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**Department of plant protection**

**College of Agriculture**

**University of Salahaddin**

**Subject: Insect structure**

**Course Book (Year 2)**

**Lecturer's name: Prof.Dr. Nabeel AbdulKadir Mawlood**

**Lecturer's name: Miss Hozan Qadir Hammamurad**

**Lecturer's nameGazangTaher Omar, MSc**

**Academic Year: 2018/2019**

**Course Book**

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| **1. Course name** | **Insect structure** |
| **2. Lecturer in charge** | **Nabeel AbdulKadir Mawlood****Hozan Qadir Hammamurad****GazangTaher Omar** |
| **3. Department/ College** | **plant protection/ Agriculture**  |
| **4. Contact** | **e-mail:nabeel****\_akm57@yahoo.com****Tel: (optional): 07503706215**e-mail:hozan.hamamurad@su.edu.krdTel: (optional) 0750 4824927e-mail:gazang.omar@su.edu.krdTel: (optional) 0750 4546799 |
| **5. Time (in hours) per week**  | **For example Theory: 2** **Practical: 3**  |
| **6. Office hours** | **Availability of the lecturer to the student during the week**A. Undergraduate students

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| Stage | Subject | No. |
| 2nd Year | Insect Structure  | 1 |
| 2nd Year | Insect Taxonomy | 2 |
| 4th Year | Medical Entomolgy | 3 |

**B. Postgraduate students**

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| Stage | Subject | No. |
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B. – Thursday and Monday |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | * Date of Birth: 2 / 5 / 1957
* Sex: Male
* Nationality: Iraqi
* Marital Status: Married

Address:Rasti Q. -Erbil –Kurdistan Region-Iraq Telephone :00964 750 370 6215E-mail:Nabeel\_akm57@yahoo.com ;nabeel.mawlood@su.edu.krdCertifications :* B.SC :College of Agriculture ,Mosul University/ Iraq (1980) .
* M.Sc. : College of Agriculture ,Baghdad University /Iraq (1985)

Taxonomic study of the beetles Family Dermestidae ( Insecta : Coleoptera ) in Baghdad University Iraq(1985) .* PhD. : College of Agriculture ,Baghdad University/Iraq(2001)

Taxonomic study of the blowflies ( Diptera : Calliphoridae) in middle of Iraq . / Baghdad University (2001). General Specialty : Agriculture –Plant ProtectionSpecialty : Entomology ( Insects Taxonomy )DipterologyJob TitleProfessor in Department of Plant protection / College of Agriculture / Salahaddin University Scientific Titles

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| --- | --- |
|  Title |  Date |
|  Assistant Lecturer |  1986 |
|  Lecturer |  1990 |
|  Assistant Professor |  1994 |
|  Professor |  2002 |

Description of Main Duties & Responsibilities:* Head of Community Health Department / Technical Institute - Baquba / Diyala / 1997
* Head of Biology Sciences Dept. / College of Education - University of Diyala /2005
* Chairman of the Scientific Promotion Committee in College of Science/ Diyala University / 2004 – 2007
* Member of the Central Committee of Promotions - University of Diyala , 2003 - 2005
* Secretary Editor of Diyala Journal - College of Education, University of Diyala, 2005-2006
* Editor of Diyala journal - Colleg of Education / University of Diyala / 2006 -2007
* Editor of the Al- Yarmouk University Journal / University of Diyala / 2006 -2007
* Member of the examination Committee for Graduate Studies - College of Agriculture - University of Salahaddin 2008 -2009
* Member of scientific Committee in the College ofAgriculture, University of Salahaddin / 2009 -2018
* Member of scientific committee in the Department of Plant Protection ,College of Agriculture, University of Salahaddin / 2009 -2018
* Chairman of the Quality Assurance Committee in the College of Agriculture -Salahaddin University / 2009 – 2010
* Member of the Joint Committee of Higher Education (Board) - University of Dohuk College of Agriculture from 2010 to 2011
* Member of the Quality AssuranceCommittee in the plant protection department of College of Agriculture - Salahaddin University / 2010 - 2011

MEMBERSHIP OF PROFESSIONAL ASSOCIATION:* Member of the Syndicate of Agricultural Engineers / Baghdad -1980
* Member of the Association of Agricultural Engineers of Baghdad , 1980
* Member of the Association of Agricultural Engineers of Erbil , 2008
* Member of Teachers Syndicate / Erbil -1986

Number of published researches : More than ( 90 )Numberof MSc and PHD students : ( 26 )* Date of Birth: 12 / 6 / 1985
* Sex: Female
* Nationality: Iraqi
* Marital Status: Single

Address: Salahaddin- Erbil- Kurdistan Region- Iraq.Phone number: 00964 750 482 4927E-mail: hozanKadir @yahoo.com;  hozan.hamamurad@su.edu.krd Certifications :B.SC : College of Agriculture , Plant Protection Department Salahaddin University/ Erbil/ Iraq* 2004- 2008 .

