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**Department of Plant protection**

**College of Agriculture Engineering Science**

**University of Salahaddin**

**Subject: Practical Insect structure**

**Course Book (Year 2)**

**Lecturer's name Hozan Qadir Hamamurad, MSc**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | Insect structure  |
| **2. Lecturer in charge** | Hozan Qadir Hamamurad |
| **3. Department/ College** | Plant protection / Agriculture Engineering Science  |
| **4. Contact** | e-mail:hozan.hamamurad@su.edu.krdTel: (optional) 0750 4824927 |
| **5. Time (in hours) per week**  | For example Theory: 2 Practical: 9 |
| **6. Office hours** | Sunday to Thursday |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | Lecturer name: Hozan Qadir Hamamurad , born 1985 , BSc degree in plant protection 2004-2008, 4th -10 had started working as an academic staff (teaching assistant) in 16-7-2009 in the college of Agriculture / plant protection department Salahaddin university, taking post graduate courses for 9 month in college of agriculture plant protection department in Salahaddin university getting MSc. Degree In Entomology (plant protection) working as an assistant lecture also member in agriculture engineering syndicate in Hawler , taking a course on teaching method in 2015 , The same University ( Salahaddin) web site Giving a pre graduating course of insect structure to students in 2nd class Working in seven researches1. Description of three species of *Clytra* Laicharting,1781 (Coleoptera: Chrysomelidae) from Kurdistan Region-Iraq.
2. New species of soft-winged flower beetles, *Malachius*, 1775 (Coleoptera: Myrlidae) from Kurdistan Region-Iraq.
3. New record of checkered beetle, *Trichodes ephippiger* Chevrolate, 1874 (Coleoptera: Cleridae) from Iraq.
4. A New record of sap feeding- beetle, *Nitidula* *flavomaculata* Rossi,1790. (Nitidulidae: Coleoptera) in some localites of Kurdistan region.
5. A new record of Chafer beetle, *Oxythyrea*  *cinctella* Mulsant ,1842 ( Coleoptera, Scarabaeidae ) from Erbil -Kurdistan region-Iraq.
6. New species of the genus, *Protaetia* Burmeister,1842 from Iraq (Coleoptera: Scarabaeidae: Cetoniinae).
7. A New record of Elm Leaf Beetles, *Xanthogaleruca luteola* (Muller,1766) (Coleoptera : Chrysomelidae ) from Iraq.
8. First report of pollen beetle *Meligthes* sp. (Stephens.1830)(Coleoptera:Nitidulidae) in Iraq.
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| **9. Keywords** | Morphology , character , external internal component , anatomy , characters |
| **10. Course overview:** A remote delivery (distance education) course that brings together basic anatomy and physiology of insects and relates this to behaviour. The main body systems will be examined sequentially and aspects of biology relevant to currently active or promising research areas featured of insect structure. The course features aspects of physiology and anatomy that are relevant to the status of insects as pests and beneficial organisms and as developmental model organisms. Class discussions of relevant topics are encouraged and assessed. Recorded mini-lectures accompany web-based resources. A remote delivery (distance education) course that brings together basic anatomy and physiology of insects and relates this to behaviour. The main body systems will be examined sequentially and aspects of biology relevant to currently active or promising research areas featured of insect structure. The course features aspects of physiology and anatomy that are relevant to the status of insects as pests and beneficial organisms and as developmental model organisms. Class discussions of relevant topics are encouraged and assessed. Recorded mini-lectures accompany web-based resources for insect morphology, and external anatomy. It is expected that all students would be present in class for lectures and also participate in all practical activities. Attendance records will be kept and used to determine each person’s qualification to sit for final examination according to the University rules. Any unavoidable cause(s) of absence must be communicated with or presented to the instructor as soon as possible, indicating the reason for the absence. |
| **11. Course objective**- our objective in this course giving information on insect structure.- detail information of insect structure.To provide students with an understanding of the comparative morphology of insect organ systems. To show students how the morphology of a structure is related to its function. The course will examine theory and practice of insects structure and exploreeconomic and ecological considerations in decision making and programs of control including morphology of insects, surveying and sampling methodology for informed decision-making, and the effect of market values and input costs on economic thresholds. Course objectives include: an overview and appreciation of insect diversity in Kurdistan region and understand basics of insect biology and taxonomy Develop effective decision-making skills in insect structure with respect to economic and environmental considerations Understand the roles of insects in crop production, the destructive nature of pest insects in relationship to plants, and the importance of beneficial insects Appreciate the different viewpoints stakeholders of crop production have and understand the ethical, economic, and environmental considerations when making decisions in insect pest-management. |
| **12. Student's obligation**Student Attendance in lecture, collecting sample, hand notes, preparing reports about some important course subjects and quizzes. |
| **13. Forms of teaching**Teaching using Power point, data show, white board, practices and video. |
| **14. Assessment scheme** practical part has 35 marks 30 marks for examination 3 marks for quizzes 1 for sample 1 for report. |
| **15. Student learning outcome:** Due to our given topic to students they will learn how to describe external and internal insects and recognized all body parts. This course is a general introduction to entomology with an emphasis on insect diversity. We will provide an evolutionary perspective on the basic taxonomy, habits, morphology, habitats, and life history strategies of insects. Students will be expected to attain some fluency in the language of entomology, showing an understanding of basic insect structure and the overall diversity of the Insect. They will learn to extrapolate from general patterns of life history and behaviour to specific predictions about the biology of most of the animals encountered in terrestrial and freshwater environments. The laboratories will work synergistically with the lectures to reinforce recognition of large and important taxa (orders, families) and to identify other taxa using dichotomous keys. In both the lecture and the laboratory the emphasis will be on the attainment of practical skills needed by teachers, naturalists, and field biologists in a variety of related disciplines. This handbook provide information on exactly what excepted learning outcomes and what methods can be used to assess them. |
| **16. Course Reading List and References‌:****▪**Snodgrass, R. E. (December 1993). Principles of Insect Morphology. Cornell Univ Press. [*ISBN*](https://en.wikipedia.org/wiki/International_Standard_Book_Number) [*0-8014-8125-2*](https://en.wikipedia.org/wiki/Special%3ABookSources/0-8014-8125-2).**▪**Gordh, G. & Headrick, D. (2001).  A Dictionary of Entomology. CABI Publishing, New York.**▪** [Copyright © 1997-2015 Amateur Entomologists' Society](http://www.amentsoc.org/help/copyright.html)**-**www.earthlife.net/search.html-https://www.cals.ncsu.edu/course/ent425/library/tutorials/external-anatomy/exoskeleton.html |
| **17. The Topics:** | **Lecturer's name** |
| 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  | Hozan Qadir HamamuradEx: (9 hrs)Ex: 15/2/2022  |
| **18. Practical Topics (If there is any)** |  |
|  | **Lecturer's name****ex: (3-4 hrs)****ex: 15/2/2022** |
| **19. Examinations:****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 blank.

**2. True or false type of exams:****3. Multiple choices:** |
| **20. Extra notes:** |
| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ**  |