	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Biology Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Entomology	4620102061	Animal Taxonomy	T=2	P=0	ECTS=3.18	6	June 22, 2022

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-5	Able to communicate scientific ideas, both orally and in writing using appropriate communication media according to the target, as a means of lifelong learning for academic self-development.
	PLO-7	Able to work independently and collaboratively, as well as responsibly, in completing various tasks in class, in the laboratory and in the field.
	PLO-13	Able to demonstrate basic knowledge of cell and molecular biology, organismal biology, ecology and evolution to analyze current biological issues
	Program Objectives (PO)	
	PO - 1	Mastering entomology concepts
	PO - 2	Able to design and carry out research in the field of Entomology and able to process, analyze, interpret and document research data.
	PO - 3	Able to apply transferable skills to develop eco-commitment in an effort to realize the character of "Faith, Smart, Independent, Honest, Caring and Resilient (Jelita's Dream)
	PO - 4	Able to communicate the results of Entomology research in the form of scientific articles.
	PLO-PO Matrix	

P.O	PLO-5	PLO-7	PLO-13
PO-1			
PO-2			
PO-3			
PO-4			

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																
PO-4																

Short Course Description	This course discusses insects, classification, morphological characteristics, insect behavior, insect physiology and bioecology. Apart from that, the issue of insect interactions with plants and insect interactions with humans is also discussed. The material is delivered using a student-centered approach in practical activities and assignments given in the form of research projects carried out by students honestly and independently.	
References	**Main :**	

1. Bernays, E.A. and R.E. Chapman. 1994. Host-Plant Selection by Phytopthagous Insects . New York: Chapman & Hall.
2. Borror, D.J., Charles A. Triplehorn, dan Norman F. Johnson. 1989. Pengenalan Pelajaran Serangga . (terjemahan). Yogyakarta: Gadjah Mada University Press.
3. Chapman, R.E., 1982. The Insects Structure and Function . Massachusetts: Harvard University Press.
4. Karindah, S. dan Toto Himawan. 1997. Entomologi Umum . Malang : Fakultas Pertanian, Universitas Brawijaya.
5. Mudjiono, G. 1998. Hubungan timbal balik serangga – tumbuhan. Malang: Fakultas Pertanian, Universitas Brawijaya.

Supporters:	
Supporting lecturer	Reni Ambarwati, S.Si., M.Sc. Dwi Anggorowati Rahayu, S.Si., M.Si.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Understand concepts related to insects, develop these concepts and use the concepts that have been mastered to study insect life,	a. Explain the objectives of entomology lectures, b. Explain the benefits of studying insects, c. Communicate concepts related to insects, d. Carrying out insect project research tasks,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% **Form of Assessment** : Participatory Activities	discussion 2 X 50		**Material:** Insect identification **Bibliography:** *Borror, DJ, Charles A. Triplehorn, and Norman F. Johnson. 1989. Introduction to the Study of Insects. (translation). Yogyakarta: Gadjah Mada University Press.* **Material:** Entomology Concepts **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
2	Understand the importance of insects to human life	a. Explain the role of insects in human health, b. Explain the role of insects in the ecosystem, c. Explain the role of insects in agriculture, d. Explain the role of insects in industry, e. Explain the role of insects in increasing human income,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	discussion 2 X 50		**Material:** Entomology Concepts **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	10%

3	Understand concepts related to general insect morphology,	a. Explain the general characteristics of insects, b. Drawing the body structure (morphology) of insects, c. Name the body parts of insects,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	Presentation and Discussion 2 X 50		**Material:** Entomology Concepts **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
4	Understand the concepts related to the internal anatomy of the insect body,	a. Explain the anatomy of the insect body, b. Drawing an anatomical scheme of an insect‘s body, c. Name the parts of the internal anatomy of an insect‘s body	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	discussion 2 X 50		**Material:** Entomology Concepts **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
5	Understand concepts related to insect reproduction and development (insect life cycle/metamorphosis)	a. Explain the insect reproductive system, b. Explain the differences in the reproductive systems of male and female insects, c. Explain the life cycle of insects through the cycle of metamorphosis, d. Explain the various forms of insect metamorphosis,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	discussion and questions and answers 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%

