Discussion<br>- Q&A | 8 hr |
| 2 | **Practice 1:** Identify the agricultural production system, report and presentation | Field survey and data collection | 8 hr |
| | **Lecture 2**: **Agroecology**<br>- Concepts and principles of agroecology<br>- Components and patterns of agroecology | - Lecture<br>- Group Discussion<br>- Q&A | 2 hr |

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| **3** | - Climate change impacts on agroecology<br>- Characteristic of agricultural products in uplands<br>- Agroecological conservation and management<br>- And procedure of assessment in agroecology | | |
| **4** | **Practice** 2: Assessment of agro-ecological production and planning production | Field survey and data collection,<br>Report and Presentation | 8 hr |
| **5** | **Lecture 3: Sustainable agro-ecological s ystems**<br>- Definition<br>- Principles of agro-ecological sustainability<br>- Environmental impact to sustainable agriculture<br>- Pinciples and concepts for sustainability | - Lecture<br>- Group Discussion<br>- Q&A | 4 hr |
| **6** | **Practice 3:** Study on agricultural production | Field survey and data collection,<br>Report & Presentation | 8 hr |
| **7** | **Lecture 4: Sample, m ethod and p rocesses of a gricultural sustainability**<br>- Integrated agriculture<br>- Organic farming<br>- Agriculture based on nature<br>- Smart Agriculture<br>- Millionaire farmers<br>- Marketing of products from sustainable agriculture | - Lecture<br>- Group Discussion<br>- Q&A | 4 hr |
| **8** | **Practice 4:** marketing channels for organically produced agricultural products | Field survey and data collection &<br>Report & Presentation | 8 hr |
| **9** | **Midterm Exam** | ndividual exam | 1 hr |
| **10** | **Lecture 5: Farmers and e xtension for a griculture sustainability**<br>- Extension for Agriculture sustainability<br>- Method and Processing for Extension for Agriculture sustainability<br>- Indicators for changing to agriculture sustainability<br>- Barrier Factors to changing of agriculture sustainability<br>- The effect of Agriculture sustainability | - Lecture<br>- Group Discussion<br>- Q&A | 4 hr |
| | **Lecture 6: Pest management in a groecological systems** | - Lecture<br>- Group Discussion | |

| | | | |
|---|---|---|---|
| **11** | - Definition and Keywords<br>- Species of Pests s (bacteria and insects)<br>- Problem of Insects to Agroecology<br>- Survey and insect population<br>- Principles of insect control and protect in agroecology | - Q&A | 4 hr |
| **12** | **Practice 5: Survey and controlling i nsects**<br>- Herbal extract trial for insect controlling for plant growth and livestock. | Field survey and data collection,<br>r eport and p resentation | 8 hr |
| **13** | **Lecture 7: Protection and Disposal from Pesticides for Sustainability**<br>- Definition and p rinciples of integrated protection<br>- Historical p lant integrated protection<br>- Choosing options for approaches<br>- Analysis of pests before using integrated protection | - Lecture<br>- Group Discussion<br>- Q&A | 4hr |
| **14-15** | **Practice 6: Identification and analysis of plant pests** | Field survey and data collection | 12 hr |
| **16** | **Lecture 8: Waste m anagement in sustainable agriculture systems**<br>- Problem and impact of waste from agricultural production<br>- Management and useful of waste from agricultural production<br>- Plant production and feed for sustainability<br>- Energy production from waste of agricultural production | - Lecture<br>- Group Discussion<br>- Q&A | 4hr |
| **17-18** | **Practice 7: Waste u tilization from agricultural production**<br>- EM (Ex tract Microorgani sm), and f ertilizer production | Field survey and data collection | 12 hr |
| **19-20** | **Final e xam** | **W** ritten examination | 1 hr |

# 8 Material needs

## 8.1 Course equipment: *link to equipment needs/purchases as part of the project*

Initial Microbe, Materials in Lab Bio, Fertilizer equipment composition

# 9 References

## 9.1 Compulsory reading list

Textbook of Agriculture system, Textbook of Organic Agriculture, Textbook of Ecology

**Suggested reading list**


- https://www.sciencedirect.com/science/article/pii/S0304380016301417
- Plant, Soil and Microbes. Vol. 1st, Implications in Crop Science
- Sean Clark. Sustainable Agriculture–Beyond Organic Farming. http://www.jnkvv.org/PDF/05042020134251342008 22.pdf
- Chamreon, Y. 2020. Principle of Crop Production. http://natres.psu.ac.th/Department/PlantScience/510-111web/index.htm


# 10 Assessment of students

## 10.1 Description of assessment

- Class Attendance 10%
- Reporting/Assignment 20%
- Small Exam 10%
- Midterm 25%
- Final Exam 35%

## 10.2 Grade distribution and student assessment

**Grading scale**

| Grade | | Total score | Scale |
|---|---|---|---|
| Symbol | Verbal grade | | |
| A | Excellent | 90-100 | 4.00 |
| $B^+$ | Very Good | 85-89 | 3.5 |
| B | Good | 80-84 | 3.00 |
| C+ | Fairly Good | 75-79 | 2.50 |

| | | | |
|---|---|---|---|
| C | Fair | 70-74 | 2.00 |
| D+ | Poor | 65-69 | 1.50 |
| D | Very Poor | 60-64 | 1.00 |
| F | Fail | 59 | 0.00 |