

**CURRICULUM OF  
PLANT PROTECTION STUDY PROGRAM  
UNDERGRADUATE PROGRAM  
FACULTY OF AGRICULTURE SRIWIJAYA UNIVERSITY  
YEAR 2015**

**A. VISION**

The vision of Plant Protection Study Program, Faculty of Agriculture, Sriwijaya University is: “Excellent in modern plant protection technology based on bio-resources and local wisdoms”.

**B. MISSIONS**

The missions of Plant Protection Department, Faculty of Agriculture Sriwijaya University are:

1. Conducting learning process in plant protection field of study emphasizing on the implementation of modern sciences and technologies based on bio-resources and local wisdoms by integrating ecological, economic, social, and cultural aspects.
2. Supplementing graduates with appropriate soft skills for being supple, tough, active, creative, innovative, supportive, and competitive agriculturists.
3. Providing graduates with entrepreneurial passion, spirit, and competency.
4. Developing modern plant protection technologies based on bio-resources and local wisdoms throughout research activities.
5. Implementing modern plant protection technology based on bio-resources and local wisdoms through community services programs.
6. Conducting collaboration with local, national and international partners in the development and utilization of local bio-resources for plant protection.

**B. OBJECTIVE**

The objectives of Plant Protection Study Program, Faculty of Agriculture, Sriwijaya University are:

1. To produce qualified graduates in the field of Plant Protection capable of implementing knowledge and skills to meet public necessities, especially in the field of plant protection.
2. To publish research article on innovative plant protection based on bio-resources and local wisdoms in national and international journals.
3. To produce innovative technology developed from applied research results to be implemented in the society through sustainable community services.
4. To build collaborations with national and international academic and non-academic institutions.

## **D. GRADUATE PROFILES**

The graduates of Plant Protection Study Program, Faculty of Agriculture, Sriwijaya University are intended to be one of the following profiles: **Farmer, Manager, Communicator, Researcher** and **Academic** with the following competences:

1. Capable of applying know-ledge and technology to recognize, detect, and identify plant pests and pathogens, measure the damage, calculate the yield losses, and formulate environmentally friendly control practices.
2. Capable of implementing and combining modern knowledge and technology with local wisdoms for the conservation and exploitation of natural enemies to be used as biological control agents of plant pests and diseases.
3. Capable of implementing modern knowledge, technology and local wisdoms to recognize, identify and utilize domestic plants to produce botanical pesticides.
4. Capable of implementing modern knowledge, technology and local wisdoms to overcome local pest and disease problems in marginal lands of South Sumatra.
5. Capable of developing his/her talent and potential to support the preferred work.
6. Having entrepreneurship intuition and capable of creating job for others.

## **E. LEARNING OUTCOMES**

To fulfill the above stated competencies, Plant Protection Study Program, Faculty of Agriculture Sriwijaya University formulated learning process consisting of attitude and norm (AN), knowledge (K), general skills (GS) and specific skills (SS).

### **1. Competency of Attitude and Social Norms**

In accordance to National Standard of Higher Education (Permenristek-Dikti No. 44 Tahun 2015), competence of attitude in the Student Learning Outcomes of Plant Protection Study Program, Sriwijaya University are as follow:

- LO-AN-1: Believing in God the Almighty, and is capable of showing religious attitude
- LO-ASN-2: Upholding human values while on duty, based on religion, moral and ethics.
- LO-AN-3: Contributing to the improvement of life quality at the society, nation and state levels, and to the advancement of civilization based on Pancasila.
- LO-AN-4: Playing an important role as a citizen who is proud and loves the country, has spirit of nationalism and responsibility to the nation and state.
- LO-AN-5: Respecting to the diversity of culture, insight, religion, belief, and other people's originality.
- LO-AN-6: Being cooperative, sensitive and responsive to the society and environment.

LO-AN-7: Complying with the law and discipline in living under society and state.

LO-AN-8: Internalizing academic values, norms and ethics.

LO-AN-9: Showing attitude of personal responsibility for the works under his/her expertise.

LO-AN-10: Internalizing the spirit of self-confidence, exertion and entrepreneurship.

LO-AN-11: Caring about the safety of food crop products from pesticide contamination.

## **2. Competency of Knowledge (K)**

LO-K-1: Mastering theoretical concepts of plant protection comprising the causal agents, symptoms, influencing factors, yield losses, and control techniques.

LO-CN-2: Mastering theoretical concepts of the exploitation of bio-resources to be used as main components of environmental friendly pest management system.

LO-K-3: Mastering theoretical concepts of agricultural ecosystem management as parts of environmentally friendly pest management system.

LO-K-4: Mastering theoretical concepts of appropriate and environmentally friendly pesticide application.

LO-K-5: Mastering theoretical concepts of domestic and international plant quarantine

## **3. Competency of General Skill (GS)**

In accordance with Permenristek-Dikti No. 44 tahun 2015, **Competencies of General Skill** in the Learning Outcomes of Plant Protection Department, Faculty of Agriculture, Sriwijaya University, are as follow:

LO-GS-1: Capable of implementing logical, critical, systematic, and innovative thinking in the concept of development or implementation of knowledge and technology reflecting and concerning human values, in accordance with his/her expertise.

LO-GS-2: Capable of showing qualified and measurable self-performance.

LO-GS-3: Capable of researching the implication implementation of knowledge and technology reflecting and concerning human values, in accordance with his/her expertise, based on scientific nature, procedure and ethics, in order to formulate solution, suggestion, design or art criticism.

LO-GS-4: Capable of formulating scientific description based on the result of abovementioned research in the form of script or final assignment report and uploading the work to the university website.

LO-GS-5: Capable of making accurate decision in the context of problem solution in his/her expertise, based on the results of information and data analyses.

- LO-GS-6: Capable of maintaining and developing network with supervisor, colleagues, and workmates, both inside and outside his/her institutions.
- LO-GS-7: Capable of being responsible for the achievement of working group and conducting supervision as well as evaluation of the accomplishment of works assigned to workers under his/her responsibility.
- LO-GS-8: Capable of conducting self-evaluation of working group under his/her responsibility and capable of managing learning process by his/herself.
- LO-GS-9: Capable of documenting, saving, and protecting data, and regaining the data to assure the authenticity and to prevent plagiarism.
- LO-GS-10: Capable of making quick adaptation to working environment.

