

**IMMATURE INSECTS**  
**ENY 5611 (4 credits)**

**Summer**

Wednesday + Friday - periods 4-6 (12:30 – 4:45 pm)  
**Room 3118** Entomology and Nematology Building

Instructor: Dr. Marc Branham  
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General Course Description: Instructional format includes lectures, laboratory periods and field trips. Lectures will focus on the anatomy/morphology, and taxonomy of immature insects at the ordinal and familial levels. Emphasis is placed on those taxa that exhibit true metamorphosis. Collecting techniques and curation/preservation techniques will also be discussed. Laboratory time will emphasize the utilization of taxonomic keys to identify immature insects to order and family (occasionally to genus and species). Field trips will be taken throughout the course of the semester, and an extensive collection of immature insects is required. Two exams will be given that include the sight identification of specimens (without identification keys), “keying out” unknown specimens, and answering questions regarding the lecture material covered. Rearing assignments and identification of unknown specimens for the teaching collection will also be required.

Prerequisite: ENY 4161/6166 or equivalent, or instructor approval.

**REQUIRED TEXT (Departmental copies of this two volume set will be checked out and loaned to you for the Summer semester.)**

Stehr, F.W. 1987. Immature Insects. Volumes I and II. Kendall/Hunt Publishing Company.

**HELPFUL (SUGGESTED) TEXT**

Chu, H.F. and L.K. Cutkomp. 1992. How to know the immature insects, 2<sup>nd</sup> edition. McGraw-Hill Professional Publishing. (approx. \$35.00)

**Course Objectives**

The student will:

- a. be provided with anatomical and taxonomic descriptions of orders and common families.
- b. be provided with field exposure to various habitats and collecting techniques.
- c. use appropriate methods for killing, preserving and labeling immature insects in order to build a scientifically useful collection.
- d. be provided knowledge of proper methods of preparation, preservation

and study of various immature insects.

- e. gain practical experience in utilizing taxonomic keys to identify immature insects (particularly the diverse and economically important Holometabola).
- f. gain familiarity with rearing techniques as well as the significance of rearing.
- g. become more cognizant of the relationship of structure to that of function and be able to relate this concept to the bionomics of immature insects.

### **Course Procedure**

Instruction is provided in two, 4-hour periods per week, with the first hour generally used as a lecture period. Collecting trips will be taken during class periods.

- a. Lecture: Anatomical and taxonomic background material will be presented to enable the student to use taxonomic keys; presentations will also cover bionomics and any unique features of taxa under consideration.
- b. Laboratory: Students will work, under expert supervision, on acquainting themselves with taxonomic keys and on the identification and study of specimens to be used in their collections and assignments. Optional open lab periods will be available to students desiring additional time, and these will be announced later in the semester.
- c. Field Work: A variety of habitats will be visited (i.e. aquatic, agricultural, etc.) to provide students broad exposure to immature insects, their habits and associated sampling techniques.

**Tentative COURSE OUTLINE (SUBJECT TO CHANGE).**

Lectures will not take up the entire lab period, so use the extra time wisely! I will stay the entire period to help with identifications and other questions.

<b>Week</b>	<b>Date</b>	<b>Lecture</b>	<b>Lab</b>
1	May 17	Intro.; overview of immatures; insect eggs; growth	Introduction to orders (immatures)
	19	Life history, metamorphosis; terms used to describe immatures	Equip. checkout; collection tech.
2	24	Apterygota; Hemimetabola (Odonata, Ephmeroptera)	<i>Collect in Natural Area</i> and take Berlese samples
	26	Plecoptera; Orthopteroidea ( <b><i>discuss family summary</i></b> )	work on collections, sort Berlese samples
3	31	Hemiptera (= old Hemiptera + Homoptera)	work on collections, study teaching collection
	June 2	Pupal Stage; Neuropteroidea; Megaloptera; Neuroptera	<i>Collect in Natural Area</i> , study teaching collection
4	7	<i>Open lab</i>	work on collections, study teaching collection
	9	<u><i>All Afternoon Collecting Trip (Aquatic collecting)</i></u>	<u><i>All Afternoon Collecting Trip (Aquatic collecting)</i></u>
5	14	Coleoptera 1	work on collections, study teaching collection
	16	Coleoptera 2	work on collections, study teaching collection
6	21	<i>Open lab</i>	<i>Collecting Trip</i>
	23	<b>EXAM#1</b> (through Coleoptera)	exam
7	28	<b>NO CLASS - Summer break</b>	<b>No Class</b>
	30	<b>NO CLASS - Summer break</b>	<b>No Class</b>
8	July 5	Pscoptera; Phthiraptera; Thysanoptera	work on collections, study teaching collection
	7	Lepidoptera 1	<i>Collecting Trip</i>
9	12	<i>Open lab</i>	work on collections, study teaching collection
	14	Lepidoptera 2; Trichoptera	<i>Collecting trip</i> /work on collections
10	19	Diptera 1	work on collections, study teaching collection
	21	Siphonaptera; Strepsiptera; Mecoptera ( <b><i>Family summaries due</i></b> )	<i>Collecting trip</i> /work on collections
11	26	Hymenoptera 1	work on collections, study teaching collection
	28	Guest Lecture, Title TBA	work on collections, study teaching collection
12	Aug 2	<i>Open lab</i>	work on collections, study teaching collection
	4	<i>Open lab</i>	study teaching collection
13	9	<i>Open lab</i> ( <b><i>Collection + Rearings + Class Collection Donations due</i></b> )	study teaching collections
	11	<b>EXAM#2</b> (Pscoptera through Hymenoptera)	

