Ministry of Higher Education and Scientific Research/Iraqi Kurdistan Region
University of Salahaddin /College of Agriculture & Engineering/ Department of Plant Protection.

Course book / M.SC.

Department: Plant Protection

Subject: Advanced Insect physiology

Semester: Spring / 2 hours/week

Lecturer: Dr. Shatha H. Ahmed

Academic Year: 2023 - 2024

Course Book

1. Course name	**Theorical Insect Physiology**
2. Lecturer in charge	**Dr. Shatha H. Ahmed**
3. Department/ College	**Plant protection\ Agricultural Engineering sciences**
4. Contact	**E-mail: shatha.ahmed@su.edu.krd** **Mobile: +9647504301734**
5. Time (in hours) per week	**For example, Theory: 2 hours / week**
6. Office hours	**Daily from 8:30 to 2:30**
7. Course code	
9. Keywords	**Plant Protection, Entomology, Insects physiology, System, functions.**

10. Course overview:

Insect Physiology is a branch of Entomology which focuses in studying different systems and organs of insects and the position of each organ inside the body.

The fundamental concepts in this subject are explaining the role of body wall in protecting inside insect from outside environment and enemies, also studying their structure.

It is very important to inform students about the digestive system of insects, their parts and function of each part in digesting of food, how food passes through the alimentary canal, and comparing between different insects in terms of their food depending on the kind mouthparts.

This information will support the knowledge of M.SC. students about the related subjects, for example, how insects feeding, how could survive without food in the winter, and furthermore by getting information about the structure of cuticle and the nerve system, this information will increase their knowledge about how to control insects.

By the end of this course the M.SC. student will be familiar with anatomic insects and the position of each system and organ of insects.

This course will focus on identification of insect outer and inner body parts and the function of each interior organ or systems from the insect body, Emphasis will be on important experiments on the most systems from the insect body and some environmental physiology studies such as impact of temperature, humidity and light on the insects live, with some physiological cases like diapause, dormancy, and migration.

11. Course objective:

The current course aims to focus on informing the students about the main systems and organs of body insects.

Allow the M.SC. student to get knowledge about the position, structure and the functions of each part. The differences between insects and other invertebrates in related to the structure and functions of some organs.

12. Student's obligations: -

The student must have an important role:

The students must contribute to the scientific discussions in the class or teaching hall.

The students must know the importance of quizzes, homework, reports, and exams.

It is necessary to contribute the student in presenting a scientific subject. There are many things important in in academic year: - attendance and completion of all tests, exams, assignments, reports, quizzes …etc.

13. Forms of teaching

Usage of different forms of teaching:

Data show, power point, Explaining & asking, White board, Report, back feed, Videos,

Highlighting Important Notes and finally Seminars.

14. Assessment scheme

1- **The course degree was divided as follow 20 Marks of Midterm Exam, 10Marks of Quiz, Marks of Seminar & Report and finally 10 Marks of Activity. The effort Score will be 50.**

Test	Mark 50%
Midterm Exam	20
Weekly Quiz	10
Seminar & Report	10
Activity	10
Total	50

15. Student learning outcome:

Course outcomes should clearly relate to topics, assignments, and exams that are covered in the present course. Course outcomes should be clear, measurable, use verbs (e.g., identify, explain), also syudent should know the important of Insect physiology, modifications of insect systems and organs, how insect survive and tolerant with their ecosystems, and how insect is attracting and attach and the mode of injury with agriculture products.

16. Course Reading List and References:

1-R.F. Chapman., "*The insects, Structure and function*", Cornell University, New york, 7th Ed., 2012

2-V. B. Wigglesworth F.R.S., "*Insect Physiology*", University press, Cambridge, Eighth Ed., 1984

3-James L. Nation. Sr., "*Insect Physiology and Biochemistry*", third Ed., 2002.

4-Marc. J. Klowden., "*Physiological Systems in Insects*", Academic press in an imprint of Elsevier, third Ed., 2013.

5- Kenis, M.; Hurley, B.P.; Colombari, F.; Lawson, S.; Sun, J.; Wilcken, C.; Weeks, R. and Sathyapala, S. 2019. Guide to the classical biological control of insect pests in planted and natural forests, FAO Forestry Paper No. 182. Rome, FAO. Licence: CC BY-NC-SA 3.0 .

6- Russell, J. PHYSIOLOGY AND MAINTENANCE. *Insect Physiology. ©Encyclopedia of Life Support Systems* (EOLSS)http://www.eolss.net/Eolss-sampleAllChapter.aspx

17. The Topics:	Lecturer's name
1st week: Introduction to insect physiology, Insects External Anatomy. 2nd week: History, Physiology of Insect Integument 3rd week: Digestive system: Alimentary canal, modification and function. 4th week: Insect nutrition 5th week: Introducion to Insect Circulatory System 6th week the 1st exam. 7th week: Insect Respiratory System or Ventelation system Modification & Function. 8th week: Insect Reproductive system,structure & Function. 9th week: Insect Endocrine System structure & Function. 10th week: Insect Muscular System, Types, Location & Function.	Asst. Prof. Dr. Shatha H. Ahmed

18. Examinations:

1- Questions samples.

- Compositional:

a-Definition?
b-Explanation?
c- What are the differences between……...?
d- Fill-in the blanks?
c- Write the functions of ……..……?

- True or false type of exams?
- Draw the diagram, Scheme, Structure of……...?

19. Extra notes:

2- With the best wishes to the development of Lab. In the. Department.

20. Peer review پێداچوونەوەی هاوڵ