



# Course Specifications

<b>Course Title:</b>	Entomology
<b>Course Code:</b>	4013362-3
<b>Program:</b>	BSc Biology.
<b>Department:</b>	Basic Sciences Department
<b>College:</b>	Adham University College
<b>Institution:</b>	1439-1440

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## A. Course Identification

<b>1. Credit hours:</b> <b>3 hours</b>
<b>2. Course type</b> <b>a.</b> University <input type="checkbox"/> College <input type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/> <b>b.</b> Required <input type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> <b>3rdYear / Level 6</b>
<b>4. Pre-requisites for this course (if any):</b> <b>Invertebrates (68022311-3).</b>
<b>5. Co-requisites for this course (if any):</b>

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	28	16
2	Blended	42	16
3	E-learning		
4	Correspondence		
5	Other		

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	28
2	Laboratory/Studio	42
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	
<b>Other Learning Hours*</b>		
1	Study	
2	Assignments	
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
	<b>Total</b>	

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

**Entomology is the study of insects. Insects are involved with virtually every part of our lives; they are pests that eat our food, our houses, our animals, and are vectors that spread sickness and disease. But insects aren't all bad! Many insects are beneficial**

pollinators, decomposers of dead materials, and useful in the biocontrol of unwanted pests. Entomologists study insects to help us manage pests, or learn how to better use them to our advantage. The course “general entomology” is designed for the students to understand insects and the human – insect relationship concepts. the basic morphological and anatomical characteristic of insects including the integument and its components, the different tegmata of insect body and their appendages, the internal anatomy, the history of insect taxonomy and the bases of modern taxonomy.

## 2. Course Main Objective

- After completing this course student should be able to:
  - Understand the principles of the human – insect relationship.
  - Demonstrate the link the basic morphological characteristic of insects including the integument and its components, the different tegmata of insect body and their appendages.
  - Describe the structure and function of various organs.
  - Demonstrate the the internal anatomy of insects.
  - Understanding the history of insect taxonomy and the bases of modern taxonomy.
  - List all the insects’ orders. • Recognize some important insect-related diseases.
  - Recognize and design models of insect life cycle.
  - Compare and assess the concepts and principles behind scientific theories regarding the significance of the specific structure in the insect body.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1	Identify the numerous levels of organization in the insect body	
1.2	Illustrate the in-depth knowledge of insect morphology, anatomy.	
1.3	Illustrate the working knowledge of the terminology and nomenclature of insect body plan.	
1...	Identify the bases of modern taxonomy.	
2	<b>Skills :</b>	
2.1	Developing oral presentations	
2.2	Communicating personal ideas and thoughts.	
2.3	Work independently and as part of a team to finish some assignments.	
2...		
3	<b>Competence:</b>	
3.1	Use information and communication technology	
3.2	Use IT and communication technology in gathering and interpreting information and ideas	
3.3	Use the internet as a means of communication and a source of information.	
3...		

## C. Course Content

No	List of Topics	Contact Hours
1	the human-insect relationship -the beneficial relationship -the neutral relationship	2

	<b>-the harmful relationship</b>	
2	<b>The integument and its components</b> - The cuticle. - The cuticular appendages and process. - Tanning or sclerotization. - The hypodermis. - The pore canals	2
3	<b>The different tagmata of insect body</b> - The Head - The head and mouth - parts relationships. - The head capsule (Cranium) structure. - Segmentation of the head. - The Tentorium.	1
4	<b>Types of antennae and mouth parts</b> - The antennal structure. - The modification of antenna - The different types of antenna - The mouth-parts structure (Labrum – mandibles – maxillae – labium – hypopharynx – the preoral cavity). - The mouth-parts modification. - The types of mouth-parts	1
5	<b>The insect thorax</b> - The structure of the thoracic segments (prothorax – mesothorax – metathorax). - The thoracic sclerites (Tergites – pleurites – sternites). - The typical insect thoracic wing bearing – segments. - The structure of Endoskeleton.	1
...	<b>The thoracic appendages.</b> - Types of legs and wings. - The structure of leg (Coxa – trochanter – femur – tibia – tarsus – pretarsus). - The leg modification and its types. - The wing structure. - The wing venation. - The wing regions. - The basal articulation of wing. - The wing – coupling apparatus	1
	<b>The insect Abdomen</b> - The structure of abdominal segments. - The abdominal endoskeleton. - The abdominal appendages. - Non reproductive appendages (anal cerci- appendages of apterygota – appendages of immature pterygota insects). - The reproductive appendages. - The structure and types of ovipositor. - The sting apparatus. - The structure of male genitalia.	1
	<b>Midterm exam</b>	1
	<b>The internal anatomy</b> - digestive system - The structure, histology, and function of fore gut (the preoral cavity – pharynx – esophagus- proventriculus and the cardiac valves). - The structure, histology, and function of mid gut. - The peritrophic membrane. - Gastric caeca.	1

