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| _Pic2 | The Islamia University of Bahawalpur  Abbasia Campus, Bahawalpur, Pakistan Ph: +92 - 62 - 9239114, Fax: +92 - 62 - 9250099 [Email:qec@iub.edu.pk](mailto:qec@iub.edu.pk) |

**Tentative Course Plan**

**Department of Entomology**

**University College of Agriculture & Environmental Sciences**

**Class:** B.Sc. (Hons.) Entomology **Semester-** 6th (Major)

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| **Instructor** | Dr. Muhammad Tahir | **Email:** tahir\_1558@yahoo.com | |
| **Course Title** | Insect Physiology | **Program** | B.Sc. (Hons.) Agriculture |
| **Course Number** | ENT-502 | **Credit Hours** | 3(2-1) |
| **Lecture** | As per time table of College | | |
| **Course Objective:** | | | |
| The main objective of the course is the study of insect development and physiology of exoskeleton, endoskeleton and different systems, hormones and pheromones. | | | |
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| **Methods of Teaching** | | | |
| • Audiovisual lectures  • Assigned readings  • Group activities & Discussion (Analytical and critical thinking)  • Web-assisted instruction  • Student Questions Encouraged  • Well moral and educational ethics during the class | | | |
| **Resource**  **Material** | Books Prescribed | | |
| 1. Ashfaq, A. and Sohail, A. 2002. Manual of Insect Physiology. Pakistan Science Foundation.  2. Chapman, R.F. 1998. The Insects: Structure and Function. 4th Ed. Hodder and Stoughton Educational Ltd., U.K.  3. Klowden, M.J. 2002. Physiological Systems in Insects. Academic Press.  4. Litwack, G. 2005. Insect Hormones (Vitamins and Hormones). Elsevier Academic Press, California.  5. Liu, N. 2008. Recent Advances in Insect Physiology, Toxicology and Molecular Biology. Research Signpost Publishers.  6. Patanaik, B.D. 2002. Physiology of Insects. Dominant Publishers and Distributors, Dehli, India.  7. Wigglesworth, V.B. 1972. Principles of Insect Physiology. 7th Ed. Meltron & Co. Ltd. U.K.  8. Yadave, M. 2003. Physiology of Insects. Discovery Publishing House, New Delhi | | |
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| **Office Help Hours** | Monday to Friday: 8:30 am to 4:30 pm | | |
| **Grading** | Exam (Date to be announced)  Mid- Exam (30%) Final Exam (50%)  Problem Session/Assignments (20%) | | |
| **Problem Session** | Monday to Friday: 8:30 am to 04:30 pm | | |
| **SEQUENCE OF TOPICS TO BE COVERED** | | | |
| **Week #** | **Topics (outline of main topics and sub topics)** | | |
| **1.** | Course contents, Recommended books, General Introduction of the course | | |
| **2.** | Integument ( The Cuticle, Basement Membrane) | | |
| **3.** | Integument ( Moulting and Cuticle Formation, Insect Growth Regulators) | | |
| **4.** | Endocrine System ( Neurosecretion, Endocrine Glands) | | |
| **5.** | Digestion and Assimilation (Structure of alimentary canal, Foregut, Hindgut, Midgut) | | |
| **6.** | Digestion and Assimilation ( Process of digestion) | | |
| **7.** | Digestion and Assimilation ( Control of digestive tract, Absorption) | | |
| **8.** | **Mid Exam**  **Lecture 9: Ants and Mid** **Termites**  **Lecture 9: Ants exams** | | |
| **9.** | Excretion ( Malpighian tubules, Mechanism of function) | | |
| **10.** | Excretion ( Mechanism of excretion, other organs of excretion, Storage excretion) | | |
| **11.** | Circulation ( The Dorsal Vessel, Circulation of Haemolymph, Functions of Haemolymph) | | |
| **12.** | Respiration (The Tracheae, Spiracles, Open and closed tracheal system): Neurobiology ( Central nervous system, Visceral nervous system) | | |
| **13.** | Neurobiology ( Peripheral nervous system); Sensory system (Antennae, Mouthparts, Legs and Wings, Compound eyes) | | |
| **14.** | Muscular Systems (Functioning of Striated Muscles, Walking and running, Jumping or leaping, Flight | | |
| **15.** | Reproduction ( Male reproductive system, Female reproductive system) | | |
| **16.** | Final Exams | | |

**Student Evaluation criteria:**

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| Attendance | 5% |
| Workshop / Assignments/Case study | 5% |
| Surprise Test/Sudden Test, Quizzes | 5% |
| Class Participation | 5% |
| Mid Term Paper | 30% |
| Final Term paper | 50% |
| **Total** | **100%** |

**Student Responsibilities:**

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in “F Grade”. Students may prepare Sketchbook for taking notes and for references.

**Instructor/Tutor**

Approved by:

**Dean/ Chairman/ HOD/ Subject Specialist/ Program Coordinator**

COURSE CONTENTS

**THEORY**

Introduction; embryonic and post-embryonic development, physiology of integument, digestive, tracheal, circulatory, excretory, reproductive, muscular and nervous systems; sense organs and perception; sound and light production, thermoregulation; production and function of hormones and pheromones**.**

**PRACTICALS**

Study of cuticular proteins; physiology of digestion, tracheal, circulation, excretion, reproduction, musculature and sensation; hormones and pheromones**.**.