## 5. Competency of Specific Skill (SS)

In accordance with profiles, visions and missions of the department, as well as the qualification of graduates as stated in KKNi (Perpres No. 8 Tahun 2012), **Specific Skills** in Learning Outcomes of Plant Protection Department, Faculty of Agriculture Sriwijaya University are as follow:

- LO-SS-1: Capable of recognizing and measuring damages caused by plant pest and diseases.
- LO-SS-2: Capable of recognizing as well as identifying plant pests and pathogens.
- LO-SS-3: Capable of planning, executing, and evaluating efficient and effective plant protection system under multi discipline team.
- LO-SS-4: Capable of creative and innovatively exploiting local bio-resources to be used in environmentally friendly pest management system.
- LO-SS-5: Capable of identifying and modifying local wisdoms by combining with latest knowledge and technology to be applied in the locally specific plant protection system.
- LO-SS-6: Capable of identifying business opportunities in plant protection sector and taking benefit from the opportunities.
- LO-SS-7: Capable of accessing resources involving capital, labor, and technology to initiate and operate business in plant protection sector.
- LO-SS-8: Capable of actualizing creative and innovative ideas related to plant protection technology into commercial activities.
- LO-SS-9: Capable of conducting basic research on plant protection technology development based on scientific methodology to formulate solution or recommendation on specific plant protection.
- LO-SS-10: Capable of writing research report as described above in the form of scientific paper and presenting the paper in scientific forum or seminar.
- LO-SS-11: Capable of thinking analytically concerning plant pest and disease cases and responsive to the development of related knowledge and technology.

LO-SS-12: Capable of performing attractive, efficient, effective and productive communication of plant protection aspects.

LO-SS-13: Capable of analyzing and evaluating the potential threats from exotic organisms to the continuation of national bio-resources.

LO-SS-14: Capable of identifying pest and plant pathogens quickly and accurately by implementing molecular bio-technology, both microscopic and macroscopically.

LO-SS-15: Capable of collecting representative samples of pests and plant pathogens within large crop population

## F. MAPPING STUDENT LEARNING OUTCOMES

No	Body of knowledge	Course name	Student Learning Outcomes	SCU		Semester
				Compulsory	Elective	
1	Basic knowledge	Religion	LO-ASN-1,2,	2		II
		Civic	LO-ASN-3,4,5,6,8	2		II
		Indonesian	LO-ASN -4 LO-GS-1	2		I
		Pancasila	LO-ASN-1,2,3,5	2		I
		English	LO-GS-10 LO-SS-10	2		I
		Community service program	LO-ASN-6,9,10	4		VI
2	Conceptual Knowledge	Inorganic chemistry	LO-CN-4	3		I
		Introduction to agricultural sciences	LO-GS-1,3	2		I
		Mathematics	LO-GS-2,4	3		I
		Botany	LO-CN-2 LO-SS-2	3		I
		Statistics	LO-GS-4	3		III
		Experimental design	LO-GS-4, LO-SS-15	3		IV
		Scientific methods	LO-GS-1,9 LO-SS-15	2		V
		Field practice	LO-GS-8,9,10	3		VII
		Research Project	LO-GS-4,5 LO-SS-9,10,11	6		VII
		Seminar	LO-GS-5, LO-SS-10,12	1		VII
		Crop Physiology	LO-CN-1,2	3		III
		Agricultural microbiology	LO-SS-2,4	3		II
		Tissue culture*	LO-SS-14			III
		Academic Agricultural English*	LO-GS-10			II

		Land and agrarian law*	LO-GS-5			VII	
3	Crop Production	Agroclimatology	LO-GS-3	3		II	
		Fundamental of agronomy	LO-GS-1	3		II	
		Annual crop cultivation**	CP-KBPP-3 LO-GS-1	3		V	
		Perennial crop cultivation**					
		Horticultural crop cultivation**					
		Basic soil science	LO-CN-3 LO-GS-1	3		II	
		Soil fertility	LO-CN-3 LO-GS-1	3		IV	
		Crop ecology*	LO-CN-3		3	IV	
		Organic Farming*	LO-CN-4		3	V	
		Swamp Farming*	LO-CN-3 LO-GS-1		3	VI	
		Fertilizer and fertilizing technology*	LO-CN-3 LO-GS-1		3	V	
		Swamp Management*	LO-ASN-4 LO-CN-3 LO-GS-10		2	VII	
		Organic Material Management*	LO-CN-3 LO-SS-3		2	VII	
4	Pest Organisms	Entomology	LO-CN-1 LO-SS-2	3		I	
		Mycology	LO-CN-1 LO-SS-2	3		III	
		Vertebrate pest	LO-CN-1 LO-SS-2	3		IV	
		Plant bacteriology	LO-CN-1 LO-SS-2	3		III	
		Insect collection	LO-CN-1, LO-SS-2	1		III	
		Insect ecology	LO-CN-1,3	3		IV	
		Plant pest identification	LO-CN-1,2,3 LO-GS-3,4	2		VII	
		Plant disease identification	LO-CN-1,2,3 LO-GS-3,4 LO-SS-1	2		VII	
		Urban entomology*	LO-ASN 11 LO-SS-6		3	IV	
		Plant virology*	LO-CN-1 LO-SS-2		3	IV	
		Plant nematology*	LO-CN-1 LO-SS-2		3	III	
		Acarology*	LO-CN-1		2	II	

