



**Jordan University of Science and Technology**  
**Faculty of Agriculture**  
**Plant Production Department**

PP341 Entomology

First Semester 2023-2024

**Course Catalog**

3 Credit Hours. Fundamental aspects of entomology including morphology, biology, physiology, ecology, taxonomy, control of insects and related arthropods, major insect pests attacking economic crops in Jordan. Laboratory is devoted to classification, identification, collation methods and equipment.

**Text Book**

<b>Title</b>	Fundamentals of Entomology
<b>Author(s)</b>	Elzinga, R. J. (1997)
<b>Edition</b>	4th Edition
<b>Short Name</b>	Ref # 1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	An Introduction to the Study of Insects.	Borror, D. J., Triplehorn, C. A., and Johnson, N. F. 1989	6th Edition	
Ref # 3	A Textbook of Entomology	Ross, H. H., Ross, C. A., and Ross, J. R. 1991	4th Edition	
Ref # 4	Entomology and Pest Management.	Pedigo, L.P. and M. Rice. 2009.	6th Edition	

**Instructor**

Name	Prof. Hail Shannag
Office Location	C4L2

Office Hours	Sun : 10:00 - 12:30 Mon : 09:00 - 10:00 Tue : 10:00 - 13:00 Wed : 09:00 - 10:00
Email	hail@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 10:00 - 11:00 Room: G2123

Prerequisites		
Line Number	Course Name	Prerequisite Type
622240	PP224 Plant Physiology	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to fundamental entomology	From <b>Ref #</b> <b>1</b> , From <b>Ref #</b> <b>2</b> , From <b>Ref #</b> <b>3</b>
Weeks 2, 3	Relation of Insects to Humans including insects as enemies to humans and the value of insects to humans	From <b>Ref #</b> <b>1</b> , From <b>Ref #</b> <b>2</b> , From <b>Ref #</b> <b>3</b>
Weeks 4, 5, 6	External Anatomy - Body Wall and Exoskeleton including structure, function, and molting. - Body Regions: o Head and its Appendages including structure, antenna, mouthparts, classification of mouthparts, eyes and vision. o Thorax and its Appendages including structure, legs, patterns of legs, wings and wing venation. o Abdomen and its Appendages including structure, non-reproductive and reproductive appendages.	From <b>Ref #</b> <b>1</b> , From <b>Ref #</b> <b>2</b> , From <b>Ref #</b> <b>3</b>
Weeks 7, 8, 9	Internal Organ Systems - Digestive System; general structure, digestion, and absorption of food. - Excretory System; Malpighian tubules, rectum, and accessory excretory structures, storage of excretory materials. - Circulatory System; structure, circulation, and blood functions. - Reproductive System; anatomy of male and female internal reproductive organs - Respiratory System; tracheal system, respiration in terrestrial, aquatic and endoparasitic insects - Nervous System; structure, nervous coordination and integration.	From <b>Ref #</b> <b>1</b> , From <b>Ref #</b> <b>3</b>
Week 10	Reproduction, Development and Metamorphosis	From <b>Ref #</b> <b>2</b> , From <b>Ref #</b> <b>3</b>

Weeks 11, 12, 13	Insect Control - Natural Control. - Applied Control including cultural and sanitary measures, mechanical and physical methods, regulatory control (quarantine), biological control, chemical control, and integrated pest management	From <b>Ref # 4</b>
Week 14	Color of insects, color types, color changes and significance of color	
Weeks 15, 16	Insect communication, Why do insects communicate?, How do insects communicate?, Types of communications between insects	

<b>Mapping of Course Outcomes to Program Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>
Exhibit breadth of understanding of a diversity of subjects in entomology [1PLO1]	10%	
Use entomological terms to demonstrate basic knowledge and understanding of major integrating concepts of entomology [1PLO1]	10%	
Categorize insects based on basic ecological, behavioral, morphological, physiological, or developmental attributes [1PLO1]	10%	
Describe the different types of insect development and relate this to insect classification [1PLO1]	10%	
Understand the causes of the variation in insect color and the role of such variation in the life of insects	15%	
Acquire knowledge about how insects communicate in various context, between and within species and their role for insects	15%	
Acquire working skills for insect collecting and mounting for study using a range of aquatic, aerial and terrestrial field collecting techniques, and preserve specimens for museum study and appreciate the importance of museums for teaching, research, and outreach	10%	
Illustrate understanding of the classification of insects; importance of taxonomy to other disciplines; identify the major orders and common families of insects collection based on their morphological characteristics, identify insects of economic importance and acquire working skills for collecting, mounting, and preserving insects	10%	
Recognize the potential impact of different insect species on agriculture, human health, and society in general and their ecological roles in different ecosystems; to be knowledgeable about potential control strategies	10%	

<b>Relationship to Program Student Outcomes (Out of 100%)</b>						
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
40						

<b>Evaluation</b>	
<b>Assessment Tool</b>	<b>Weight</b>
Assignments and Projects (collecting and preserving at least 50 different insect specimens)	10%
First	25%
second	25%
Final	40%

<b>Policy</b>	
Exams	All exams are closed book and notes. The final exam is comprehensive covering all teaching materials. Incomplete exams need approval from the department chair and the faculty dean.
Cheating	Prohibited; and in case of cheating the student will be subject to punishment in according with the university regulations.
Attendance	Students are expected to attend all class meetings regularly. If the student is absent for more than 20% of the course, the student will be prevented from taking all subsequent exams and assigned an F (Failure) grade in the course (deprived by absence). The maximum includes both excused and unexcused absences.
Participation	Participation is highly encouraged.
Laboratory	Students will take thirteen labs during the course. Students must submit lab reports and take final lab exam. Lab attendance is required for passing the class.
Withdraw	The student can withdraw from the course in accordance with the timeline defined by the university regulations.

Date Printed: 2024-01-14