



**Department of ...Biology.....**

**College of .....Science.....**

**University of .....Salahaddin.....**

**Subject: ...Entomology.....**

**Course Book – (Year ,3)**

**Lecturers: 1. Hana Hashim Mohammad, MSc.**

**2. Rezan Aziz Mustafa, MSc.**

**Academic Year: 2018 - 2019**

# Course Book

1. Course name	Entomology
2. Lecturer in charge	Assist. Prof.: Hana Hashim Mohammad Lecturer: Rezan Aziz Mustafa
3. Department/ College	Biology/Science
4. Contact	e-mail: <a href="mailto:hana.mohammad@su.edu.krd">hana.mohammad@su.edu.krd</a> <a href="mailto:Rezan.mustafa@su.edu.krd">Rezan.mustafa@su.edu.krd</a>
5. Time (in hours) per week	Theory: 2 x 2 Practical: 3 x 2 (Supervision)
6. Office hours	Availability of the lecturer to the student during the week
7. Course code	SBio 302
8. Teacher's academic profile Hana Hashim	<ul style="list-style-type: none"> <li>I graduate from Salahaddin University in 1992 (Ranked 5<sup>th</sup> in collage). In 1995 I finished my MSc degree and started as Assistant Lecturer Teaching Practical Parasitology, Practical Entomology, and Practical Invertebrate Biology</li> <li>At 2013 I got Assistant prof. degree, from that time, I am in charge of teaching Entomology theory for 4<sup>th</sup> class students at Environmental science Department, and teaching Entomology theory for 3<sup>rd</sup> class students in Biology department, Supervising Entomology Practical Laboratory, supervising graduate students .</li> </ul>
Rezan Aziz	<ul style="list-style-type: none"> <li>I graduated from Salahaddin University in 1986, first, I worked as assistant of biology for six years and assist in practical plant anatomy, medical bacteriology, industrial microbiology.....etc . At the end of 1992, I finished my M.Sc. degree in Entomology and start as Assistant Lecturer, teaching Entomology.</li> <li>I teach other lessons such as medical bacteriology, general microbiology and industrial microbiology as well as medical Entomology.</li> <li>For 3 years (Between 1993-1996) I worked as a Member of the Examination Committee for College of Science.</li> <li>From 1992 until 2006 I was as assistant lecturer</li> <li>From 2006 until now, I am Lectures</li> <li>I will continue to teach Entomology- Theory</li> </ul>
9. Keywords	Entomology, insect morphology ,insect Anatomy, insect taxonomy

**10. Course overview:**

In this section the lecturer shall write an overview about the subject he/she is giving. The course overview must cover:

- 1- Identify the Order of an insect specimen without using a key.
- 2- Identify the morphological characters unique to various Orders and Families of insect.
- 3- Collect, mount and curate insects at a museum quality level.
- 4- Identify and describe the life history traits of locally economically important insects.
- 5- Distinguish the various classes of the Phylum Arthropoda and be able to explain why certain organisms are in the various Classes.

**11. Course objective:**

- 1- Learn the basic external morphology of insects and how it is used in classification.
- 2- Understanding of the principles of internal and external anatomy of insects ( Integument, Digestive system, Tracheal system, Circulatory system, Excretory system, Reproductive system, insects development, Nervous system, and Sense organs
- 2- Describe the life cycles of important insect groups.
- 3- Understand how insects affect humans medically and economically.

## 12. Student's obligation

**Exam policy:** Student should get at least 2 exam during the course (semester). There will be no make-up exams for absence students without medical report.

### Classroom polices:

**1- Attendance:** You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. **Students are responsible for obtaining any information they miss due to absence.**

**2- Lateness:** Lateness to class is disruptive

**3- Electronic devices:** All cell phones are to be turned off at the beginning of class and put away during the entire class.

**4-Talking:** During class please refrain from side conversations. These can be disruptive to other students and the professor, and not Disrespectful to both the professor and to other students

## 13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: power point presentations for the head titles and definitions and summary of conclusions systematic of fungi and any other illustrations, besides worksheet will be designed to let the chance for practicing on several aspects of the course in the classroom. There will be classroom discussions and the lecture will give enough background to translate, solve, analyse, and evaluate problems sets, and different issues discussed throughout the course.