			LO-SS-2				
		Apiology*	LO-SS-6		3	IV	
		Storage Pest*	LO-CN-1 LO-SS-2		2	VII	
5	Plant and Pest Interaction	Plant entomology	LO-GS-1 LO-SS-1,2,14	3		V	
		Plant pathology	LO-GS-1 LO-SS-1,2,14	3		V	
		Important pests of essential crops	LO-GS-1,2,3 LO-SS-4,5,	3		VI	
		Important diseases of essential crops	LO-GS-1,2,3 LO-SS-4,5,	3		VI	
		Seed and post-harvest disease	LO-GS-1,2,3 LO-SS-4,5,	3		VII	
		Plant disease epidemiology*	LO-GS-1,2,3 LO-SS-4,5,		2	VI	
		Ornamental crop diseases*	LO-SS-2,3,4		2	VII	
6	Management of Pest Organisms	Principles of crop protection	LO-CN-1,3,4 LO-SS-12	3		III	
		Introduction to plant protection biotechnology	LO-SS-11,14	3		V	
		Plant quarantine	LO-CN-5 LO-SS-13,14	2		V	
		Pesticides and application technique	LO-ASN-10 LO-CN-4 LO-GS-5 LO-SS-11	3		V	
		Integrated pest management	LO-ASN-11 LO-CN-4 LO-SS-5,13,15	3		VI	
		Biological control and habitat management	LO-CN-2 LO-SS-1,4,5	3		VI	
		Monitoring of pests and diseases	LO-ASN-9 LO-CN-1 LO-GS-2 LO-SS-1,2	2		VI	
		Plant Clinique	LO-ASN-9 LO-CN-3,4 KK-1,2,3,5,13	2		VII	
		Weed control*	LO-ASN-11 LO-SS-3,5		3	III	
		Pesticide and environment*	LO-ASN-10 LO-CN-4,		2	VI	
		Pest forecasting system*	CP-KU-9 LO-SS-3,14,15		2	VII	
		Pesticide residue	LO-ASN-10 LO-CN-4, LO-GS-2		2	VII	

		analyses and bioassay*				
7	Agricultural Social Economics	Principles of management	LO-ASN-9 LO-GS-2,6,7,8	2		II
		Introduction to agricultural economics	LO-SS-6,7	3		I
		Rural sociology	LO-ASN-2,5,6	3		II
		Farm management*	LO-CN-3 LO-SS-6,7		3	IV
		Agricultural extension*	LO-SS-4,5,11		3	VI
		International economics*	LO-CN-5 LO-GS-10		3	V
8	Entrepreneurship	Entrepreneurship	LO-ASN-10 LO-SS-6,7,8	2		III
		Principles of business*	LO-ASN-10 LO-SS-6,7,8		3	III
		Silkworm farming*	LO-ASN-10 LO-SS-6,7,8		2	V
		Mushroom farming*	LO-ASN-10 LO-SS-6,7,8		2	VI
Total of Credit Semester Unit				130	68	
						68

Note: \*elective course; \*\* must choose one of the three courses

## G. CURRICULUM STRUCTURE

Curriculum of Plant Protection Department, Faculty of Agriculture, Sriwijaya University is constructed from 8 Bodies of Knowledge i.e., Basic Knowledge, Conceptual Knowledge, Agricultural Production, Plant Disturbing Organisms, Plant and Pest Interaction, Pest Management, Agricultural Social Economics, and Entrepreneurship. Total credit of compulsory courses is 130 semester credit units (SCU), while total credit of offered elective courses is 68 SCU. Students have to take all compulsory courses and at least 14 SCU of elective courses. The scope and depth of each Body of Knowledge are represented by the name, number and credits of lectures of each Body of Knowledge presented in the following tables.

### 1. Basic Knowledge

No	Course Code	Course name	SCU
1	UNI 10115	Religion	2 (2-0)
2	UNI 10215	Civic	2 (2-0)
3	UNI 10315	Indonesian	2 (2-0)
4	UNI 10515	Pancasila	2 (2-0)
5	UNI 10415	English	2 (2-0)
6	UNI 40115	Community service program	4 (0-4)
Total credits of compulsory course			4



## 2. Conceptual Knowledge

No	Course Code	Course name	SCU
1	PER 11215	Inorganic chemistry	3 (2-1)
2	PER 11215	Introduction to agricultural sciences	2 (2-0)
3	PER 11515	Mathematics	3 (3-0)
4	PER 12115	Botany	3 (2-1)
5	PER 21115	Statistics	3 (2-1)
6	PER 24115	Experimental design	3 (2-1)
7	PER 31115	Scientific methods	2 (2-0)
8	PER 49215	Field practice	3 (0-3)
9	PER 49315	Research Project	6 (0-6)
10	PER 49415	Seminar	1 (0-1)
11	PAG 21215	Crop Physiology	3 (2-1)
12	PPT 11415	Agricultural microbiology	3 (2-1)
13	PAG 33615	Tissue culture	3 (2-1)
14	PPT 11215	Academic Agricultural English*	2 (2-0)
15	PTN 47515	Land and agrarian law*	2 (2-0)
Total credits of compulsory course			35
Total credits of elective course			7

Note: \*elective course

## 3. Crop Production

No	Course Code	Course name	SCU
1	PAG 11315	Agroclimatology	3 (2-1)
2	PAG 11615	Fundamental of agronomy	3 (2-1)
3	PAG 24215	Annual crop cultivation**	3 (2-1)
4	PAG 24315	Perennial crop cultivation**	3 (2-1)
5	PAG 24415	Horticultural crop cultivation**	3 (2-1)
6	PTN 12115	Basic soil science	3 (2-1)
7	PTN 20115	Soil fertility	3 (2-1)
8	PAG 21115	Crop ecology*	3 (2-1)
9	PAG 33215	Organic Farming*	3 (2-1)
10	PAG 36515	Swamp Farming*	3 (2-1)
11	PTN 36215	Fertilizer and fertilizing technology*	3 (2-1)
12	PTN 36715	Swamp Management*	2 (2-0)
13	PTN 47615	Organic Material Management*	2 (2-0)
Total credits of compulsory lectures			15
Total credits of elective lectures			16

