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**Department of Plant Protection**

**College of Agriculture**

**University of Salahaddin – Erbil**

**Subject: Forest Insects / Practical**

**Course Book – (Year 3) Spring Semester**

**Lecturer's name:**

**MSc. Dlpak Birkhader Yaba (Lecturer)**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | Forest Insects (practical) | |
| **2. Lecturer in charge** | MSc. Dlpak Birkhader Yaba | |
| **3. Department/ College** | Plant Protection / Agricultural Engineering Sciences | |
| **4. Contact** | e-mail: dlpak.yaba@su.edu.krd  Tel: (optional) 07504622779 | |
| **5. Time (in hours) per week** | 6 hours | |
| **6. Office hours** | Sunday to Thursday | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | **Lecture name: Dlpak Birkhader,born 1968 BSC. In biology ,college of science ,salahaddin university in 1988-1989 seventh of tenth of BSC degree ,started working as an academic staff (biology teacher) in ministry of education) until 2003 after that I started taking post graduate courses in college of Education, in biology department in genetics I finished in 2006 I started working as a teacher in ministry of education after one year I transported to ministry of higher education in 2007 until now I working as an assistant lecturer in plant protection department, also I m member in biological syndicate in howler, taking a course on teaching method in 2010,in salahaddin university ,also I taking course of computer in college of education and taking course in English.**  **Giving under graduating course of genetics (second stage) ,general zoology (first stage and forest insect (third stage) student in third class, also I have four published research:**  **1) Role of sex chromatin on performance in local black goats.**  **2) Role of sex chromatin on performance in crossbred cows.**  **3) Role of sex chromatin on performance in Arabic sheep (published)**  **4) Identification and effect of essential oil compounds of Cyperus rotunds in the biological and quantity of DNA in *Triboliuum castaneum*. (Published)** | |
| **9. Keywords** | Forest Insects, Common name, Scientific names, Order, Family, Description and Damage. | |
| **10. Course overview:**  **▪ The importance of studying the subject:**  The brief contents of this module include:   1. Common name, scientific name, Order and Family of forest insects. 2. Morphological description of forest insects. 3. Plant hosts of forest insects. 4. Infestation symptoms and damage nature of forest insects.   **▪ Understanding of the fundamental concepts of the course:**  This course will provide a brief overview of the diverse insect fauna that attacks the various parts of forest trees and their products.  **▪ Attendance:**  It is mandatory for every student to attend in the lectures and also participate in all laboratory sessions. In addition, the attendance is recorded and kept as well as used to determine each person’s qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.  **▪ Code of Conduct in Lecture Rooms and Laboratories:**  Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, chatting, using mobile, etc.) during lectures. Food and drinks are not permitted in the laboratories.  **▪ Sufficient knowledge and understanding to secure employment:**  This course will encourage graduated students on how to use their knowledge in terms of forest insect management. Furthermore, the course will also provide graduated students with insect biology, ecology, and the way of insect controlling. | | |
| **11. Course objective:**  The course aims to provide the students with the forest knowledge's required for a correct application of the prevention and control methods towards the insects. Therefore, the aims of the course are to get knowledge and focus on the main pests, like Arthropods (Insects) of their relationships with the forest trees, the different methods for the control of those organisms. | | |
| **12. Student's obligation**  Participation  Examination  Report  Quizzes  Collecting Samples  Drawing in Notebook | | |
| **13. Forms of teaching**  Data show and PowerPoint  Whiteboard  Lecture in word  Microscope  Samples of insects  Video show | | |
| **14. Assessment scheme:**  - (35) for the practical, and this include:  - (25 marks) for two examination in course.  - (10 marks) for the quizzes, Report, Notebook and Samples. | | |
| **15. Student learning outcome:**  This course trains students to acquire: **a)** attainments on the main insects infesting forest trees; **b)** knowledge of pest control applied to forests (means and methods for prevention, monitoring and control of insect pests). | | |