M.Sc. : College of Agriculture, Plant Protection Department , Salahaddin University/ Erbil/ Iraq* 2014.

Taxonomic study of leaf beetles (Coleoptera: Chrysomelidae) in some Localities of Kurdistan Region-Iraq.  General Specialty : Agriculture –Plant Protection Department Specialty : Entomology (Plant Protection) ; Insects Taxonomy .Job TitleLecturer in Department of Plant protection / College of Agriculture / Salahaddin University Scientific Titles

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| --- | --- |
|  Title |  Date |
|  Assistant Lecturer |  2014 |
|  Lecturer |  2018 |

Number of published researches : ( 8 )Lecturer name: **GazangTaher Omar** , born 1982 , BSc degree in plant protection 2001-2005, 3th -10 had started working as an academic staff (teaching assistant) in 25-10-2005 in the college of Agriculture / plant protection department Salahaddin university, taking post graduate courses for 2 year in college of agriculture plant protection department in Salahaddin university getting MSc. Degree In Entomomlogy (plant protection) working as an assistant lecture also member in agriculture engineering syndicate in Hawler, taking a course on teaching method in 2011,The same University ( Salahaddin).Now PhD student in practical stage. Giving a pre graduating course of insect taxonomy to students in 2nd class Working in one researches1. A New species of comb-clawed beetle *Cteniopus*Solier, 1835 (Coleoptera: Alleculiidae) from Erbil Governorate Kurdistan Region-Iraq.