Note: \*elective course; \*\* must to take one of the three courses

#### 4. Pest Organisms

No	Course Code	Course name	SCU
1	PPT 11115	Entomology	3 (2-1)
2	PPT 11315	Mycology	3 (2-1)
3	PPT 22115	Vertebrate pest	3 (2-1)
4	PPT 22215	Plant bacteriology	3 (2-1)
5	PPT 22315	Insect collection	1 (0-1)
6	PPT 24115	Insect ecology	3 (2-1)
7	PPT 47315	Plant pest identification	2 (1-1)
8	PPT 47415	Plant disease identification	2 (1-1)
9	PPT 24215	Urban entomology*	3 (2-1)
10	PPT 24315	Plant virology*	3 (2-1)
11	PPT 24415	Plant nematology*	3 (2-1)
12	PPT 24515	Acarology*	2 (1-1)
13	PPT 24615	Apiology*	3 (2-1)
14	PPT 46215	Storage Pest*	2 (1-1)
Total credits of compulsory courses			20
Total credits of elective courses			16

Note: \*elective course

#### 5. Plant and Pest Interaction

No	Course Code	Course name	SCU
1	PPT 35215	Plant entomology	3 (2-1)
2	PPT 35315	Plant pathology	3 (2-1)
3	PPT 35615	Important pests of essential crops	3 (2-1)
4	PPT 35715	Important diseases of essential crops	3 (2-1)
5	PPT 46115	Seed and post-harvest disease	3 (2-1)
6	PPT 35815	Plant disease epidemiology*	2 (2-0)
7	PPT 46315	Ornamental crop diseases*	2 (1-1)
Total credits of compulsory courses			15
Total credits of elective courses			4

Note: \*elective course

#### 6. Management of Pest Organisms

No	Course Code	Course name	SCU
1	PPT 21115	Principles of crop protection	3 (2-1)
2	PPT 35115	Introduction to plant protection biotechnology	3 (2-1)
3	PPT 35415	Plant quarantine	2 (2-0)

4	PPT 35515	Pesticides and application technique	3 (2-1)
5	PPT 37115	Integrated pest management	3 (2-1)
6	PPT 37215	Biological control and habitat management	3 (2-1)
7	PPT 37315	Monitoring of pests and diseases	2 (1-1)
8	PPT 47215	Plant Clinique	2 (1-1)
9	PAG 21815	Weed control*	3 (2-1)
10	PPT 46415	Pesticide and environment*	2 (2-0)
11	PPT 47115	Pest forecasting system*	2 (2-0)
12	PPT 47515	Pesticide residue analyses and bioassay*	2 (2-0)
Total credits of compulsory courses			21
Total credits of elective courses			9

Note: \*elective course

### 7. Agricultural Social Economics

No	Course Code	Course name	SCU
1	ABI 11115	Principles of management	2 (2-0)
2	ABI 11215	Introduction to agricultural economics	3 (2-1)
3	ABI 11315	Rural sociology	3 (2-1)
4	ABI 24215	Farm management*	3 (2-1)
5	ABI 34415	Agricultural extension*	3 (2-1)
6	ABI 34715	International economics*	3 (2-1)
Total credits of compulsory courses			8
Total credits of elective courses			9

Note: \*elective course

### 8. Entrepreneurship

No	Course Code	Course name	SCU
1	PER 37115	Entrepreneurship	2 (2-0)
2	ABI 11415	Principles of business*	3 (2-1)
3	PPT 35915	Silkworm farming*	2 (1-1)
4	PPT 37415	Mushroom farming*	2 (1-1)
Total credits of compulsory courses			2
Total credits of elective courses			7

Note: \*elective course

## H. Course Distribution

### Semester I

No	Course Code	Course name	SCU
1	ABI 11215	Introduction to agricultural economics	3 (2-1)
2	PER 11215	Inorganic chemistry	3 (2-1)
3	PER 11515	Mathematics	3 (3-0)
4	PER 12115	Botany	3 (2-1)
5	PER 11215	Introduction to agricultural sciences	2 (2-0)
6	PPT 11115	Entomology	3 (2-1)
7	UNI 10515	Pancasila	2 (2-0)
8	UNI 10315	Indonesian	2 (2-0)
9	UNI 10415	English	2 (2-0)
Total credits of compulsory courses			23
Total credits of elective courses			23

Note: \*elective course

### Semester II

No	Course Code	Course name	SCU
1	ABI 11115	Principles of management	2 (2-0)
2	ABI 11315	Rural sociology	3 (2-1)
3	PAG 11315	Agroclimatology	3 (2-1)
4	PAG 11615	Fundamental of agronomy	3 (2-1)
5	PPT 11215	Academic Agricultural English*	2 (2-0)
6	PPT 11415	Agricultural microbiology	3 (2-1)
7	PPT 24515	Acarology*	
8	PTN 10115	Basic soil science	3 (2-1)
9	UNI 10115	Religion	2 (2-0)
10	UNI 10215	Civic	2 (2-0)
Total credits of compulsory courses			21
Total credits of elective courses			5

Note: \*elective course

### Semester III

No	Course Code	Course name	SCU
1	ABI 11415	Principles of business*	3 (2-1)
2	PAG 21215	Crop Physiology	3 (2-1)
3	PAG 21815	Weed control*	3 (2-1)
4	PAG 33615	Tissue culture*	3 (2-1)
5	PER 21115	Statistics	3 (2-1)
6	PER 37115	Entrepreneurship	2 (2-0)
7	PPT 11315	Mycology	3 (2-1)
8	PPT 21115	Principles of plant protection	3 (2-1)
9	PPT 22215	Plant bacteriology	3 (2-1)
10	PPT 22315	Insect collection	1 (0-1)

11	PPT 24415	Plant nematology*	3 (2-1)
Total credits of compulsory courses			18
Total credits of elective courses			12

Note: \*elective course

#### Semester IV

No	Course Code	Course name	SCU
1	ABI 24215	Farm management*	3 (2-1)
2	PAG 21115	Crop ecology*	3 (2-1)
3	PER 24115	Experimental design	3 (2-1)
4	PPT 22115	Vertebrate pest	3 (2-1)
5	PPT 24115	Insect ecology	3 (2-1)
6	PPT 24215	Urban entomology*	3 (2-1)
7	PPT 24315	Plant virology*	3 (2-1)
8	PPT 24615	Apiology*	3 (2-1)
9	PTN 24115	Soil fertility	3 (2-1)
Total credits of compulsory courses			12
Total credits of elective courses			15