	<ul style="list-style-type: none"> <li>- The structure, histology, and function of hind guts (pyloric valves – intestine – rectum and rectal glands- anal glands).</li> <li>- The salivary gland structure, types, number, and function.</li> <li>- The nutrition and digestion.</li> </ul>	
	<ul style="list-style-type: none"> <li>-The circulatory system</li> <li>The structure of insect open circulatory system (dorsal vessels- diaphragms – sinuses – and pulsatory organs).</li> <li>- The hemolymph.</li> <li>- The type of hemocytes.</li> <li>- The hemolymph circulation.</li> </ul>	1
	<ul style="list-style-type: none"> <li>The excretory system</li> <li>- The Malpighian tubules numbers and structure.</li> <li>- Major attachment types of Malpighian tubules with hind gut.</li> <li>- The pericardial cells and nephrocytes.</li> <li>- The fat bodies.</li> </ul>	1
	<ul style="list-style-type: none"> <li>- The reproductive system.</li> <li>- The male reproductive system (testes – vas deferens- ejaculatory ducts and the male accessory glands).</li> <li>- The female reproductive system structure. - The type of reproduction.</li> </ul>	1
	<ul style="list-style-type: none"> <li>The ecdysis and metamorphosis.</li> <li>- Introduction of taxonomy.</li> </ul>	1
	<b>Total</b>	

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge</b>		
1.1	<ul style="list-style-type: none"> <li>• Identify the numerous levels of organization in the insect</li> <li>• In-class lecturing where the previous knowledge is linked to the current and future topics.</li> <li>• Homework assignments.</li> <li>• Discussions (connecting what they learn in the class and applying this information in laboratory).</li> <li>• Handout of lecture notes for each topic.</li> </ul>	<ul style="list-style-type: none"> <li>•In-class lecturing where the previous knowledge is linked to the current and future topics.</li> <li>•Homework assignments.</li> <li>•Discussions (connecting what they learn in the class and applying this information in laboratory).</li> <li>•Handout of lecture notes for each topic</li> </ul>	<ul style="list-style-type: none"> <li>•Homework and quizzes.</li> <li>•Midterm and final written exams (theoretical and practical).</li> <li>•Evaluation of reports.</li> <li>•Oral presentation.</li> <li>•Course work reports.</li> </ul>
1.2	<ul style="list-style-type: none"> <li>•Illustrate the in-depth knowledge of insect morphology, anatomy.</li> </ul>		
...	<ul style="list-style-type: none"> <li>• Illustrate the working knowledge of the terminology and nomenclature of insect body plan.</li> </ul>		
2.0	<b>Skills</b>		
2.1	Developing oral presentations	<ul style="list-style-type: none"> <li>•Application of essential scientific techniques through lectures, classes and essays.</li> <li>• Small group discussion.</li> <li>• Ask the students to make small search project during the semester.</li> <li>• Making connections between different topics across the course.</li> </ul>	<ul style="list-style-type: none"> <li>•Course work reports.</li> <li>•Evaluation of the topics prepared by students according to the content, arrangement, and covering of the topic.</li> <li>•Midterm and final exams.</li> <li>Checking the homework assignments</li> </ul>
2.2	Communicating personal ideas and thoughts.		
...	Work independently and as part of a team to finish some assignments.		
3.0	<b>Competence</b>		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Use information and communication technology	Oral presentations. <ul style="list-style-type: none"> <li>• Internet search assignments and essays.</li> <li>• Incorporating the use and utilization of computer in the course requirements.</li> <li>• Students will be asked for delivering a summary regarding certain topics related to the course.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation of student essays and assignments.</li> <li>• Evaluating the laboratory written reports.</li> <li>• Marks given to for good reports and presentations</li> <li>• Evaluating during the discussion in lecture and reports. Part of the grad is put for student's written participation</li> </ul>
3.2	Use IT and communication technology in gathering and interpreting information and ideas		
...	Use the internet as a means of communication and a source of information.		

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works, search or presentation	4th and 8th weeks	10 %
2	Midterm "Written Test (1)"	8th week	30%
3	Final Exam "Practical Test"	15th week	20%
4			
5			
6			
7			
8			

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

## F. Learning Resources and Facilities

### 1. Learning Resources

Required Textbooks	
Essential References Materials	
Electronic Materials	
Other Learning Materials	

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<b>Classrooms, laboratories</b>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<b>data show</b>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<b>Council / Committee</b>	
<b>Reference No.</b>	
<b>Date</b>	