RUTGERS Department of Entomology

Syllabus for (11:370:403/515)

INSECT STRUCTURE & FUNCTION I

4.0 credits

Instructor: Dr. Chloe Hawkings
Location: Blake, Room 101
Course Overview : Insect Structure and Function I is an overview of comparative morphology and physiology across insect taxa.
Number of credit hours : Four (4)
Days and times of lectures : Tu, Th (12:35 – 5:15, 2:15 – 3:35pm) Lec./Lab
Office hours : By appointment
Office location: Thompson Hall, Room 132
Email: c.hawkings@rutgers.edu
Prerequisites: (11:370:202 or 11:370:381 suggested)

Course Description : This course will introduce students to the morphology and physiological systems of insects. The diversity of insects is readily recognizable through morphological features, and their abundance and ability to occupy a wide range of ecological niches can be attributed to adaptations of both external structures and internal physiology. Also covered is comparative external morphology relevant to identification of insect groups.

Learning outcomes:
1. Students should be able to define key concepts relating to insect morphology, physiology and evolution covered in lecture materials.
2. Students should be able to distinguish insects based upon morphological structures .
3. Students should be able to apply course material to demonstrate their ability to solve real world problems.
4. Students should be able to examine scientific studies to draw connections between lecture material and current research to draw conclusions on the need for research.
6. Students should be able to gain an understanding of the significance of different insect structure and how this relates to their function. Analyzing comparative mechanisms is crucial.

Resources :
Textbooks (recommended but not required):
Principles of Insect Morphology by R. E. Snodgrass
The Insects: Structure and Function by R. F. Chapman

Course Calendar:
Sept. 3: Course Introduction; Phylogeny: homology and synapomorphy (*Chapters 1*)
Sept. 5: Insect Integument and Molting (*Chapter 3)*
Sept. 10: Insect Body regions and Segmentation (*Chapter 4*)

Sept. 12: Segmented Arthropod Appendages (*Chapter 5*)
Sept. 17: The Insect Head (*Chapters 6, 7*)
Sept. 19: The Insect Head and The Head Appendages (*Chapters 6, 7*)
Sept. 24: Section review (*Chapters 3, 6, 7*)
Sept. 26: Midterm Exam
Oct. 1: Lab Practical Exam 1
Oct. 3: Comparative Thoracic Morphology (*Chapter 8)*
Oct. 8: Comparative Thoracic Morphology and Locomotion (*Chapters 8, 9*)
Oct. 10: Wing Anatomy and Flight (*Chapter 10)*
Oct. 15: Insect Flight (*Chapter 10)*
Oct. 17: The Abdomen and Feeding Mechanisms (*Chapters 11, 12)*
Oct. 22: Comparative Feeding Mechanisms (*Chapter 12)*
Oct. 24: The Alimentary Canal (*Chapter 13*)
Oct. 29: Section review & Circulatory systems (*Chapters 14*)
Oct. 31: Midterm Exam
Nov. 5: Lab Practical Exam 2
Nov. 7: The Respiratory System (*Chapter 14*)
Nov. 12: The Nervous System (*Chapters 15*)
Nov. 14: The Sense Organs (*Chapter 16*)
Nov. 19: Internal Insect Reproduction (*Chapters 17*)
Nov. 21: External Insect Reproduction and Insect Sex (*Chapters 18)*
Nov. 26: Insect ribosomal structure, molecular phylogeny, & geologic time
Nov. 28: Thanksgiving
Dec. 3: Current Topics in Insect Morphology
Dec. 5: Class Discussion on Reading Assignment; Final Exam Review
Dec. 10: Lab Practical Exam 3
Dec. 11: Class end
Dec. 16 - 23: Final Exam

Grading and assignment:
Exams: Two midterm exams consisting of both multiple choice and essay style questions which cover material from lectures prior to the exam. One final exam is cumulative and covers all lecture material.
Assignments: A reading assignment will be given in which students will summarize the contents and complete outside of class. Assignments are aimed to encourage students to understand the course content and scientific literature in a way which can be articulated to other scientists. Students are expected to contribute to class discussions after reading.
Quizzes: Five quizzes will be assigned at the beginning of class to be completed before the lecture begins
Total % contributed (course):
Midterm Exams (15% each) 30%
Final Exam 20%
Lab 25%
Quizzes (2% each) 10%
Participation/discussions 15%
Total % contributed (lab):
Lab Practicals (25% each) 50%
Quizzes (4% each) 20%
Participation 10%
Attendance 10%

Course Etiquette: Attendance is recommended, and participation is required for participation points. This requires participation in class activities, discussions, and questions. A strict late policy is followed in

this class, lateness is regarded as absence. Quizzes and handling of grades and assignments will be conducted at the start of the lecture. If you are going to be late, let the instructor know immediately. If you miss a lecture you are responsible for catching up in time for assignments and exams. Missed exams and tests can only be excused through university approved absences. The instructor should be provided proof of university approval no more than one week after the exam date. No disturbances will be tolerated in class, this includes engaging in disruptive behavior and inappropriate cell phone or laptop use that is not related to the course. We strive to create a positive classroom climate to facilitate all students to be able to learn.

Americans with Disabilities Act (1990): The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please visit the Office of Disability Services or contact their office for further information.

Academic Integrity: The University's policy on Academic Integrity is available at http://academicintegrity.rutgers.edu/academicintegrity-policy. The principles of academic integrity require that a student: properly acknowledge and cite all use of the ideas, results, or words of others. You must acknowledge **all** contributors to a given piece of work. All work submitted for a course or other academic activity must be produced by the student turning in the assignment or task and is produced without the aid of impermissible materials or impermissible collaboration. All data or results must be obtained by ethical means and reported accurately without suppressing any results inconsistent with his or her interpretation or conclusions. Treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress. You are expected to uphold the canons of the ethical or professional code of the profession for which he or she is preparing. Adherence to these principles is necessary in order to ensure that everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments. all student work is fairly evaluated and no student has an inappropriate advantage over others. The reputation of the University for integrity in its teaching, research, and scholarship will be maintained and enhanced. Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.