Co-funded by the Erasmus+ Programme of the European Union

Souphanouvong University

No _____/.....

Place, Date ____/___/___

Course Syllabus

1 Program

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

2 Course details

Course name: Climate Change Adaptation of Agriculture and Forestry

Course code: XXXXX

Number of credits (hours/week): 3 (2-3-4); two classes (4 hours) per week, total 144 hours. 32 hours Lecture and Practice 48 hours, assignment 64 hours.

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

Prerequisites courses: Meteorology, Land use planning, RS and GIS, Agronomy, agroforestry

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): **Lecturer**: Beun Donsavanh. **Affiliation**: Department of Forest Resource, Faculty of Agriculture and Forest Resource. Souphanouvong University.

4 Course description

All post graduate's students will understand definition and significant, key words, general knowledge in climate, climate change, events and impact from it to agriculture and forestry section of the world and region, explainable any framework, policy of international and nation, phenomena and any issues in agriculture and forestry under climate change impact, study on new way for agriculture and forestry production, impact assessment impact to build new option for adaptation, and working together with local organization for combating climate change.

5 Course objectives

This course objective needs to build a post graduate's student a capacity in research and data analysis of climate change to build a new option for adaptation in agriculture and forestry.

Knowledge: All students are able to understand and explain the principles of climate change adaptation, situation, problem and causes from climate change to agriculture and forestry.

Skills:

- All post graduate's students can apply the new principles of agriculture and forestry for coping and adapting to climate change impact.

- Post graduate's students can assess the climate change impact

- and they can build a project and plan with any activities regarding the coping and adaptation from climate change impact.

Application of theories to practice:

- All students are able to bring lesson of theoretical framework in the class to apply in the research, data collection as well as data analysis; also they have capacity to propose any project concerns.

Social knowledge and skills:

- All post graduate students will have skill for working with team, team leader to do projects, to be good work with coordination as well as helping community work for adaptation from Climate change.

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

6 Course teaching methods

This course will employ the mix approaches to teach including lecture, practices, and a group discussion relating any issue concerned.

7 Teaching plan

Week	Content	Method/activity	Hours
1	**Chapter 1: Introduction** 1. Definition and significant of adaptation climate change 2. Keywords 3. General knowledge on climate and climate change	- Lecture - Propose topic to all students for writing final report with title specifically	**8**
2	4. Extreme events and impact of climate change to agriculture and forestry in the world and region	- Group discussion with knowledge and experiences in climate change	4
3	Group work with Extreme events from climate change and its impact	Assignment	8
4	**Chapter 2: International and National policy on climate change** 1. The role of international to climate change adaptation 2. The role of Government of Laos to adaptation of climate change impact	- Lecture - Group discussion with any issues relating government document for climate change	**8**
5	Group Work with the role of international and Government of Lao for coping climate change and adaptation	Assignment	**8**
6	3. The role of local level to adaptation of agriculture and forestry from climate change impact. 4. Majority of official documents regarding climate change to any sector and agriculture and forestry section	- Group discussion with any issues relating government document for climate change	**8**
7	Personal work with essay onto any issues regarding any role to combat climate change.	Assignment	**8**
Midterm			

8	**Chapter 3: Situation and Problem of agriculture and forestry production under climate change.** 1. Situation of agriculture and forestry production in the world, region and Laos.	- Lecture - Group discussion - Soil meter, Gas detector	**4**
9	2. The problem of agriculture and forestry production relationship with climate change. 3. The coping and readiness of any organization concerned and farmers.	- Lecture - Group discussion onto issues and impact of climate change to agriculture and forestry and analyze problem in order to address it and build a option for adaptation in agriculture sector.	**8**
10	Individual and team work with own presentation for critical thinking for addressing above problem	Presentation, Q&A	**8**
11	**Chapter** 4: **New way of agriculture and forestry production** **1.** Smart farm approaches to resilience agriculture and forestry production **2.** Using of agroforestry system into adaptation for agriculture and forestry production	- Lecture - Group discussion - Sharing experiences with advocating for coping and adaptation of farm integration and smart farm - Soil Moisture meter, gas and air quality test, and PM 2.5 test	**8**
12	3. The using of integrated agriculture and innovation technology for food supply sustainability	- Lecture - Group discussion - Sharing experiences with advocating for coping and adaptation of farm integration and smart farm	**4**
13	Individual and team work with own presentation for critical thinking for addressing above problem	- Assignment - working with test and checking equipment for data collation as Portable Gas Methane Detector,	**8**

		Portable Ozone meter, Radiation monitor, Oxygen meter, Multi-gas detector	
14	**Chapter** 5: **Impact assessment and option for agriculture adaptation in climate change impact.** 1. Impact assessment of agriculture and forestry production on climate change impact. 2. Factors and Indicators of impact assessment for agriculture and forestry in climate change impact.	- Lecture - Group discussion, group assignment with any issues concerned	**8**
15	Group work with identify the factors and indicators of climate change impact to agriculture and forestry	Assignment	**8**
16	3. Orientation for new option for agriculture and forestry production under climate change.	- Lecture - Group discussion, group assignment with any issues concerned	**4**
17	Individual and team work with own presentation for critical thinking for addressing above problem	Presentation, Q&A	**8**
18	**Chapter 6: Cooperation of organization and local community for climate change adaptation** 1. Local organization work with community to cope the climate change. 2. Planning of agriculture-forestry with other organizations for coping and adaptation climate change.	- Lecture - Group discussion, group assignment with any issues concerned	**8**
19	3. Case study	Group discussion	**8**
20	Defense and Presentation	Presentation, Q&A	**8**
Final Exam			

8 Material needs

8.1 Course equipment: Tools use in the classes and practices as LCD and Projector, Temperature and Moisture meter, Air Quality and PM 2.5 meter, Moisture Meter, Portable Gas Methane Detector, Portable Ozone meter, Radiation monitor, Oxygen meter, Multi-gas detector.

9 References

9.1 Compulsory reading list

1. Food and Agriculture Organization of the United Nations, 2007. Adaptation to climate change in agriculture, forestry and fisheries: Perspective, framework and priorities. Online at http://www.fao.org/nr/climpag/pub/adaptation_to_climate_change_2007.pdf

2. ກະຊວງກະສິກຳ-ປ່າໄມ້ (MOAF), 2010.
ຄູ່ມືເທັກນິກກະສິກຳສຳລັບການປັບຕົວຕໍ່ກັບການປ່ຽນແປງສະພາບດິນຟ້າອາກາດ.

9.2 Suggested reading list

2. S. Mark Howden, Jean-Franc¸ois Soussana, Francesco N. Tubiello, Netra Chhetri, Michael Dunlop, and Holger Meinke, 2007. Adapting agriculture to climate change. Online at https://www.pnas.org/content/pnas/104/50/19691.full.pdf

3. H. Pathak, P.K. Aggarwal and S.D. Singh, 2012. Climate Change Impact, Adaptation and Mitigation in Agriculture: Methodology for Assessment and Application.

4. FAO and OECD, 2012. Building resilience for adaptation to climate change in the agriculture sector. Proceedings of a Joint FAO/OECD Workshop. Online at http://www.fao.org/3/i3084e/i3084e.pdf

5. Any papers and documents concerned.

10. Assessment of students

10.1 Description of assessment

Course assessment for students' grade, this will collect the score from several criteria, as class participation 10 percent, Activities with Q&A 10 percent, Report 20 percent, Midterm 20 and final term 40 percent.

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

Place, Date ...../...../.....