



**Department of plant protection**

**College of Agriculture**

**University of Salahaddin**

**Subject: Insect Taxonomy**

**Course Book- (Year 3)**

**Lecturer's name: Lecture**

**Gazang Taher Omar PhD**

**Academic Year: 2023/2024**

## Course Book

<b>1. Course name</b>	<b>Insect Taxonomy</b>
<b>2. Lecturer in charge</b>	<b>Gazang Taher omar</b>
<b>3. Department/ College</b>	<b>Plant protection / Agricultural Engineering sciences</b>
<b>4. Contact</b>	e-mail:gazang.omar@su.edu.krd Tel: (optional):07504546799
<b>5. Time (in hours) per week</b>	<b>Theoretical (2)hours Practical:( 6 )hours</b>
<b>6. Office hours</b>	<b>Availability of the lecturer to the student during the week</b>
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	(Gazang) Date of Birth: 5 May 1982 Place of Birth: Erbil Nationality: Iraqi Marital Status: Married Sex: Female <b>Education:</b>  (Gazang)BSc. Plant Protection, University of Salahaddin, 2005  MSc. Entomology, University of Salahaddin, 2010  PhD in Entomology- insect taxonomy, University of Salahaddin, 2020
<b>9. Keywords</b>	<b>Morphology , character , orders , differences, Anatomy</b>
<b>10. Course overview:</b> This course is an exploratory, first course in insect identification, recognition and naming designed primarily for students in biological sciences. However, it also meets the need of students in other fields such as crop protection and soil sciences. It provides information history of insect evolutions, systems involved in naming insects, identification and classification of different insects as well as collection and preservation of such insects. It involves practical periods aimed at exposing the students to different species of insect to enable them identifies them to families level. Topics to be covered include insect systematic and evolution, successes of insects, use of identification keys, methods of collection and preservation of insects. Insect classification, and thereby entomological nomenclature and	

more particularly insect scientific names have undergone many reorganisations and modifications over the last decades. The general public is not familiar with scientific nomenclature, whether zoological or botanical. Moreover, their notion of what a species is or represents is quite vague. To name an animal or a plant species, people generally use the words « a kind of », « a sort of », « a variety », « a race ».

Such approximate and therefore imprecise language highlights how difficult it is for the public to name or apprehend some “thing”, whether animal or plant, that more or less looks like some “thing” else. For scientists, the word “species” has a well-defined meaning: it is the basic unit (also called taxon) of systematic classification. Although the concept of “species” is currently interpreted in different ways by the scientific community, its main feature is inter-fecundity, i.e. the capacity for individuals belonging to a same population to interbreed and give birth to viable, fecund offspring in natural conditions.

### **11. Course objective:**

The goal of this course is to provide you with a sound theoretical and practical understanding of both insect diversity and the practice of classifying organisms. Lectures discuss the general principles of systematics, history of insect classification, construction and use of identification tools, nomenclature, and biology and evolutionary history of the hexapod orders. We also explore why competing classifications exist in taxonomy, and what existing classifications imply about broad patterns of evolutionary change and diversification within insects. Laboratory work focuses on the means of recognition of the major groups of insects (order and family); in-class exercises illustrate concepts discussed in lecture. A collection is required that will further refine your ability to identify insects to the level of order, family and in many cases species. Accumulating the required numbers of taxa will be possible only by employing a variety of collecting techniques. Building an insect collection, with correctly identified and curated specimens is an excellent way to learn, understand and employ the methods used by professionals to classify not only insects, but living organisms in general.

The main objectives of this course are to:

- introduce students to collection, identification and naming of different insect species
- provide students with opportunities to prepare insect boxes and identify all the insects collected to family level and also preserve some of the insects collected for future use.

### **12. Student's obligation**

In this part the role of students is as follow :

Student Attendance in lecture and examination , preparing reports about some important course subjects , writing an assignment on any field visiting , doing daily quiz , giving samples

### **13. Forms of teaching**

Teaching methods are , using data show ways , power point , white board , giving hand note

#### 14. Assessment scheme

Marks distribution of 100%

Test	Mark 50%
1st Exam	12
Quizzes and reports	3
Theory	15
Practicaly	35
Total	50

Final examination (100)

#### 15. Student learning outcome:

Upon successful completion of this course, the student will be able to:

(Knowledge based)

- explain what insect systematic is all about;
- classify insects into different families based on similarities and differences that exist among them;
- explain the function of the identification key;
- explain the different techniques used in insect collection and how these insects can be preserved;
- know the different features peculiar to each insect family.