6	Understand concepts related to the senses, sound reproduction, light and movement.	Explain the meaning of insect senses, Explain the reproduction of sound in insects, Describe the effect of light on insects, d. Explain the movement system of insects,	**Criteria:** 1. TASK with a weight of 30% 2. UTS weight 20% 3. Student activities and responses during learning activities are assessed as participation, weight 20% 4. UAS weight 30% 5. Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Discussion and questions and answers 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.* **Material:** Introduction to insects **Bibliography:** *Borror, DJ, Charles A. Triplehorn, and Norman F. Johnson. 1989. Introduction to the Study of Insects. (translation). Yogyakarta: Gadjah Mada University Press.*	5%
7	Understand the concepts of insect ecology and behavior,	Explain the concepts of insect ecology, Explain insect behavior in various ways (feeding behavior, mating behavior, etc.)	**Criteria:** 1. TASK with a weight of 30% 2. UTS weight 20% 3. Student activities and responses during learning activities are assessed as participation, weight 20% 4. UAS weight 30% 5. Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	discussion and questions and answers 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
8	UTS	UTS	**Criteria:** 1. TASK with a weight of 30% 2. UTS weight 20% 3. Student activities and responses during learning activities are assessed as participation, weight 20% 4. UAS weight 30% 5. Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Participatory Activities, Tests	UTS 2 X 50			15%

9	Understanding insect evolution, phylogeny and classification of insects, explaining the basic principles of insect classification	a. Explain the meaning of insect evolution. b. Explaining insect phylogeny, c. Explain the classification of insects, d. Explain the basic principles of insect classification,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	discussion and responsibility 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
10	Understanding the relationship between insects and cultivated plants,	a. Explain the role of insects in cultivated plants, b. Create an example of the positive role of insects for humans,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Participatory Activities	discussion and responsibility 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
11	Understand hormones, pheromones and insecticides	Explain about insect hormones, Explain the benefits of insect hormones, Explain about pheromones in insects, d. Mention various types of insect pheromones, e. Explain about insecticides f. Distinguish between chemical insecticides and natural insecticides,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Participatory Activities	discussion 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.* **Material:** Entomology **Bibliography:** *Borror, DJ, Charles A. Triplehorn, and Norman F. Johnson. 1989. Introduction to the Study of Insects. (translation). Yogyakarta: Gadjah Mada University Press.*	5%

12	Do a little research/insect identification	Carrying out small insect exploration research around campus, identifying insect findings with the help of a binocular microscope and an insect identification key,	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	PJBL 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.* **Material:** entomology **Bibliography:** *Borror, DJ, Charles A. Triplehorn, and Norman F. Johnson. 1989. Introduction to the Study of Insects. (translation). Yogyakarta: Gadjah Mada University Press.*	5%
13	Do a little research/insect identification	a. Carrying out small insect exploration research around campus, b. Identify insect findings with the help of a binocular microscope and an insect identification key	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	PJBL 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.*	5%
14	Present the results of small research/insect identification	Presenting the results of small research in front of the class, Writing scientific articles from the results of insect research.	**Criteria:** 1.TASK with a weight of 30% 2.UTS weight 20% 3.Student activities and responses during learning activities are assessed as participation, weight 20% 4.UAS weight 30% 5.Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	Pjbl 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.* **Material:** Entomology **Bibliography:** *Borror, DJ, Charles A. Triplehorn, and Norman F. Johnson. 1989. Introduction to the Study of Insects. (translation). Yogyakarta: Gadjah Mada University Press.*	5%

15	Present the results of small research/insect identification	a. Presenting the results of a small research in front of the class, b. Write scientific articles based on insect research results.	**Criteria:** 1. TASK with a weight of 30% 2. UTS weight 20% 3. Student activities and responses during learning activities are assessed as participation, weight 20% 4. UAS weight 30% 5. Essay questions are assessed jointly at UTS and UAS **Form of Assessment** : Project Results Assessment / Product Assessment	PJBL 2 X 50		**Material:** Entomology **Literature:** *Karindah, S. and Toto Himawan. 1997. General Entomology. Malang: Faculty of Agriculture, Brawijaya University.* **Material:** Entomology **Bibliography:** *Borror, DJ, Charles A. Triplehorn, and Norman F. Johnson. 1989. Introduction to the Study of Insects. (translation). Yogyakarta: Gadjah Mada University Press.*	5%
16	UAS		**Form of Assessment** : Participatory Activities				10%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	42.5%
2.	Project Results Assessment / Product Assessment	50%
3.	Test	7.5%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.