## 14. Assessment scheme

To get the best of the course, it is suggested that you attend classes as much as possible, read the required lectures, teacher's notes regularly as all of them are foundations for the course.

The students are required to do one closed book exam at the mid of the semester besides other assignments including translations and one research paper. The exam has 25 marks, the attendance, classroom activities; translations and research paper count 10 marks.

There will be a final exam on 60 marks. So that the final grade will be based upon the following criteria:

- Practical Examination: 15
- Theory examination: 25
- Final examination theory : 40
- Final examination practical: 20

**15. Student learning outcome:**

After completion of this course, student will be able to:

- Define common terms used in insect taxonomy
- Studying the advantages and disadvantages of different orders .
- Identify all insect orders.
- Studying different structure and shapes of each family .
- Classification of most insect especially those common in Kurdistan Iraq.
- Studying the economical insect that causing destructiveness to different plants.
- The student will be able to recognize the useful and destructiveness insect and how detect them .

**16. Forms of teaching**

Course book and PowerPoint

**17. Topics:**

**Lecturer:**  
**Rezan Aziz Mustafa**

Week	Topic
1 <sup>st</sup>	Introduction and Classification of Arthropoda Class: Crustaceans, Arachnids, Chilopoda, Diplopoda, Onychophora, Insecta.
2 <sup>nd</sup>	Success as Group:-Adaptive features, Functional wings, Small size, Adaptability of structures, complete Meta-Morphosis, High fertility, Social life, Segmentation of the body wall, Protective resemblance , Biding protective structures, Poisons, Bites and Stings.
3 <sup>rd</sup>	Injurious insects and Beneficial insects
4 <sup>th</sup>	Body wall or Integument: (the Cuticle, the Epidermis, the Basement membrane). Epidermal growth (molting). Cuticular appendages, and Cuticular processes.
5 <sup>th</sup>	Body regions:- the Head, Origin, Head organization and Appendages, special structures of the Head capsule, Compound eyes, Ocelli, and Antennae.
6 <sup>th</sup>	Mouth parts in different adult insects:- Chewing m. p. , Cutting m. p., Sponging m. p., Chewing - Lapping m. p., Piercing-Sucking m. p., Siphoning m.p., and mouth parts in different Immature insects.
7 <sup>th</sup>	First exam

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8th	Thorax (Legs and Wings)
9th	Abdominal Appendages.
10th	Internal Anatomy :- Digestive system :- Alimentary canal, Stomodeum, Mesenteron, Proctodeum, Malpighian tubules, Salivary glands, Salivation.
11th	Nutrition, Vitamins, Water requirement, Digestion, Ingestion, Enzymes, Peritrophic membrane.
12th	Excretion and Excretory system
13th	Circulatory System:- Blood and Dorsal vessel. The functions of blood cells and blood circulation.
14th	Respiration :-External respirationband Internal respiration. Tracheae and Tracheoles, Blood respiration , Adaptation for aquatic life
15th	Reproductive System and Nervous System
16th	Second Exam
<b>17. Topics:</b>	
<b>Assist. Prof. Hana Hashim</b>	
Week	Topic
1 <sup>st</sup>	Insect classification Sub-class: Apterygota Order Thysanura , Order: Diplura Order: Protura , Order Collembola, Order:Microcorphyia
2nd	Sub-class: pterygota, Division: Exopterygota, Order: Ephemeroptera , Order: Odonata ,Order: Dermaptera
3rd	Order: Orthoptera ,Order: Dictyoptera
4rth	Order: Isoptera , Order: Phthiraptera
5th	Order : Hemiptera, Order: Thysanoptera ,Order Phasmida
6 <sup>th</sup>	Examination
7 <sup>th</sup>	Division: Endopterygota Order: <a href="#">Coleoptera</a>
8th	Order: Neuroptera
9th	Order: <a href="#">Lepidoptera</a>
10th	Order: Hymenoptera
11th	Order:Diptera
12th	Slide preparation
13th	Examination