Note: \*elective course

#### Semester V

No	Course Code	Course name	SCU
1	ABI 34715	International economics*	3 (2-1)
2	ABI 34415	Agricultural extension*	3 (2-1)
3	PAG 24215	Annual crop cultivation**	3 (2-1)
	PAG 24315	Perennial crop cultivation**	3 (2-1)
	PAG 24415	Horticultural crop cultivation**	3 (2-1)
4	PAG 33215	Organic Farming*	3 (2-1)
5	PER 31115	Scientific methods	2 (2-0)
6	PPT 35115	Introduction to plant protection biotechnology	3 (2-1)
7	PPT 35215	Agricultural entomology	3 (2-1)
8	PPT 35315	Plant pathology	3 (2-1)
9	PPT 35415	Plant quarantine	2 (2-0)
10	PPT 35515	Pesticides and application technique	3 (2-1)
11	PPT 35915	Silkworm farming*	2 (1-1)
12	PTN 36215	Fertilizer and fertilizing technology*	3 (2-1)
13	PTN 47415	Organic Material Management*	2 (2-0)
Total credits of compulsory courses			19
Total credits of elective courses			16

Note: \*elective course; \*\*must take one of the three courses

**Semester VI**

No	Course Code	Course name	SCU
1	PAG 36515	Swamp Farming*	3 (2-1)
2	PPT 35615	Important pests of essential crops	3 (2-1)
3	PPT 35715	Important diseases of essential crops	3 (2-1)
4	PPT 35815	Plant disease epidemiology*	2 (2-0)
5	PPT 37115	Integrated pest management	3 (2-1)
6	PPT 37215	Biological control and habitat management	3 (2-1)
7	PPT 37315	Monitoring of pests and diseases	2 (1-1)
8	PPT 37415	Mushroom farming*	2 (1-1)
9	PPT 46315	Ornamental crop diseases*	2 (1-1)
10	PPT 46415	Pesticide and environment*	2 (2-0)
11	UNI 40115	Community service	4 (0-4)
Total credits of compulsory courses			20
Total credits of elective courses			11

Note: \*elective course

**Semester VII**

No	Course Code	Course name	SCU
1	PER 49215	Field practice	3 (0-3)
2	PPT 46115	Seed and post-harvest disease	3 (2-1)
3	PPT 46215	Storage Pest*	2 (1-1)
4	PPT 47115	Pest forecasting system*	2 (2-0)
5	PPT 47215	Plant Clinique	2 (1-1)
6	PPT 47315	Plant pest identification	2 (1-1)
7	PPT 47415	Plant disease identification	2 (1-1)
8	PPT 47515	Pesticide residue analysis and bioassay*	2 (2-0)
9	PTN 37315	Swamp Management*	2 (2-0)
10	PTN 47315	Land and agrarian law*	2 (2-0)
Total credits of compulsory courses			10
Total credits of elective courses			10

Note: \*elective course

**Semester VIII**

No	Course code	Course name	SCU
1	PER 49315	Research Project	6 (0-6)
2	PER 49415	Seminar	1 (0-1)
Total credits of compulsory courses			9
Total credits of elective courses			0

## **H. Course Syllabus**

### **1. Religion (UNI 10115), Islamic Religion**

Studying aspect in relation to the relationship between creatures and the power of Allah SWT, Learning about prophetic and Islamic sharia, relationship between human being with Allah SWT, relationship with themselves, with other people, and with nature and their environment. Analyze Islam scientifically, learning about Islamic culture and learning about Iman, praying, fasting, zakat and hajj.

### **3. Civic (UNI 10215)**

The understanding of the concept of Nusantara archipelago, concept of power, the outlook of Nusantara insight, national resilience. Training using comprehensive and integrative approach in the response to national resilience problems. Frame of mind of national safety and defense. Concept of defending country “hankamrata”.

### **4. Indonesian (UNI 10315)**

Basic knowledge of language proficiency, effective sentence construction, paragraph analyses and short essay. Principles of writing scientific papers and thesis, writing paper on simple specific topic. Work on the construction of sentences and etymology generally used in scientific communication.

### **5. English (UNI 10415)**

Ability to construct sentence, vocabulary, ability to understand and freely translate agricultural reading materials from English to Indonesian. The uses of English words and expression to speak and write properly.

### **6. Mathematics (PER 11115)**

Figure and function, limit and function. Continuity, differential and its use, integral and its application, function and variables, vector, matrix and determinant.

### **7. Introduction to Agricultural Science (PER 12215)**

Definition and scope of agriculture, history and development of agriculture, inventors in agriculture, main issues in agriculture, agriculture as sub-sector of nation development, roles of science and technology in agriculture, development of agribusiness and agroindustry in income generating of the society, food security, natural resource and environmental problems in relation to agriculture, agriculture and free trading, rule and policy in agriculture.

### **8. Principles of management (ABI 11115)**

Definition and history of management, function and methods in management, process in management including planning, organizing and implementing, monitoring and evaluation. Introduction to human resources management.

### **9. Introduction to agricultural economics (ABI 11215)**

Theory and principles of economic in relation to agriculture. Theory and principles of agricultural economy, problem, production factors and economic policy in agricultural sector and agricultural marketing in Indonesia. Natural recourse problems, rural development, world population, and food chain.

## **9. Rural Sociology (ABI 11315)**

Definition of rural sociology, culture, interaction and social process, social and culture changes, social institution, social status and roles, power and authority and leadership, social strata, social group and organization, role of women in rural areas.

## **10. Fundamental of agronomy (PAG 11615)**

Definition and scop of agronomy, agriculture development, area of origin and center of crop production, Interaction between crop and biotic and abiotic environment. Crop cultivation steps. Plant growth and development system.

## **11. Agroclimatology (PAG 11315)**

Definition and scop of agroclimatology, climate and weather, evapotranspiration, water balance, climate classification in Indonesia, effects of climate on crop.

## **12. Basic soil science (PTN 10115)**

Definition of soil, process of soil construction and development, soil properties, basic of soil fertility, major soil in Indonesia, introduction to soil management.

## **13. Soil Fertility (PTN 20115)**

Scope and problems in soil fertility, identification of soil fertility, interaction between soil and crop, crop nutrients, soil fertility management, soil fertility valuation.