(Skills)

- prepare good insect box which will include the names and families of all insect collected and
  - preserve some insects collected in specimen bottles using appropriate chemicals
- Upon completion of this course you will be able to:
- Sight identify all hexapods to order and the majority of common insects to family
  - Describe key innovations in life history, growth, development and behavior for each insect order.
  - Draw a phylogenetic tree depicting the relationships among hexapod orders
  - Collect insects and record field data in any habitat using a variety of different methods, and list the strengths and weaknesses of each technique
  - Preserve insects by pinning, point mounting, slide mounting and preservation in ethanol.
  - Prepare specimens for deposition into a museum collection, including labeling, packing and shipping.
  - Describe the taxonomic process: how species are described, named and classified.
  - Explain the importance of insects to global biodiversity and conservation.

#### 16. Course Reading List and References:

- <https://insects.tamu.edu/students/undergrad/ento305/index.html>;

<p>Borner , D.J and Delong , D. ( 1954 ) . An Introduction .1 the study of insects . Holt , Rinehart to andWinston New york.</p> <p>Chinery , M. ( 1982 ) . A Field guide to the Insect of Britain and Northern Europe . William Collins Sons and Co. Ltd Glasgow .</p> <p>Imm , A.D. ( 1964 ) . A General Textbook of Entomology .  Methuen and Co. LTD London .</p> <p>Mayer , E. (1969 ) . Priciples of Systemstics Zoology . Tata  McGraw – Hill Publishing Company LTD. Bombay – New Delhi .</p> <p>Ross , H.H. ( 1948 ) . A Textbook of Entomology . John Wiley and Sons , Inc. New York .</p> <p style="text-align: center;">Internet</p> <p>I:\Insect classification.htm J:\The History of Taxonomy eHow_com.htm J:\Systematics , taxonomy, classification.htm J:\ Phylum Arthropoda mm.htm J:\ Arthropoda Characteristics Tutorvista_com.htm I:\A Guide To arthropoda.htm I:\Principles of systamatics.mht I:\Principles of nomenclature of zoological taxa.mht</p>		
<b>17. The Topics:</b>		<b>Lecturer's name</b>
Weeks	Subject	Lecturer's name ex: (2 hrs)
1 <sup>st</sup>	Taxonomy , its history and function	
2 <sup>nd</sup>	kingdom of living organs ,characteristics and its Phylum ,	

	Phylum Arthropoda , Taxonomic key of Classes	
3 <sup>rd</sup>	The species , subspecies , and higher categories ,Taxonomic characters	
4 <sup>th</sup>	Taxonomic procedure methods of insect collection , Kind of Types	
5 <sup>th</sup>	Steps of identification , Classification , Nomenclature and identification of insects and their relatives( Phylum : Arthropoda and classes )	
6 <sup>th</sup>	Taxonomic discrimination major types of variation , The international rules of zoological nomenclature	
7 <sup>th</sup>	Classification of Insects; Study of insects Order , Subclass : Apterygota ,Order :Collembola , Thysanura , Protura , Diplura	
8 <sup>th</sup>	Subclass: Pterygota , Order : Ephemeroptera ,Orthoptera , Dictyoptera , Phasmida	
9 <sup>th</sup>	Subclass: Order : Odonata , Dermaptera , Isoptera	
10 <sup>th</sup>	Order :, Hemiptera , Homoptera	
11 <sup>th</sup>	Order : Anoplura , Mallophaga , Thysanoptera , Plecoptera	
12 <sup>th</sup>	Order : Neuroptera , Siphonoptera , Mecoptera , Zoraptera	

13 <sup>th</sup>	Order : Diptera , Coleoptera , Psocoptera	
14 <sup>th</sup>	Order : Lepidoptera , Trichoptera,	
15 <sup>th</sup>	Order Embioptera , Hymenoptera ,	
<b>18. Practical Topics (If there is any)</b>		Lecturer's name ex: (3-4 hrs)  ex: / /2019
<b>19. Examinations:</b>		
<b>1. Multiple choices:</b>		
Q2 : Choose the correct terms from the brackets of the following sentences .		
Q 3: Enumerate the following ( Choose only <u>Three</u> ) .		
Q4:Write the scientific name and the Order of the following .		
<b>Common name</b>	<b>Scientific name</b>	<b>Order</b>
Q5 : Formulate an appropriate taxonomic key for the identified the following :- Orders of Class Insecta .		
Q6: Explain		
<b>20. Extra notes:</b>		

With the best wishes to the development of Lab. In the. Department. doing more survey for collecting, and linked with international insects museums to identified more samples belong to this area.

**21. Peer review**

پیداچونہوہی ھاوہل