| **16. Course Reading List and References‌:**  **Berryman, A. A. (1986).** Forest insect's principle and practices of population management. Plenum press, New York. 283pp.  **Ciesla, W. M. (2011).** Forest Entomology. Wiley-Blackwell published, UK. 442pp.  **Kimoto, T. and M. Duthie-Holt (2006).** Exotic Forest Insect Guidebook. Canadian Food Inspection Agency. 128pp.  **Leather, S. R. (2005).** Insect Sampling in Forest Ecosystems. Blackwell Publishing, UK. 316pp.  **Lieutier, F.; K. R. Day; A. Battisti; J. Grégoire and H. F. Evans (2007).** Bark and Wood Boring Insects in Living Trees in Europe, a Synthesis. Published by Springer, Netherlands. 581pp.  **Nair, K. S. S. (2007).** Tropical Forest Insect Pests, Ecology, Impact, and Management. Cambridge University Press, UK. 424pp.  **Schabel H. G. (2006).** Forest Entomology in East Africa. Published by Springer, Netherlands. 287pp.  **Wagner M. R.; J. R. Cobbinah and P. P. Bosu (2008).** Forest Entomology in West Tropical Africa: Forests Insects of Ghana. Published by Springer, Netherlands. 309pp. | | |
| **17. The Topics:** | | **Lecturer's name** |
| Insects Definition  The impact of forest insects:  Insect counts in the limited forest areas:  Insect counts in the large forest areas:   * Land count: * Aerial count by airplanes   Forest tree insects | | 1 |
| **Lepidoptera leaf eater insects:**  **1- Leaf chewing insects:**  Oak leaf cutworm, *Euproctis melania*  Gypsy moth, *Lymantria dispar*  Pine Processionary Caterpillar, *Thaumetopoea pytiocampa*  Pistachio processionary bud moth,*Thaumetopoea solitaria*  Oleander hawk-moth, *Daphnis nerii*  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 2 |
| **2- Leaf folding insects:**  Spruce budworm, *Choristoneura fumiferana*  Oak Leaf Roller,*Archips semiferanus*  **3- Tent making insects:**  Spring web worm, *Ocnogyna loewii*  European tent caterpillar, *Malacosoma neustria*  **4- Leaf miner insects:**  Blotch miner, *Phyllonorycter* *blancardella*  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 3 |
| **Coleoptera leaf eater insects:**  Iraqi poplar root beetle, *Adoretus irakanus*  Poplar leaf beetle, *Melasoma populi*  **Orthoptera leaf eater insects:**  Egyptian grasshopper, *Anacridium aegyptium*  *Phaneroptera nana*  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 4 |
| **Hymenoptera leaf eater insects:**  Larch sawfly, *Pristiphora erichsonii*  Spruce sawfly, *Diprion hercyniae*  Leafcutter ant, *Atta colombica*  Leafcutter bee, *Megachile* sp.  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 5 |
| **Piercing-sucking Insects:**  Brocaded poplar bug, *Monosteira unicostata*  Poplar branch bug, *Apodiphus amygdali*  Forest cicada, *Cicadetta montana*  Poplar leaf psyllid, *Camarotoscena speciosa*  Western branch psyllid, *Egeirotrioza verrucifica*  Olive psyllid, *Euphyllura olivina*  Poplar leaf aphid, *Chaitophorus populialbae*  Oak aphid, *Quercus aegilops*  Pistachio bug, *Anopulvinaria pistaciae*  poplar scale, *Diaspidiotus caucasicus*  Oriental scale, *Aonidielia orientalis*  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 6-7 |
| **Meristem tissue insects:**  **1- Outgrowth top insects:**  Pistachio bark beetle, *Chaetoptelius vestitus*  Pine bud butterfly, *Rhyacionia (Evetria) frustrana*  Spruce weevil, *Pissodes harcyniae*  **2- Fruit insects:**  Oak fruit moth, *Cydia fagiglandana*  Oak fruit weevil, *Curculio* sp.  **3- Seed insects:**  Oak gall wasps, *Andricus* sp.; *Cynips* sp.  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 8-9 |
| **Bark and Phloem insects:**  **Bark insects:**  Pine bark beetle, *Dendroctonus frontalis*  Spruce bark beetle, *Ips typographus*  Almond bark beetle, *Scolytus rugulosus*  Pine bark beetle, *Onthotomicus proximus*  Fig bark beetle, *Hypoborus ficus*  **Phloem piercing insects:**  Poplar borer, *Capnodis miliaris*  Pistachio borer, *C. cariosa*  Almond borer, *C. carbonaria*  Peach capnodis, *C. tenebrionis*  Sumac borer, *C. porosa*  Lesser poplar stem borer, *Melanophila picta*  Apricot stem borer, *Sphenoptera dhia-ahmedi*  Poplar moth, *Parathrene tabaniformis*  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 10-12 |
| **Scientific trip** | | 13 |
| **Wood insects:**  **1- Living tree insects:**  Oak stem borer (Long horned stem borer), *Cerambyx cerdo*  Peach stem borer with long antennae, *Chlorophorus varius*  Asian long-horned beetle, *Anoplophora glabripennis*  Walnut stem worm, *Zeuzera pyrina*  Leopard moth (Willow stem worm), *Cossus cossus*  **2- Dying tree (or newly cutting) insects:**  Red-bay ambrosia beetle, *Xyleborus glabratus*  Oak pinhole bore, *Platypus cylindrus*  Sirex wood wasp, *Sirex noctilio*  **3- Wet wood insects:**  Termite (White ant): *Microcerotermes diversus*  **4- Dry wood insects:**  Brown lyctus beetle, *Lyctus brunneus*  Parallel powder-post beetle, *Trogoxylon parallelopipedum*  Lead-cable borer, *Scobicia declivis*  Red shot-hole borer, *Xylobiops basilaris*  **(Common name, Scientific name, Family, Order, Description and Damage)** | | 14-15 |
| **18. Examinations:**  **Some examples about the questions (Move type):**  Q1: Define the followings: 1- Leaf folding insects 2- Leaf chewing insects  Q2: Identify this specimen? Write the Scientific name, Order and Family.  Q3: Mention the damage caused by this specimen?  Q4: Write one special feature of this specimen.  Q5: What is the type of metamorphosis of this specimen?  Q6: Explain the phenomena in front of you? Write the Scientific name and Family.  Q7: Match each of A column to that in B column.  Q8: What is the type of mouth part of this specimen?  Q9: What are the damage stages of this specimen?  Q10: Fill in the following blanks: | | |