## **14. Fertilizer and Fertilizing Technology (PTN 36215)**

Introduction, fertilizer classification, fertilizer production technology, fertilizer behavior in the soil, fertilizing methods and recommendation.

## **15. Statistics (PER 21115)**

Definition and the use of statistics in agricultural sector, understanding of population, sample, parameter, statistics, means and distribution, sampling technique, regression and correlation analysis.

## **16. Botany (PER 12115)**

Understanding of cell, cellular organelles and their function, interrelation between cells. Function of plant organs, development of flower and seeds, Principles of plant classification and plant nomenclature.

## **17. Experimental Design (PER 24115)**

Definition and scope of experiment, classification of experimental design, test of means significant difference, design of one way experiment, Split plot design, variant and covariant analysis, problems in agricultural experiments especially those related to pest and diseases.

## **18. Crop Physiology (PAG 21215)**

Definition and role of crop physiology and its relation to other sciences. Characteristics, absorbance, movement and transpiration of water. Photosynthesis and photosynthate translocation, Plant respiration, Photorespiration, Principles of plant growth and development.

## **19. Scientific Methods (PER 31115)**

Philosophy and approach to the truth. Research philosophy, types, objectives and principles of research, scientific steps in research procedures, research question, formulation of research problem, objective, hypothesis, variables, theoretical background, and research design. Data and data collection methods, population and sample, measurement in an experiment, validity and reliability, the use of statistics in experiments, data analysis and conclusion. Writing report and scientific paper.



## **20. Entrepreneurship (PER 37115)**

Important of entrepreneurship, definition and characteristics of entrepreneurship, steps in entrepreneur, organizational and job management, technical and production aspects, marketing aspect, creativity and innovation, construction and development of new business, elements and formats of business plans, entrepreneurship practices.

## **21. Community Service Program (UNI 49115)**

Community service program started with training on practical works in agricultural sector, health, rural social and cultural life, education, rural governance, economy and employment. Working practice for 2 months in rural areas of South Sumatra followed by writing report.

## **22. Field Practice (PER 49215)**

Application of science and technology and skill training in the sector of pest and disease under supervision of supervisor. Write report on the application of technology, experience of trainings, problem identification and solution in the field, approved by supervisor.

## **23. Research Project (PER 49315)**

Learning how to conduct research or engineering comprehensively covering several aspects started from preparation, discussion, research execution and writing report, as parts of final assignment supervised by supervisor. Steps to be followed include: research proposal, research design, research execution, data analysis, research result presentation in the form of report according to scientific writing guidance provided by Faculty of Agriculture, Sriwijaya University.

## **24. Seminar (PER 49415)**

Presenting research results as part of research project or field practice supervised by research project supervisor or field practice supervisor.

## **25. Entomology (PPT 11115)**

This lecture is focused on the understanding insects that are directly or indirectly related to the agriculture. The topics cover the history and development of entomology; taxonomy, classification and nomenclature of insects; insect morphology; growth and development of insects; insect digestive system; insect nervous system; insect metabolic system; the role of insects in agricultural ecosystems; insects as plant eaters, pollinators, decomposers, natural enemies (predators and parasitoids). Introduction of several insect species of Order Protura, Collembola, Diplura, Tysanura, Odonata, Ephemeroptera, Neuroptera, Lepidoptera, Coleoptera,

## **26. Academic Agricultural English (PPT 11215)**

This course is specially designed to improve students' understanding on academic and agricultural English; learning is focused on the understanding written materials through reading and summarizing agricultural articles and texts; watching and summarizing video on agricultural activities; interviewing farmers as resource persons to collect agricultural information from the first hands and writing report on the interviewed topics; improving speaking ability through group discussion and oral presentation..

## **27. Mikology (PPT 11315)**

This course focused on the understanding of fungi that are directly or indirectly related to the agriculture. The discussion covers the history and development of mycology; taxonomy; classification; biology; ecology and physiology of fungi; procedures and naming of fungi; fungal metabolism; growth and development of fungi; plant pathogenic fungi; symbiotic fungi with plants; maintenance in the laboratory; identification of fungi.

### **28. Agricultural Microbiology (PPT11415)**

This lecture is focused on understanding of biology and ecology of agricultural microbes. Learning involves discussion about microbial taxonomy, morphology, anatomy, reproduction, growth and metabolism. A student project about identification, characterization, and practical uses of the most beneficial agricultural microbes is implemented in this course.

### **29. Principles of Crop Protection (PPT 21115)**

This lecture is focused on the understanding of the principles of crop protection from pests and diseases. Materials given include: definition of plant pest and disease, characteristics of plant pests and pathogens, damages caused by pests and symptoms produced by plant pathogens, impact of pest and disease on yield losses, techniques of pest and disease controls, examples of important plant pests and diseases, integrated pest and disease management.

### **30. Vertebrate Pest (PPT 22115)**

This course is specialized on learning vertebrate animal acting as agricultural pest. Materials learnt include taxonomy, morphology and classification of the animals. Other topics include distribution, behavior, reproduction, and damages on crops caused by the animals; also control measures of the animals. Species to be discussed include: rats, squirrel, wild pig, monkey, hedgehog, civets, birds and elephants.

### **31. Plant Bacteriology (PPT22215)**

This course is intended to an understanding of bacteriadirectly or indirectly in relation to agricultureincluding :The history and development of plant bacteriology; morphology of plant bacterial cells;classification of plant bacteria; bacterial metabolism; plant bacterial genetics;growth and development of bacteria; identification of bacteria; bacgterial ecology plantbacterial control; bacterial diseases in food crops; bacterial disease in hirticultural crops; bacterial disease of industrial crops bacterial disease inestate crops..

### **32. Insect Collection (PPT22315)**

This course is more devoted to insect preservation and insect collection techniques. In the learning activities, brief and technical theories of collecting soil insects, insects that actively fly and insects that live in water are given. Insect preservation is carried out through dry preservation, wet preservation and resin preservation. Soil insects are collected using trap traps, barless funnels. Flying insects were collected using tray traps, insect nets and light traps. Water insects are collected using nets. Labeling and arranging insects in collection boxes.

