

Ent-5011 Insect Structure & Function Syllabus: Spring Semester 2018

Instructors	Office	Email
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Class Time and Location

Tuesday and Thursday 9:35 am – 12:35 pm; 485 Hodson Hall

Office hours

TJK. Wednesdays, 1-3. **Note:** The best way to reach me (to schedule an alternate time) is to email me. The easiest way to check on my availability is to use your UM gmail account calendar function. Search for Timothy Kurtti calendar and you can see it.

K.M. Tues and Thurs after class (anytime) or email me to arrange meeting.

Course Materials

Primary

Chapman, R.F. 2013. The Insects. Structure & Function. Cambridge (5th edition)

OR

Klowden, M.J. 2013. Physiological Systems in Insects. Academic Press (Third edition)
(available online through UMN Library)

Additional readings and other course material will be provided on Moodle

Supplementary

Snodgrass, R.E. 1935. Principles of Insect Morphology. Cornell Univ.

Moodle

Access the site via myU > myCourses

The Moodle site will make your names visible within the course website, but only to other students in the class. Since we are using a secure, password-protected course website, this will not increase the risk of identity theft or spamming for anyone in the class. If you have concerns about the visibility of your Internet ID, please contact one of the course instructors.

Course Goals

This course will provide students with an understanding of how insects are made (morphology, anatomy) and function (physiology). In the laboratory, you will use living and preserved specimens. You will learn about the diversity of insect external and internal structures and relate them to their functions and evolutionary origins. The course will provide an overview of comparative insect form, development, morphology, neurobiology and function. You will examine the major structures and organ systems of insects and the modifications that are important to the success of insects. By the end of

the course you will have acquired the ability to identify, define, and solve problems related to the structure and function of insects. You will also have acquired the ability to locate and evaluate information and scientific literature related to insect structure and function.

Course Topics

Topics include developmental and evolutionary biology, neural and hormonal regulation of organ functions, neurophysiology, digestion, excretion, circulation, respiration and reproduction

Grading

Grades are based on 3 examinations, laboratory images, lab quiz scores, and participation in scientific paper discussions.

Scoring system:

Grading (A-F): A 95+, A-90.0 - 94.9, B+85.0 - 89.9, B 80.0 - 84.9, B- 75.0 - 79.9, C+ 70.0 - 74.9, C 65.0 - 69.9, C 60.0 - 64.9, D 55.0 - 59.9, fail <55.0

	Points
Images	
10, each worth 10 points	100
Exams	
Exam 1	100
Exam 2	100
Exam 3 - Take Home Final	100
Lab Practicals	
Quiz 1	20
Quiz 2	20
Quiz 3	20
Scientific paper discussions	
10 papers, each worth 10 points	100

Total 560 pts

Examinations

There will be 2 100-point in-class examinations. Exams will include information presented in class, paper discussions, demonstrations, and lab exercises. They may include images collected and posted in the class image bank. The exams will include material covered up to class period immediately preceding them. Exams will include

definitions, short answer and essay questions. Exams start promptly and late arrivals do not get extra exam time without a valid excuse.

There will be 3 20-point Lab practical examinations. During the examination, you will be asked to identify structures you have examined in the lab. Microscopes will be set up and you will be asked to name the structure at the tip of the pointer

The Final examination will be open book and comprehensive take home exam worth 100 points.

Laboratory Exercises

Please work in teams of 2-3.

Our laboratory microscopes, Leica EZ4D, can be connected to laptop computers using the App Leica Firecam. You are encouraged to bring your laptops to class to take images of the structures that you examine. Images are for your personal study and will help prepare you for the laboratory quizzes. Submitted images will be made available to everyone in class.

Each team is expected to submit 2 images of structures examined during each laboratory exercise, one that is labeled and one that is unlabeled.

Current Topics in Insect Structure & Function

A 30-45 min “journal club” will be held on Thursdays. Students will read published papers on a topic that was or will be covered in class. You are expected to read the paper before class. During this time, the class will examine what was done (the question), how the research was done (methods), the results, what the results mean and what could be done next. The instructors will select the publications. Each group will be asked to moderate a section (abstract, introduction, etc.) of the paper. As moderators your group should be prepared to facilitate a class discussion by preparing a power point (ppt) or chalkboard presentation.

A high degree of preparation and engagement is expected in this class and will contribute to your learning. Prepare for each class session by reading information placed on Moodle, completing the reading assignments. Come to class with a collegial attitude, openness to learning new concepts, and willingness to discuss readings and class topics. Engagement is demonstrated by interacting professionally with other students, the instructor, and guest speakers (e.g., only utilize electronic devices for purposes specific to class). Attendance is crucial to your success and students are expected to attend all class sessions. Makeup will require legitimate absences (see Student Conduct Policy below).

ENT5011, 2018 Calendar

Week	Date	Tuesday	Thursday
1	1/16-18	Introduction – Kurtti	Insect Body Plan: External - Kurtti
2	1/23-25	Insect Body Plan: Internal - Kurtti	Body Plan Diversity - Kurtti (Written Prelim)
3	1/30-2/01	Nervous System Organization- Mesce	First Lab Quiz Nervous System Function – Mesce
4	2/06 – 08	Magical Membranes: The Neuronal Resting Membrane Potential - Mesce	Action Potentials and Neuronal Communication- Mesce
5	2/13-15	Body Plan Origin: Kurtti	Integument 1 - Kurtti
6	2/20-22	Integument 2 - Kurtti	Exam 1
7	2/27-3/01	Endocrine System 1 – Mesce	Endocrine System 2 – Mesce
8	3/06-08	Hormones & Behavior – Mesce Second Lab Quiz	Signaling Mechanisms-Mesce (Written Prelim)
	3/13-17	SPRING BREAK	SPRING BREAK
9	3/20-22	Food Processing 1 - Kurtti	Food Processing 2 – Kurtti
10	3/27-29	Excretory System	Respiratory System - Kurtti
11	4/03-4/05	Insect Vision	EXAM 2
12	4/10-12	Circulatory System – Kurtti	Immune System – Kurtti
13	4/17– 19	Mechanical and Chemical Senses – Mesce	Locomotion and Flight - Mesce
14	4/24-26	Reproductive System – Kurtti	Neurotoxicology & Insecticides – Mesce
15	5/01-03	Students' Topic of Choice - Mesce	Exam 3 Handed Out
16	5/11	Final Exam Take Home – Due	

Laboratory Exercises

Lab	Topic
1	External Structure
2	Internal Structure
3	Nervous System
4	Embryogenesis
5	Integument
7	Hormonal System
8	Mouthparts
9	Digestive Excretory
10	Circulatory & Immune Systems
11	Reproductive system

University of Minnesota Student Conduct Policy

(For additional information and complete policy see –

http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Student Conduct Code: The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community. As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*.

Scholastic Dishonesty: You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code:

http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see:

<http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty:

<http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences: Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such

circumstances do not include voting in local, state, or national elections. For complete information, please see:

<http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

Sexual Harassment: "Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action: The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: [http://regents.umn.edu/sites/default/files/policies/Equity Diversity EO AA.pdf](http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf).

Disability Accommodations: The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Services (DS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations. If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course. For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

Mental Health and Stress Management: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.