

# GENERAL ENTOMOLOGY

## NH02037

### 1. General information

- Term: 3
- Credits: **Total credits 2 (Lecture: 1,5 – Practice: 0,5)**
- **Self-study: 6** credits
- Credit hours for teaching and learning activities: 30 hrs.
- Self-study: 90 hrs.
- Department conducting the course:
  - Department: Entomology
  - Faculty: Agronomy
- Kind of the course:

Foundation <input type="checkbox"/>		Fundamental <input type="checkbox"/>		Option 1 <input type="checkbox"/>		Option 2 <input type="checkbox"/>	
Compulsory	Elective	Compulsory	Elective	Compulsory	Elective	Compulsory	Elective
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Prerequisite course(s): None..

### 2. Course objectives and expected learning outcomes

#### \* *Course objectives:*

- Knowledge: Course provided for students with knowledge in
  - + difference of insects from other classes in the arthropod. Morphological characteristics, basic biology of insects and taxonomy of insect orders.
  - + directions, principles of pest control to protect crops and management insect groups that damage crops
- Skills: Course provided for students with skills in
  - + investigating, capturing, processing and identifying samples of common pests in Vietnam based on pest symptoms and insect morphological characteristics competently
  - + finding and proficiently exploiting information materials related to the field of plant protection in both Vietnamese and English on the Internet related to entomology.
- Attitude: Course provided for students with attitudes in
  - + Independence and autonomy in investigating and capturing insects in the field, proactive in classifying insects
  - + self-studying and accumulating knowledge to improve the professional level of insects. Ability to propose and solve problems in the field of plant protection related to insect morphology and biology. Ability to plan learning, coordinate, promote collective intelligence of the group

#### \* *Course expected learning outcomes*

<b>Notation</b>	<b>Course expected learning outcomes</b>	<b>PLO performance criteria</b>
<b>Knowledge</b>	After successfully completing this course, students are able to	

CELO1	Apply insect knowledge to horticulture and landscaping.	1.2
CELO2	Apply insect control measures to build high-tech models/advanced processes for producing horticultural products to meet market demand.	2.2
<b>Skills</b>		
CELO 3	Apply proficiently skills to build and develop internal relationships, including establishing connections, resolving conflicts and external relations in the group's working process.	4.2
<b>Attitude</b>		
CELO 4	Take responsibility to protect the environment	9.2

### 3. Course description

Brief description of the course: This course consists of Preamble; Insect morphology; insect biology; Insect ecology; Classification of insects to order; Principles and methods of pest control.

### 4. Teaching and learning & assessment methods

CELOs	CELO1	CELO2	CELO3	CELO4
<b>Teaching and learning</b>				
Lecturing	x	x		x
Teaching through practical work	x	x	x	x
Group-based	x	x	x	x
Lecturing	x	x		x
<b>Assessment</b>				
Rubric 1. Diligence (5%)				x
Rubric 2. Practical (25%)	x	x	x	x
Rubric 3. Mid-term exam (10%)	x	x		
Rubric 4. Final exam (60%)	x	x		

### 5. Student tasks

- Attendance: All students attending this module must attend class at least 75% of the theory periods.
- Lecture preparation: All students attending this module should read the reference book for the next lesson before coming to class.
- Thematic exercise: All students participating in this module must register and write a topic on a specific insect object and will present it to the class in the last week of the course.
- Practice: All students attending this module must attend 100% of the practical sessions and complete the report of the exercises. Practice class size 25 students / 5 groups (5 students / group).
- Final exam: All students taking this course must take the final exam

### 6. Text books and references

1. Ministry of Agriculture and Rural Development - Desicion 01-38-2010, 2010. Methods of investigation and detection of plant pests and diseases.

2. Nguyen Van Dinh, Do Tan Dung, Ha Quang Hung, Pham Van Lam, Pham Binh Quyen, Ngo Thi Xuyen, 2007. Textbook of Biological Measures for Plant Protection. Hanoi Agricultural Publishing House.
3. Nguyen Viet Tung (Ed) 2006. General entomology textbook. Hanoi Agricultural Publishing House.
4. Chu Nghieu, 1966 – General entomology, Shanghai Higher Education Publishing House.
5. Nguyen Viet Tung (2012) Principles and management to prevent pests and protect crops. Insects and Pests Agriculture. Agricultural Publishing House, page: 401- 419
6. Gillot C. , 2005 – Entomology. Springer
7. Triplehorn C. A. and Johnson N. F. (2005), Introduction to the study of insects, Thomson Brooks/Cole Press
8. Nguyen Duc Tung, Le Ngoc Anh, Ho Thi Thu Giang, Nguyen Duc Khanh, Tran Thi Thu Phuong, Pham Hong Thai (2021) Specialized entomology practice.

