

Insect Physiology

Syllabus for ENY 6401– 3 credit hours

Instructor: Daniel Hahn

E-mail: Through the course E-learning site in Sakai – this is the best way to reach me!

Phone: 352-273-3968

Office: ENY 3112

Office hours: 1 hour after each scheduled lecture and by appointment, I am happy to talk on the phone or Skype with distance students.

Delivery options: Please note that this course is delivered in three different ways each with a separate section number based on delivery format.

- 1) Students in Gainesville will meet with me for a live lecture every Tuesday and Thursday. Gainesville-based students are expected to attend lectures and participate in interactive discourse during the lecture period and in online forums.
- 2) Students at UF REC sites will tune in for the live lectures using the Polycom system every Tuesday and Thursday. Polycom-based students are expected to attend lectures and participate in interactive discourse during the lecture period and in online forums.
- 3) Students taking this course by asynchronous distance delivery will use the UF E-learning system. Asynchronous distance students will have access to recorded video lectures via the web. Asynchronous students are expected to keep pace with Gainesville and Polycom students and participate through interactive discussion forums given weekly.

Meeting time: On campus and by Polycom Tuesdays and Thursdays from 12:50-2:45 (periods 6 & 7 – 3 contact hours within these periods), distance video delivery will be asynchronous on the web.

Meeting location: Steinmetz Hall (ENY) RM# 1027 or your local Polycom unit.

Course Objectives:

Understand the functions and structures involved in selected physiological systems in insects.

Learn basic principles of the mechanics of physiological systems so that you can learn insect physiology on your own when necessary.

Become familiar with some basic techniques in physiology, biochemistry, and molecular biology so you can better understand their application.

Know how insect physiology applies to your sub-field in entomology and draw from this discipline to enhance your own work.

Expected knowledge:

You should have had at least one introductory course in entomology such as ENY 3005 or ENY 5006. In addition, a course in biochemistry or molecular genetics would very, very helpful. If you lack these courses, you will be expected to do the independent reading to acquire the background needed for the course. I also expect you to know some basic concepts of genetics, cell biology, and whole-organism physiology at the level of an introductory biology course. I do realize that many of you probably took introductory biology a long time ago and may have forgotten some of these concepts, so I will gladly provide you with some supplementary readings if you ask. If you have questions about something you have read come see me and we'll talk about it.

Textbook:

Klowden, M.J. 2007. *Physiological Systems in Insects*, Second Edition Academic Press, San Diego, CA, 415 pp.

In addition to the assigned text, I will provide supplementary reading materials from a number of sources including book chapters, review articles, primary literature, and the Internet. When assigned, you will be expected to read these articles and make the effort necessary to understand the material.

Examples of these types of readings are:

Nijhout, H.F. 1981. Physiological control of molting in insects. *American Zoologist*. 21:631-640.

Truman, J.W., and L.M. Riddiford. 1999. The origins of insect metamorphosis. *Nature*. 401:447-452.

Simpson, S.J., D. Raubenheimer, and P.G. Chambers. 1995. The mechanisms of nutritional homeostasis. Pp 251-278. In R.F. Chapman and G. de Boer eds. *Regulatory Mechanisms in Insect Feeding*. Chapman and Hall, New York.

Yin, C-M., W-H Quin, and J.G. Stoffolano Jr. 1999. Regulation of mating behavior by nutrition and the corpus allatum in both male and female *Phormia regina*

(Meigen). Journal of Insect Physiology. 45:815-822.

Two other books that are very useful, but not required:

Chapman, R.F. 1998. The Insects, Structure and Function, 4th Ed. Cambridge University Press, UK. 770 pp.

Nation, James L. 2002. Insect Physiology and Biochemistry. CRC Press, Boca Raton, 485 pp.

Grades will be based on a total of 450 points spread across the assignments below:

Exams (3 hour exams & final – drop lowest score, 100 pts each)	300
Paper Summaries for Discussion (4 x 25 pts each)	100
Quiz Question Design	10
<u>Participation</u>	<u>40</u>
Total	450

Letter Grades will be assigned as follows:

- A = 93% or more total points
- A- = 90% to 92% total points
- B+ = 87% to 89% total points
- B = 83% to 86% total points
- B- = 80% to 82% total points
- C+ = 77% to 79% total points
- C = 73% to 76% total points
- C- = 70% to 72% total points
- D+ = 67% to 69% total points
- D = 63% to 66% total points
- D- = 60% to 62% total points
- E = Less than 60% total points

Grades and Grade Points

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Attendance and class demeanor: Please note that concepts in this course will be conveyed numerous ways including lectures, readings, discussions, individual projects and group-learning activities. I expect that you will attend classes, be punctual, prepared, and participate. I think that active participation is the best way to involve most people in learning, so I will expect you to be interactive online in asynchronous discussions for distance students and both in person and online discussions for local students in Gainesville. My goal is to make this an open learning atmosphere where you will think about physiological systems in a synthetic and analytical way. I expect you to go beyond

simply knowing the information to pass the test and be able to apply the information in your own work down the road. Because of time constraints, I will rely on you to learn some material on your own from assigned readings. If I ask you to have something read before class or for a test, please do it. As a courtesy to your fellow students, please turn off cell phones (don't make me call you out for texting, facebooking, or whatever).

Computer requirements: Students taking the course through asynchronous distance delivery are expected to keep pace with students taking the course live and to complete in exercises in the E-learning system regularly (see below for more details). Because distance delivery requires both a computer and access to the Internet you must have a back-up plan for contingencies such as your computer getting stolen or breaking down. Contact me right away if you are having problems.