### **33. Insect Ecology (PPT24115)**

This lecture is focused on the understanding the ecology of insects, especially insects that are directly or indirectly related to plants, both beneficial and harmful. The discussion includes the notion of insect ecology, insect habitats, insect population and population development, insect diversity, insect defense systems, insect-plant relationships, palaeoecology, biogeography and insect biodiversity; overview of insect pest ecology, pollinator insect ecology, predator insect ecology and parasitoids.

### **34. Urban Entomology (PPT24215)**

This lecture is focused on the understanding of insects living in urban housing areas; grouping of the insects into beneficial and harmful insects, effects of environment on the insect population development in housing, market, and garbage disposal areas; classification and taxonomy of insect ,living in urban areas of orders: Diptera, Isoptera, Orthoptera and other insect orders acting as pest in housing areas and their disturbance; their roles as disease vector, traditional,, physical, mechanical and integfrated control of urban insect.

### **35. Plant Virology (PPT24315)**

This lecture is focused on understanding of the virus existence as plant pathogen and their control. The materials given include history and development of virology, economical aspect

of plant viruses, taxonomy and nomenclature, particle composition, virus replication, virus infection symptoms, identification and diagnosis, ecology and epidemiology; virus control, and examples of plant virus diseases.

#### **36. Plant Nematology (PPT24415)**

This course is devoted to studying plant parasitic nematodes in the form of microscopic animals in the shape of eels. The discussion will focus more on the perspective of cultivated plant parasitic nematodes and their economic value. Symptoms of attack on food crops and horticulture, sampling technique, extraction, fixation, mounting, making semi-permanent slides and permanent slides. External morphological structure, internal structure, reproduction, life cycle, biological control.

#### **37. Acarology (PPT24515)**

Through this course, students are able to understand and explain in general, mites in agriculture and non-agriculture, the difference between mites and ticks. Students are able to explain the morphological, biological and behavioural characteristics of mites and ticks. Students also know the characteristics of plant-eating mites and predatory mites. Students know several important types of mites in plantation crops, food and horticulture (fruits, flowers and vegetables). Students know how to control mites in technical, chemical, biological and technical culture.

#### **38. Apiology (PPT24615)**

This course teaches more about the history of honey bee cultivation, development and industry, morphology, honey bee systematics; stinging bees (*Aphis* sp) and stingless bees (*Trigona* sp), differences in habitat, foraging and colonies between stinging bees (*Aphis* sp) and stingless bees (*Trigona* sp), queen bees, beekeeping equipment; box (stup), equipment and supplies for officers, honey and its derivatives, management of honey bee cultivation, honey bee pests and diseases.

#### **39. Introduction to Plant Protection Biotechnology (PPT35115)**

This course is intended to understand the importance of quarantine as the front gate keeper for saving a region or a country from invasion of harmful organisms. The discussion includes government laws and regulations concerning plant protection and the meaning of international quarantine, domestic quarantine and quarantine between; Quarantine Plant Destruction Organisms (OPTK) A1 and A2; Risk Analysis of Plant Pest Organisms; Introduction techniques and procedures, transportation of plant materials between countries and regions; quarantine procedures in world free trade; and rule of commodity packing for international trade.

#### **40. Plant Entomology (PPT35215)**

This course is focused on the understanding and scope of agricultural pest science; interaction between insect and plants, interaction between vertebrate pests and plants; pests groups; co-evolution of insect; attacking pattern and damages caused by agricultural pest insects; insect population growth rate; insect distribution pattern; insect sampling; index of diversity.

#### **41. Plant Pathology (PPT35315)**

This lecture is focused on understanding the existence of plant diseases as one of the obstacles to agricultural production with all its aspects. The discussion includes the meaning of healthy plants and sick plants; causes of plant diseases; bacteria, viruses, phytoplasmas and nematodes; the interaction of the host plant with the pathogen, the infection process starting from inoculation, pre-penetration, penetration and invasion; host plant response to pathogen infection; symptoms and signs of plant diseases; severity and incidence of plant diseases; damage and loss due to plant diseases

#### **42. Plant quarantine (PPT35415)**

This course is intended to understand the importance of quarantine as the front gate keeper for saving a region or a country from invasion of harmful organisms. The discussion includes government laws and regulations concerning plant protection and the meaning of international quarantine, domestic quarantine and quarantine between; Quarantine Plant Destruction Organisms (OPTK) A1 and A2; Risk Analysis of Plant Pest Organisms; Introduction techniques and procedures, transportation of plant materials between countries and regions; quarantine procedures in world free trade; and rule of commodity packing for international trade.

#### **43. Pesticide and Application Technique (PPT35515)**

This course is focused on understanding of pesticides uses and applications as a component of plant protection, pesticide use risks, and policy and strategy to reduce harmful risks of pesticide. Learning involves discussion on development of pesticides, classification, toxicology, registration, application tools, methods of application, sprayer calibration, safety working with pesticides, treatments for pesticide poisoning, and application management to reduce harmful pesticidal risks in environment, beneficial organisms and human. A student project of evaluation of pesticide uses and efficacy trials at farm fields is implemented in the lecture.

#### **44. Pests of Essential Crops (PPT35615)**

This course is focused on students' understanding on pest attacking estate crops, industrial crops, food crops and horticultural crops. Estate crops include oil palm, coconut, coffee, tea, cocoa, pepper and clove. Food crops include rice, maize, cassava, and other carbohydrate crops; while horticultural crops include vegetable crops, (Brassicaceae and Cucurbitaceae) and ornamental crops. Classification, bio-ecology and morphology of pests, damaging process, life cycle and behaviour, and control measures of pests.