Description of dark beetle, OpatroidespunctulatusBrullé, 1832 (Coleoptera: Tenebrionidae: Opatrinae) from Iraq , Erbil province. |
| **9. Keywords** | **Morphology , character , orders , differences, Anatomy**  |
| **10. Course overview:** This course is a general introduction to entomology with an emphasis on insect diversity. Lectures provide an evolutionary perspective on the basic taxonomy, habits, morphology, habitats, and life history strategies of insects. INSECT DIVERSITY AND BIOLOGY is an introductory entomology course meant to provide a basic framework for the study of the biology, importance, and identification of insects.  Insects, with their incredible variety of form and function, not only make up a huge majority of all species of living things, they also affect all other species through their economic, medical and ecological importance.  The framework for the course will be an overview of the structure and diversity of insects in an evolutionary context.  That framework will be used to illustrate general themes in insect biology, and to introduce the orders and most important families of insects. Lectures provide an evolutionary perspective on the basic taxonomy, habits, morphology, habitats, and life history strategies of insects. The labs are a practical introduction to insect identification.  Students will learn to recognize the larger taxa and will gain hands-on experience with the tools used to identify other insects.  Usage of dichotomous keys will be emphasized, and students will use keys to identify insects provided in study sets as well as some specimens they have collected themselves during the term. |
| **11. Course objective:** Evolution of Insect Structure is designed to provide an introduction to basic insect anatomy, functional morphology, and the terminology associated with those fields—with a focus on the external skeletal structures of adult insects. In addition, we will discuss a variety of topics related to the evolution of the insect form, and important variations on selected aspects of that form (for example, variation in mouthparts and wings). Lectures will introduce and discuss these topics and the terminology associated with them. Laboratories will emphasize the exploration of insect anatomy and functional morphology using physical insect specimens, while reinforcing the development of a vocabulary of terms useful for communicating about the “parts” of insects this course led students to be able to explain how many of the morphological differences that are seen among the major groups of insects can be viewed as adaptations of those insect groups to different biological conditions. |
| **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**Breakdown of overall assessment and examination25 marks for theoretical part The marks is divided as follow :10 marks for 1st monthly exam and 10 marks for 2nd2 marks for daily quiz 2 for reports1for class conversation Final examination 20 practical part , 40 for theoretical parBreakdown of overall assessment and examination15 marks for practical part The marks is divided as follow :10 marks for 1st monthly exam.2 marks for daily quiz 2 for sample 1 for reports |
| **15. Student learning outcome:** be sufficiently knowledgeable about the basic anatomy of insects that you can explain it to and discuss it with other entomologists, non-entomological scientists, fellow students, first graders, and the general public., … have developed an extensive new vocabulary of terms related to insect anatomy and morphology that will allow you to read the descriptive scientific literature of entomology with considerable understanding. ,… be familiar enough with the fundamental morphology of insects, and its terminology, that you can readily use keys for identifying insects to the family level (this will be especially helpful for those of you who will be moving on to Entomology 301 in the spring…).,have developed an appreciation for both the basic body form of insects (how all different insects are similar), and some of the ways that that body form has been altered in specialized ways in different groups of insects. |
| **16. Course Reading List and References‌:**▪ https://insects.tamu.edu/students/undergrad/ento305/index.html; |
| **17. The Topics:** | **Lecturer's name** |
| Lecture 1Study of the insects( Success and distribution ) , The beneficial and injuries of the insects to the manLecture 2 Phylum : Arthropoda and its classes, Crustaceae , Archnida, Chilopoda , Diplopoda and Insecta,  General characteristics of InsectsLecture 3Insect body wall - its structure and function Lecture 4 Structure of the head , Types of orientation , Area of the head 1st examination Lecture 5 The Head and its appendages , Antenna , Mouthparts Lecture 6 The Thorax and its appendages , The LegsLecture 7 The Thorax and appendages , The Wings , wings coupling Lecture 8 The Abdomen and its appendages in wings and wingless insects , Types of cerciLecture 9 The Digestive system - Structure of alimentary canal , Fore-gut, Mid-gut and hind-gut , Head glandsLecture 10 The Respiration System , The spiracles , Respiration in Terrestrial , aquatic and endoparasitic insects Lecture 11 The Circulatory system , Haemocoel and dorsal vessel, Accessory pulsatory organs Lecture 12 The Nervous system , structure of neuron - central nervous systemLecture 13The Excretory system , Malpighian tubules - accessory excretory – organs , Fatty bodies , Nephrocytes , OenocytesLecture 14 The Reproductive systems ,Male and female -their structures and Accessory glandsLecture 15 The Sensory organs , Vision organs , Simple and compound eyes ,Auditory organs | Lecturer's nameProf. Dr.Nabeel Abdul Kadir Mawlood ex:(1hr)ex:/12/2018 |
| **18. Practical Topics (If there is any)** |  |
| In this course we will given an overview of insect structure Lecture1 study the external structure and component of exoscelton (Body wall).Lecture 2 define antenna and study types of antenna.Lecture 3 study mouthparts and modification of mouthpart.Lecture 4 study the thorax and appendage of thorax.Lecture 5 study of wings and modification of wings and study types of wing- coupling.Lecture 6 study of Dissection Lecture 7 1st practical examination.Lecture 8 study preparing the slid after that how to drawing the parts of insect.Lecture 9 abdomen and abdomen appendages.Lecture 10 study the metamorphosis and types of insect metamorphosis.Lecture 11 study the internal anatomy of insects, Digestive system.Lecture 12 Respiratory system and muscle system.Lecture 13 study the nervous systems.Lecture 14 study the reproductive system male genitalia and female genitalia of insects.Lecture 15 2nd examination Lecture 16 museum visit.Each term should include not less than 16 weeks  | Lecturers nameHozan Qadir HammamuradEx. (9 hr)Ex. 11/10/2018GazangTaher OmarEx: (9 hrs) |
| **19. Examinations:**1. Compositional1. Enumerate the terms in bellow.
2. Draw the following.
3. Define

4. Compare between 5. Multiple choices:Practical: **Question sample:**1. Draw the following.
2. Write the parts that point.
3. Write the function of this parts.
4. Defined between this parts.
5. What is the parts and give the examples.
6. Fell the blanks.

 **2. True or false type of exams:****3. Multiple choices:** |
| **20. Extra notes:** |
| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ** 1. Borrer , D.J and Delong , D. ( 1954 ) . An Introduction tothe study of insects .Holt , Rinehart and Winston New york.

Chapman , R. F. ( 1969 ). The insects Structure and function.1st ed. Hodder and Stoughton Educational ,London .819 P. Chinery , M. ( 1982 ) . A Field guide to the Insect of Britain and Northern Europe . William Collins Sons and Co. Ltd Glasgow . Gillott , C. ( 2005 ) . Entomology . 3rd. ed. Publishing by Spriger , P.O. The Netherlands .Imm , A.D. ( 1964 ) . A General Textbook of Entomology . Methuen and Co. LTD London . Ross , H.H. ( 1948 ) . A Textbook of Entomology . John Wiley and Sons , Inc. New York .Snodgrass , R.F. ( 1935 ) . Priciples of insect morphology Tata McGraw – Hill Book Publishing Company LTD. Bomay . New Delhi AnternetH:\biology\Insect Morphology and Anatomy (Thorax).htmH:\biology\Insect Anatomy.htmH:\biology\Coleoptera.htmH:\biology\Diptera.htmH:\FFA Study Materials - Collection.mht.‌‌  |