<p><b>18. Practical Topics (If there is any)</b></p>	
<p><b>Week1:</b> What is an arthropod? Insects and their relatives; Collecting and preserving of insect</p> <p><b>Week2:</b> The insect head</p> <p><b>Week3:</b> The antennae</p> <p><b>Week 4::</b> Insect mouth part A- Mouth part of mature stage 1- Chewing (biting) mouth part 2- Sponging (lapping )mouth part</p> <p><b>Week 5:</b> 3- Chewing - sponging mouth part mouth part 4-Piercing - sucking Plant tissue , Animal tissue</p> <p><b>Week 6:</b> 5- Cutting-Lapping mouth part 6- Cutting-sucking mouth part 7- Siphoning-Sucking mouth part</p> <p><b>Week 7:</b> Mouth part of immature stage 8- Predaceous – biting mouth part 9- Predaceous - suctorial mouth part 10- Mouth part of Lepidoptera of larvae</p> <p><b>Week 8: Examination</b></p> <p><b>Week 9:</b> Thoracic appendages The legs and its modification</p> <p><b>Week 10:</b> The wings and its modification</p> <p><b>Week 11:</b> Abdominal appendages Reproductive appendages and Non- reproductive appendages</p> <p><b>Week 12:</b> Metamorphosis – Type of larvae and pupae</p> <p><b>Week 13:</b> Internal Anatomy</p> <p><b>Week 14: Slide preparation</b></p> <p><b>Week 15: Examination</b></p>	<p><b>Assist. Lecturer:</b> <b>Govand Musa Qader</b></p>
<p>2<sup>nd</sup> Semester</p>	
<p><b>Insect classification</b></p> <p><b>Week1 : Sub-class: Apterygota</b> Order Thysanura , Order: Diplura ,Order: Protura ,Order Collembola ,order:Microcorphyia</p> <p><b>Week 2: Sub-class: pterygota,</b> Division: Exopterygota, Order: Ephemeroptera ,Order: Odonata ,Order: Dermaptera</p> <p><b>Week3:</b> Order: Orthoptera ,Order: Dictyoptera</p> <p><b>Week 4:</b> Order: Isoptera , Order: Phthiraptera</p> <p><b>Week 5:</b> Order: Hemiptera</p> <p><b>Week 6:</b> Order: Thysanoptera, Order Phasmida</p> <p><b>Week 7:</b> Examination</p> <p><b>Week 8: Division: Endopterygota</b> Order: <u>Coleoptera</u></p> <p><b>Week 9:</b> Order: Lepidoptera</p> <p><b>Week 10:</b> Order: Neuroptera</p>	

<b>Week 11:</b> Order: Diptera <b>Week 12:</b> Order: Hymenoptera <b>Week 13:</b> Examination	
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<p><b>19. Examinations:</b></p> <p><b>1. Compositional:</b> In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....?</p> <p><b>Q/</b> Explain briefly about the secretions of Aphids . Secrete defensive fluid. In some species the body is more or less covered with white waxy fibers, secreted by dermal glands. Aphids also excrete honeydew from the -anus; the honeydew consists mainly of excess sap ingested by the insect, to which are added excess sugars and waste material. This honeydew may be produced in sufficient quantities to cause the surface of objects beneath to become sticky</p> <p><b>2. True or false type of exams:</b>In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence.</p> <p><b>Q/</b> Blattodea Are dorsoventrally compressed insects with the head concealed by the pronotum when viewed from the dorsal aspect . T</p> <p><b>3. Multiple choices:</b> In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. <b>Q/</b> Which of the following are true flies a. firefly                      b. mayfly b. Caddisfly                  d. sand fly</p> <p><b>4. Fill in the blanks:</b> In this type of exam there will be a sentences with deleted word, students will add the correct words for giving full meaning to the sentences. <b>Q/</b> Tettigonidae have is long and sword-shaped Ovipositor</p>
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<b>20. Extra notes:</b> No notes
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<b>21. Peer review</b>  Peer name: Assist. Prof. Hana Hashim
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