

## Basic Information

<b>Course Code</b>	
<b>Course Title</b>	Applied Entomology and Acarology
<b>Academic Year</b>	2022/2023
<b>Academic Program</b>	New Professional Diploma in Plant Clinic and Phytosanitary Technologies
<b>Hours/week semester</b>	Lectures: 2                      Practical: 2    total: 3

**Course Description:** This course introduces students to the major orders of insects and other arthropods of economic importance with specific emphasis on the major harmful insect and mite pests of the important agricultural and horticultural crops in Egypt. Summary is given on the various orders of insects, life cycles and symptom of infestation caused by major groups of these pests; principles for control techniques and pest management will be included.

### 1. Course Aims

- 1.1- Know the economic importance of arthropod pests on crop production
- 1.2- Recognize the major morphological features of insect and mite pests
- 1.3- Define the different species of plant-damaging insects and mites
- 1.4- Recognize the biology and metamorphosis of different insects and mites
- 1.5- Describe the type of damage caused by plant-damaging insects and mites
- 1.6- Detect the infestation of insects and mites on different crops in Egypt
- 1.7- Manage the orchards or field against these pests before their outbreaks
- 1.8- Review different approaches to control and minimize their impact on yield
- 1.9- Determine the basic principles of Integrated Pest Management (IPM)

### 2. Intended Learning Outcomes

#### 2.1. Knowledge and Understanding

On successful completion of this course, the student should be able to

- 2.1.1- Mention the different species of insects and mites and their host plants
- 2.1.2- Understand the development and life cycle of insects and mite pests
- 2.1.3- Know the behavior and feeding habits of these pests
- 2.1.4- Recognize the damage types caused by these pests on different crops
- 2.1.5- Lists the different methods used to manage these pests

#### 2.2. Intellectual Skills

By the end of this course, the student should be able to

- 2.2.1- Conclude the factors affecting the population status of insect and mite pests
- 2.2.2- Evaluate the appreciate conditions for the factors causing infestation with different insect and mites on agricultural crops
- 2.2.3- Employs the information on life cycles of these pests in how to combat each species
- 2.2.4- Assess the using of integrated pest control program

#### 2.3. Practical and Professional Skills

By the end of this course, the student should be able to

- 2.3.1- Distinguish between the symptoms of various insect pests and determine the time of their occurrence
- 2.3.2- Determine the seasons of outbreak of pests and how to reduce their damage

2.3.3- Utilize standard laboratory procedures and techniques in experimental applications in applied entomology and acarology

2.3.4- Plans programs to manage insect and mite pests on agricultural crops

#### **2.4. General and Transferable Skills**

By the end of this course, the student should be able to

2.4.1- Writes and presents specialized reports to explain different phenomena

2.4.2- Think independently, and solve problems on scientific basis

2.4.3- Communicates with colleagues and works in a research team

2.4.4- Identify roles, tasks, and set clear guidelines and performance indicators

2.4.5- Demonstrates self-learning and continuous capabilities to develop professional skills

2.4.6- Address the community linked problems with considerable attention to the community ethics and traditions

#### Course content

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Introduction and overview to the economic importance of arthropods on agricultural crops	3	2	2
General characteristics features and body regions of insects (structure and function)	3	2	2
Mouth parts of insect pests and their role in spreading of plant diseases	3	2	2
Development, metamorphosis, reproduction and main insect orders	3	2	2
Biology, life cycle and feeding habits of main groups of insect pests attacking cereal crops	3	2	2
Biology, life cycle and feeding habits of main groups of insect pests attacking legume crops	3	2	2
Biology, life cycle and feeding habits of main groups of insect pests attacking main vegetable crops	3	2	2
Biology, life cycle and feeding habits of main groups of insect pests attacking some deciduous fruit orchards	3	2	2
Biology, life cycle and feeding habits of main groups of insect pests attacking some evergreen orchards	3	2	2
Biology, life cycle and feeding habits of main groups of insect pests attacking some ornamental plants	3	2	2
General characteristics and classification of phytophagous mites	3	2	2
Biology, life cycle and feeding habits of major plant mite pests	3	2	2
Symptoms and damage of mite pests on main cultivated vegetables, field crops and fruit orchards	3	2	2





Practical exams	<ul style="list-style-type: none"> <li>• Slideshow exams</li> <li>• Practical case studies</li> <li>• Exams on plants of the faculty farm</li> </ul>
Oral exams	<ul style="list-style-type: none"> <li>• The exam committee involves at least 3 examiners</li> <li>• Each evaluates the student by giving a separate score</li> <li>• The scores are then averaged</li> <li>• The student randomly selects question cards</li> </ul>
Student activities	<ul style="list-style-type: none"> <li>• Self-learning activities are evaluated throughout the semester</li> </ul>

<b>6.3. Assessment Schedule</b>		<b>6.4. Weighing of Assessments</b>
<b>Exams and activities</b>	Week (in each semester)	<b>Total (%)</b>
Semester work exam	4 <sup>th</sup> , 8 <sup>th</sup> and 12 <sup>th</sup>	10
Student activities	Throughout the semester	10
Final written exam	15 <sup>th</sup>	50
Final Practical exam	15 <sup>th</sup>	20
Final oral exam	15 <sup>th</sup>	10
<b>Total</b>		<b>100</b>

## 7. List of References

### 7.1. Course Notes

Course notes will be given at the beginning of each lecture

### 7.2. Essential Books

- 1- Chapman, R.F. 1979. The insects: Structure and function. Elsevier Publishing Co., New York
- 2- Robert E. Pfadt (1985). Fundamentals of applied entomology (Edn 4). MacMillan Pub Co ISBN
- 3- Fenemore, P. G. (2006). Applied entomology. New Age International.
- 4- D. Dent (2000) Insect Pest Management. Oxford University Press US (CABI Publishing); ISBN.

### 7.3. Recommended Books

- 1- Wylie, F. R., & Speight, M. R. (2012). Insect pests in tropical forestry. CABI.
- 2- Paull, R. E., & Armstrong, J. W. (1994). Insect pests and fresh horticultural products. Treatments and responses.
- 3- Horowitz, A. R., & Ishaaya, I. (2004). Insect pest management: field and protected crops. Springer Science & Business Media.

### 7.4. Periodicals, websites, ..... etc.

- Journal of Economic Entomology
- Journal of Applied Entomology
- Journal of Plant Protection Research
- Environmental Entomology

**Course coordinator:**

Prof. Dr. Mohamed A. M. Osman

**Head of Department:**

Prof. Dr.

