

RUTGERS

Department of Entomology



Syllabus for (11:370:404)

INSECT STRUCTURE & FUNCTION II: Physiology and Biochemistry 4 Credits

Instructor: Dr. L. B. Brattsten, lb.brattsten@rutgers.edu

Offered: Spring semester of even years; Next offered in SPRING 2020

Pre-requisites: 11:370:381 Insect Biology or equivalent, 11:370:403 Insect Structure & function I or equivalent, 11:115:403, 404 General Biochemistry or equivalent, and consent of instructor.

Lectures: T, Th, 2 (10:55 – 12:15) **Location:** Thompson Hall, Room 201

Labs T 3,4,5 (12:35 – 5:15) **Location:** Old Blake Hall, Room 101

Text: Chapman, Simpson, Douglas, 2013. The Insects: Structure and Function, 5th Edition, 900+ pp. Cambridge University Press; papers from the current literature; the entire course will be posted on a Rutgers Canvas course website

Tentative schedule of lecture topics

- 1 Introduction, Eating styles & techniques
- 2 Guts, their correlation with eating styles;
- 3 Nutrients
- 4 Digestion; and insect gut adaptations to feeding styles
- 5 Intermediary metabolism
- 6 Intermediary metabolism; and ion uptake
- 7 Energy metabolism and electrolyte homeostasis
- 8 Absorption, excretion, circulation, ion uptake
- 9 Respiration and gas exchange
- 10 Detoxification;
- 11 Detoxification
- 12 Insect eggs
- 13 Embryology and development;
- 14 Development
- 15 Reproduction, diapause;
- 16 Neurophysiology
- 17 Neurophysiology and behavior
- 18 Neurophysiology and behavior
- 19 Mechanical communication systems; acoustics

20 Visual communication systems;
21 Visual communication systems
22 Hormonal communication systems
23 Pheromonal communication systems
24 Chemical Communication systems: Kairomones, Synomones, Necromones
Discussions and Reviews in preparation for quizzes

Testing & Grading:

[% of final grade]

- 4 online quizzes [40%]
- lab reports [50 %]
- Lecture attendance [10%]

Assessment of student achievement

- Review by the instructor of student progress with close advising and mentoring
- Suggested continuation of entomological studies by taking other entomology courses or specialty courses in other departments
- Participation in internships and other work tailored to career goals, assessed accordingly
- Recording of professional placement data or professional studies

Roles of the instructor in helping students achieve learning objectives

- Advising to assure that students are being taught in a coherent and academically rigorous way
- Effective monitoring of student progress
- Evaluations of the teaching effectiveness of the instructor
- Periodic review of course requirements and content, and assessment tools by select program faculty in consultation with the office of the School of Environmental and Biological Sciences dean of academic programs and/or the unit dean
- Inform students of internship and/or employment opportunities

The Entomology Courses of Study Committee will regularly review the structure and content of the course and the feedback received from assessments and surveys. These reviews will be used to provide the best possible education to students that meet current needs for professionals in entomology. The course content and format will be modified to improve learning effectiveness.

Rutgers' Academic Integrity: Rutgers' Academic Integrity guidelines can be found at <http://academicintegrity.rutgers.edu> and will be adhered to in this course.

Academic Integrity Policy at Rutgers University requires every student to:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.
- make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of unsanctioned materials or unsanctioned collaborations.
- obtain all data or results by ethical means and report them 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.
- 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 insure 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 academic and ethical development of all students is fostered and
- the reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Contact Information:

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Office Hours by appointment