## 7. Course outline

Week	Content	Course expected learning outcomes
1	<b>Chapter 1: The concept of insect class and the task of General Entomology</b>	
	<p><b>A/ Main contents:</b> (3 hours)</p> <p><b>Theory:</b></p> <ul style="list-style-type: none"> <li>1.5 Definition</li> <li>1.6 Taxonomic position and characteristics of insect class</li> <li>1.7 The evolutionary origin of the class of insects</li> <li>1.8 The role of insects in nature and humans</li> <li>1.9 Some historical landmarks of insect research</li> </ul> <p>Tasks of general entomology.</p>	CELO1, 2
1&2	<p><b>B/ Self- study contents:</b> (2 hours)</p> <p>Read, understand, and remember the role of insects and major sections in entomology</p>	CELO1, 2, 3, 4
	<b>Chapter 2. Insect morphology</b>	
2	<p><b>A/ Main contents:</b> (7,5 hours)</p> <p><b>Theory:</b> (5 hours)</p> <ul style="list-style-type: none"> <li>2.5 Definition and tasks of the course</li> <li>2.6 Features of the external structure of an insect's body</li> <li>2.7 Insect head parts</li> <li>2.8 Insect chest parts</li> <li>2.9 Insect belly parts</li> <li>2.10 Insect skin</li> </ul> <p><b>Practice/Experiment:</b> (2,5 hours)</p>	CELO 1, 2, 3, 4.

	Insect morphology - Option 1: Taxonomy position of insect class - Option 2: Outer structure of insects	
	<b>B/ Self- study contents:</b> ( 15 hours) Understand and remember the morphological features of the insect class; Detailed characteristics of each part of an insect's body Understanding insect skin structure and insect molting steps.	CELO 1, 2, 3, 4.
3	<b>Chapter 3. Insect Biology</b>	
	<b>A/ Main contents:</b> (4 hours) <b>Theory:</b> (2 hours) 3.5 Definition, content and tasks of the course 3.6 Methods of reproduction in insects 3.7 Insect development and metamorphosis 3.8 Some concepts of the individual development cycle of insects 3.9 The phenomenon of seasonal cessation of sexual development of insects <b>Seminar/Discussion/Project/E-learning:</b> (1 hours) Choose one of the themes. 1. Insect behavior; Types of reflexes and practical implications of studying reflexes in insects 2. Reproduction patterns in insects and the biological significance of insect reproduction patterns 3. Adult Insects: Maturation, Basic Biology of the Adult Phase <b>Practice/Experiment:</b> ( 1 hours) - Insect biology	CELO 1, 2, 3, 4
3&4	<b>B/ Self- study contents:</b> ( 8 hours) Read, Understand, Remember the Methods of Reproduction; Forms of metamorphosis; larval forms, pupal forms; Diapausing characteristics of insects; Recognizing metamorphosis from larval morphology.	CELO 1, 2, 3, 4.
4	<b>Chapter 4. Insect Ecology</b>	
	<b>A/ Main contents:</b> ( 2 hours) <b>Theory:</b> (2 hours) 4.1. Definition and mission 4.2. Ecological factors (abiotic and biotic factors) 4.3. Biological balance in nature 4.4. The influence of ecological factors on insect life	CELO 1, 2
	<b>B/ Self- study contents:</b> ( 4 hours) Read, Understand the impact of ecological factors on the rules of development of plant pests and natural enemies.	CELO 1, 2, 3, 4

5	<b>Chapter 5. Taxonomy of Insects</b>	
	<p><b>A/ Main contents:</b> ( 3,5 hours)</p> <p><b>Theory:</b> (2 hours)</p> <p>5.5 Definition and tasks of taxonomy of insects</p> <p>5.6 System and method of insect taxonomy</p> <p>5.7 Classification system of insect class</p> <p>5.8 Some orders of insects important in agriculture</p> <p><b>Practice/Experiment:</b> ( 1,5 hours)</p> <p>- Classification of orders of insects and classification to the ordo of Orthoptera and Homoptera.</p>	CELO 1, 2, 3, 4
	<p><b>B/ Self- study contents:</b> ( 7 hours)</p> <p>Read, Understand the impact of ecological factors on the rules of development of plant pests and natural enemies</p>	CELO 1, 2, 3, 4.
	<b>Chapter 6. Principles and methods of plant pest control</b>	
6	<p><b>A/ Main contents:</b> ( 3 tiết)</p> <p><b>Theory:</b> (3 tiết)</p> <p>6.5 General concept</p> <p>6.6 Ways to prevent pests</p> <p>Principles of pest control in agricultural crops</p>	CELO 1, 2
	<p><b>B/ Self- stusy contents:</b> ( 6 hours)</p> <p>Read and remember the directions and principles of pest control</p>	CELO 1, 2, 3, 4
	<b>Chương 6. Principles and methods of plant pest control</b>	
7	<p><b>A/ Main contents:</b> ( 3 hours)</p> <p><b>Theory:</b> (2 hours)</p> <p>6.4. Measures to prevent plant pests</p> <p><b>Seminar/Discussion/Project/E-learning:</b> ( 1 hours) Choose one of the themes.</p> <p><b>Chemical pest control measures. The use of this measure in IPM should pay attention to what issues?</b></p>	CELO 1, 2
	<p><b>B/ Self- stusy contents:</b> ( 6 hours)</p> <p>Read and remember the pest control measures, pay attention to the implementation of IPM</p>	CELO 1, 2, 3, 4
8	<b>Presentation</b>	

	<b>A/ Main contents:</b> (1,5 hours) <b>Theory:</b> (1,5 hours) Students present assigned individual essay report	CELO 1,2
	<b>B/ Self- study contents:</b> (9 hours) Prepare essays/reports by text and presentations.	CELO 1,2