Paper discussions and summaries: Students will be assigned 4 papers from the literature to summarize and evaluate during the course. Each student will provide a 2-3 page written summary with evaluation of each paper prior to discussion. Students in Gainesville and on Polycom will discuss the paper live during class time. Asynchronous distance students will have access to recorded discussions and will provide their analyses of the papers using specialized forum threads within the E-learning system. A detailed rubric for paper summaries, evaluations, and discussions will follow.

Participation grade: The 40 points of the participation grade will be distributed across a series of discussion questions that will be introduced during lectures (live or recorded) and discussed in forums within the E-learning platform. Students will be expected to log into the E-learning platform and make substantial comments on the topics discussed in these forums to receive participation points. Rubrics for grading each discussion will be provided with the discussion question.

Exams: This course includes three exams and a comprehensive final. All four exams are worth 100 points and students are given the option of dropping their lowest exam score. Missed exams may be made up with the approval of an excused absence from the instructor. Excused absences can be arranged with the instructor ahead of time or with appropriate documentation after the fact (e.g., medical or police report). As above, students taking the course by asynchronous delivery over the Internet must have a back-up computer plan for tests.

Additional General Information:

Academic Honesty, Software Use, Campus Helping Resources, Services for Students with Disabilities

Academic Honesty

In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2011-2012 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Training Programs
 - Community Provider Database
- *Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

E-mail Requirements/Gatorlink Accounts: You are required to have a Gatorlink computer account through the university (a free service to the University of Florida students). Using this account you will be able to send and receive e-mail and access the World Wide Web from home or school and thus access the UF E-learning system (WEBCT) component of this course at <http://lss.at.ufl.edu/>. Instructions for getting a Gatorlink account can be found at <http://www.gatorlink.ufl.edu/>. While many of you already have independent email accounts, course notifications will be sent to your gatorlink account and all course correspondence must be carried out through this account as stated in the official UF e-mail policy pasted below.

UF Policy on E-mail: “Official University business email will be communicated to students using the University GatorLink email account. That is, official email will be sent exclusively to GatorLinkUserName@ufl.edu. The preferred email address recorded for all students will be the GatorLink address. This is the email address displayed in the online phonebook. Students may continue to use the forwarding mechanism to deliver their email to other mail services, if they wish. However, it is the student’s responsibility to insure that the forwarding address is current so that they receive official communications from the University”.

Plagiarism: Plagiarism is a serious problem in academia today, especially with the ease of obtaining information from the World Wide Web. Plagiarism is defined as representing the words or ideas of another person as one’s own, without attribution to the source. All words and ideas must be attributed to a source unless they are considered common knowledge (i.e., widely known by many people and found in many different sources). There are many kinds of plagiarism, as you will read on the Guide to Plagiarism website referenced below.

Plagiarism is unethical, unacceptable in science, and prohibited by the UF Student Honor Code (<http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php>). The consequences for plagiarism while at the University of Florida range from receiving a grade of zero for the plagiarized assignment or a failing grade for the course, to, for repeated offenses, expulsion from the university. Plagiarism after graduate training calls into question one’s scientific integrity and can lead to banning of publication in journals and the loss of jobs/careers.

In some countries, it is an acceptable practice to write in a manner that faculty members at the University of Florida consider plagiarism. Students studying in our university and with plans to publish their research in the English language need to know what plagiarism is and how to avoid it.

Students who plagiarize will be caught and consequences will be applied. I check all written assignments using an anti-plagiarism software called Turnitin® (<http://www.at.ufl.edu/~turnitin/about.html>). Students who plagiarize will receive a grade of zero on the assignment. The second instance of plagiarism in the course will result in an automatic failing grade in the course.

For further information and examples of plagiarism, I strongly suggest that you please read the George Smathers' Library Guide to Plagiarism <http://www.uflib.ufl.edu/msl/07b/students.html>.

Please understand that our purpose in bringing to your attention the matter of plagiarism is to help train you to be ethical scientists, not to impugn your character.

Schedule and list of topics: Note that this may change during the course of the semester, so think flexible! Exams will be delivered during laboratory periods (ENY 6401L) for students located in Gainesville and remotely at that same time for students taking ENY 6401 by Polycom. Exams will be delivered through E-learning for asynchronous distance students.

Week	Lecture Topic	Assignment Schedule
1 Tu	Organization & Homeostasis	
1 Tr	Post-embryonic Development	
2 Tu	Post-embryonic Development	
2 Tr	Post-embryonic Development	
3 Tu	Nijhout Paper Discussion	
3 Tr	Endocrinology	Summary 1 - Nijhout
4 Tu	Endocrinology	
4 Tr	Endocrinology	
5 Tu	Endocrinology	
5 Tr	Truman and Riddiford Paper Discuss.	
6 Tu	Test 1	
6 Tr	Reproduction	
7 Tu	Reproduction	Summary 2 – Truman and Riddiford
7 Tr	Reproduction	
8 Tu	Stoffalano and Yin Paper Discussion	
8 Tr	Cuticle	Summary 3 – Stoffalano and Yin
9 Tu	Cuticle	
9 Tr	Nutrition and Feeding	
10 Tu	Nutrition and Feeding	
10 Tr	Test 2	
11 Tu	Simpson & Raubenheimer Paper Disc.	

11 Tr	Neurobiology	
12 Tu	Neurobiology	Summary 4 Simpson & Raubenheimer
12 Tr	Immunity	
13 Tu	Respiration	
13 Tr	Muscles and Movement	
14 Tu	Olfaction – Guest Lecture	
14 Tr	Pheromones – Guest Lecture	
15 Tu	Test 3	
	Final Exam – 2:30-4:30 pm	