#### **45. Diseases of Essential Crops (PPT35715)**

This lecture is more focused on how to understand and define the meaning of important and unimportant diseases, main plants and ordinary plants; symptoms of important plant diseases; measurement of the incidence and intensity of important plant diseases; measurement of yield losses and losses due to important plant diseases; how to deal with important plant diseases; and examples of important diseases in food crops, horticultural crops, plantation crops and ornamental plants

#### **46. Plant Disease Epidemiology (PPT 35815)**

This lecture is more devoted to understanding how plant diseases develop and spread as well as factors, especially environmental factors that can affect the plant disease epidemics. The discussion includes the history and scope of plant disease epidemiology; pathogenic organisms in common plants; relationship between pathogens with plants; the process of reproduction of pathogens and the mechanism of release and spread of inoculum and influencing factors; infectious processes and disease cycles; dynamics of plant diseases and the rate of disease development; forecasting plant disease epidemics; use of epidemiology in disease control.

#### **47. Silk Worm Farming (PPT35915)**

Learning morphological characteristics of silk worm, life cycle of silk worm, species of silk worm in Indonesia, wild silk worm, preparing mulberry leaves for feeding silk worm; mulberry cultivation; preparation of silk worm production; room sterilization; handling of silk worm eggs until hatchery; handling of silk worm larval ( from fifth until fifth instar), prepupae maintenance; cocoon harvesting and handling.

#### **48. Seed and Post-Harvest Diseases (PPT46115)**

This lecture is focused on the understanding of the seed diseases, seed-borne diseases and post-harvest diseases, especially in horticultural plant products that are susceptible to disease and have a relatively short shelf life. The discussion of the material includes the notion of seeds, seedlings and post-harvest products; post-harvest management of agricultural products; types of post-harvest diseases and modes of infection and development; types of seed diseases and seed-borne inoculum mechanisms; seed health checks; prevention of post-harvest diseases; prevention of seed diseases and seed-borne diseases; seed disease control and post-harvest disease control

#### **49. Storage Pests (PPT46215)**

Focuses of this subject are on understanding on pests, insects and vertebrate, which attack agricultural stored products. Topics of lecture consist of definition, scope and important roles of pests of stored products; taxonomy and classification; ecology physiology and behavior; storage construction; damage by pests of stored products; management of pests of stored products.

#### **50. Diseases of Ornamental Crops (PPT46315)**

This course is devoted to the understanding and importance of ornamental plant diseases; diseases of roses; diseases of chrysanthemums; disease in orchids;

#### **51. Pesticide and environment (PPT46415)**

This subject has focuses on dangers of pesticide on ecosystem, human, livestock, and wildlife; side effects of pesticides; pesticide contamination on the environment, residues of pesticides in plant, soil, and water; pesticide poisonous symptoms; pesticide accumulation in organs; pesticide and food web; pesticide uses for agriculture, animal husbandry, domestic; antidotum of pesticide poisons; mutual effects of pesticide and environment; government regulation; pesticide and storage; pesticide spills

#### **52. Integrated Pest Management (PPT37115)**

This course is focused on the understanding of pest and plant disease control which is effective as well as economical and environmental friendly. The topics include the history and legal basis for implementing integrated plant pest and disease control; agricultural ecosystems and healthy plant cultivation; introduction of pests and plant diseases in general along with the damage and losses caused; techniques for controlling plant pests and diseases that can be integrated into crop cultivation systems and how to integrate them; the effects of inappropriate control measures on the environment; the economic damage threshold and the economic threshold and the method of determining it; how to select and use pesticides safely.

#### **53. Biological Control and Habitat Management (PPT37215)**

This lecture is more focused on how to identify natural enemies for controlling pests and diseases that can be used as biological control agents, as well as on how to make agricultural habitats suitable for the life and development of these biological agents. The lecture materials include the introduction of important natural enemies in the field with the aim of determining follow-up actions for the use of these natural enemies. The topic includes the definition of biological control; natural enemies of pests, predators, parasitoids and pathogens; conservation of natural enemies of pests, massrearing, introduction and inundation of natural enemies of pests; biological control of plant diseases, antagonists, competition, antibiosis, resistance induction and growth triggers; propagation and utilization of antagonistic microbes.

#### **54. Monitoring of pests and diseases (PPT37315)**

Sampling techniques, pest capture techniques, population calculations, damage calculations, techniques for handling diseased plant samples, how to calculate

**55. Mushroom Farming (PPT37415)**

History and economic value of cultivated mushrooms, Biology; life cycle, mycelium, hyphae and fruiting bodies, Biology; life cycle, mycelium, hyphae and fruiting bodies, Ecology of cultivated mushrooms; temperature, humidity, light and CO<sub>2</sub>; create badlogs, spawn and manufacture mushroom cultivation

**56. Pest Forecasting System (PPT47115)**

Understanding of pest forecasting and its role in pest control, methods of pest observation and pest sampling, pest population estimation, methods of pest forecasting.

**57. Plant Clinique (PPT47215)**

This course is devoted to understanding the diagnosis of macroscopic and microscopic plant damage; pest control recommendations; how to collect and pack samples to be sent to the laboratory; techniques for preserving diseased plant preparations; preparation of preparations and propagation of plant-disturbing organisms in the laboratory

**58. Plant Pest Identification (PPT 47315)**

This course is intended to provide knowledge about the importance of identifying (pests) which will be implemented in controlling them. In the lecture also presented the important part of morphology in identifying pests. Various morphological forms of eggs, larvae, nymphs, pupae and imagoes of several types of plant pests were also introduced. In addition, several important pests from the Mandibulata and Hymenoptera groups were also presented. and ways to identify rats, squirrels, pigs, bats, birds, mites and mollusks.

**59. Plant Disease Identification (PPT 47415)**

This lecture is focused on understanding of methods for identification of plant diseases caused by fungi, bacteria, and viruses, or even phytoplasmas. Learning involves identification through symptoms, disease signs, procedures for sampling and handling of samples, microscopy techniques, methods for culturing and inoculation of plant pathogen. A student project of plant disease identification and characterization is implemented in this lecture through postulate Koch assay.

**60. Pesticide residue analyses and bioassay (PPT47515)**

This subject is focused on understanding on the importance of pesticide residues in agricultural products, especially on pesticides which are used to control plant pests and diseases; pesticide groups, formulation and its toxicities, and potencies to contaminate agricultural products; dangers of pesticide residues, pesticide poison symptoms; chemical analysis of pesticides residues; qualitative and quantitative bioassays.