[Be prepared to work in lab if collecting trips are cancelled due to inclement weather]

## GRADING

Exam #1	June 23	175
Family Summary	July 21	50
Collection/Rearing	August 9	600
Exam #2	August 11	175
<b>Total Points</b>		<b>1000</b>

Scale: Percentage	94-100	A
	90-93	A-
	86-89	B+
	83-85	B
	80-82	B-
	76-79	C+
	73-75	C
	70-72	C-
	66-69	D+
	63-65	D
	60-62	D-
	59-below	E

For further information about the current UF Grading Policies for assigning grade points, go to <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>.

## DESCRIPTION OF ASSIGNMENTS, COLLECTION, EXAMS

### **Family Summaries**

Each student is to choose an insect family of their choice, collect as much published information as possible on the immature stages of that family and summarize this information in 8-10 pages. You may choose to organize your paper into sections discussing: general biology, general morphology, life cycle/s, larval habitat and feeding behavior. You paper must include a reference section citing the appropriate sources (including correctly citing websites you used as resources. Also, please include referenced illustrations of the immature forms found in your chosen family. You are to hand in two copies of your summary: a) one on paper, and b) one electronic copy, {e-mailed to me at [marcbran@ufl.edu](mailto:marcbran@ufl.edu) }. Both copies are due at the beginning of class on July 21st. Be sure to correctly cite your sources. Direct quotes should be placed in quotation marks (though direct quotes are not commonly used in scientific writing) and paraphrased information should not follow the original source too closely. You should know how to correctly cite references used in your paper. If you don't know how, ask. "Pasting" sentences from another source is inappropriate and usually constitutes plagiarism. *Evidence of plagiarism will result in a grade of zero for the Family Summary and reporting the student to the Dean of Students Office (for Academic Dishonesty).*

## **Collection/Rearing Assignment**

The completion of an extensive insect collection will be the major focus (600 points) of the course. It will include a rear out assignment. (Please see collection handout for details.) The collection (plus 3 rear outs) are due by the end of the period (4:30pm) on August 9<sup>th</sup>. If a collection (or any of its components) is turned in after (4:30pm) on August 9<sup>th</sup>, 50 pts per half-day (100pts per day) will be deducted beyond 4:30pm on August 9<sup>th</sup>. Specimens that have been turned in for other graded assignments in other courses are not allowed to be included in this collection. All specimens must be collected by the student turning in the collection or collected by another student enrolled in ENY5611 this semester. *Violations of these two rules concerning specimen sources will result in a grade of zero for the collection and reporting the student to the Dean of Students Office (for Academic Dishonesty).*

## **Exams**

Exams will cover the biology and morphology information discussed in class, the keying out of unknown specimens, and sight identifications of various taxa. Exam #2 WILL NOT be cumulative.

## **Field Trips**

During the summer semester we will attempt to visit a variety of habitats to maximize your exposure to immature insects. By doing so, it also maximizes the risk of coming across something that could harm you. Ticks, chiggers, widow spiders, mosquitoes, biting flies, reptiles, plants and other environmental hazards will be encountered during these trips, so dress accordingly. Appropriate dress includes shoes that cover the feet (no sandals, or flip-flops), long pants, long sleeve shirt and a hat. Although this recommendation does not completely eliminate the risks associated with outdoor activities, it does reduce it considerably. A change of clothes is a good idea if you are one that doesn't mind getting into your work. Insect/tick repellent and sunscreen are also necessary for these trips along with snacks and drinking water.

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**Additional General Information:** The following information applies to all courses at the University of Florida.

## **Online Course Evaluation Process**

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>

Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>

## **Academic Honesty**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following 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."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>

## **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.

## **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. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation

0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

## **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/](http://www.counseling.ufl.edu/cwc/)*

Counseling Services

Groups and Workshops

Outreach and Consultation

Self-Help Library

Wellness Coaching

- U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/)
- *Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)*

## **Student Complaints**

Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)