# WELCOME TO ENY 3005/5006L

## PRINCIPLES OF ENTOMOLOGY LAB
## Web Course Spring 2012

**Instructor:** Dr. Rebecca Baldwin
Office: 3212, ENY building
E-mail: baldwinr@ufl.edu
Phone: 352-273-3974
Fax: 352-392-0190

**TA:** Chris Holderman
Office: 3235, ENY Building
E-mail: chrish2@ufl.edu
Phone: 352-273-3979

**Mail (for collections):** Dr. Rebecca Baldwin or Chris Holderman
UF Entomology and Nematology
Steinmetz Hall
Building 970 Box 110620
Natural Area Drive
Gainesville, FL 32611

### Overview

This class provides the laboratory activities for the ENY 3005/5006 web course. In this lab, you will learn the anatomy of an insect, how to identify an insect to order, how to collect and curate insects, and you will learn a bit about how insects fit into our lives.

There are a series of lab activities for you to complete during the semester. Some of the assignments are interactive virtual labs, some are hands-on labs that you must report on, and some are just for you to read through for the information. The first few labs will give you a foundation that will help you learn to identify insects so you can begin working on your collection. You will notice that there are two lab reports. These two experiments will take time to set up and will take a while to collect the data, so be sure to read them ahead of time. (You will hear this from me again.) Besides the insect collection and lab reports, there will be a lab exam at the end of the semester and several worksheets along the way.

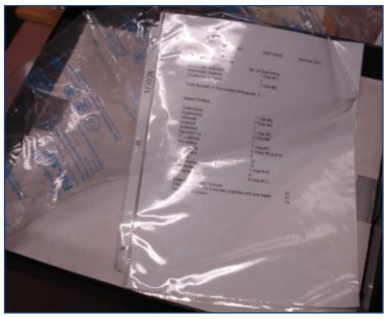
All of the lab material can be found in ELearning at http://lss.at.ufl.edu. **Assignments should be posted to the assignment link in Sakai.** *Please follow the "Complete by" date on this syllabus.* Again, please refer to the course outline for assignment due dates. If you have questions about assignments, please e-mail the TA and copy the instructor. The TA will be your primary contact for the lab portion of the class.

There is an insect collection due at the end of the semester. Since this is a web class, there are students across the US and even in other countries. Take into account the weather conditions in your area and plan to collect on warm, sunny days. Please don't wait until the last minute to collect. Curation takes some time, so you want to leave the last few weeks before the collection is due to work on labeling and pinning. *Collections will not be returned to you unless you have made prior arrangements with your instructor.* If your collection needs to be mailed back to you, you must provide a pre-paid shipping label with your collection. We cannot send you a bill for shipping costs, so please pre-pay if you would like your collection returned. If you send your collection by USPS, you can include stamps for the shipping amount and an address label with your collection. UF will no longer ship collections back through campus mail, so we must hand deliver the collections to the post office. Remember to include the postage with your collection, so we don't have to make multiple trips to return collections. Please send a package that can be used to ship back your collection. All additional shipping labels from previous uses must be removed. If you use anything that says "Priority Mail", you must send enough shipping to cover the costs. Collections not returned will be donated for education and outreach events.

**Important Collection Note**:
Read the "Collection and Curation" information in Sakai. This explains the materials you will need for the required insect collection as well as the different collecting and curating techniques. Labs 1 and 2 contain very important information that will help you with your collection, so please make sure that you these get done on time so you can correctly identify and curate your insects. Although the first two labs are preparing you with information about insects, you do not have to wait to begin collecting. If you do collect insects before getting your insect collecting kit, please put them in baggies or some type of container with the dates and place of collection then store in your freezer until you are ready to pin them. Your collection will be ongoing throughout the semester. There are no scheduled weeks for collection trips, so you are expected to collect when you can. If you have any problems or need suggestions, please contact the instructor. IMPORTANT: Only soft-bodied insects are curated in alcohol, but you are not required to use alcohol vials. For this class, you may pin or point all specimens. The shipping of alcohol is becoming more and more restricted, so you may want to pin all of you specimens.

The collection should be submitted in a box of some type. Collections submitted outside of a box (i.e on posterboard, corkboard, or Styrofoam) will not be accepted. Insects that are poorly curated will not be graded, and each collection should be presented in a professional manner. This collection is worth 100 points and will take some time to complete. If you submit insects that are pinned, but are still alive, you will receive a 10 point deduction in your grade. Collections postmarked after the due date will not be accepted. Each specimen must be pinned or spread properly (all leps) and must be in good condition. **All specimens should be identified to Order** and should be properly labeled. (See the link in ELearning for the MS word label template). An index of your collection must accompany your collection. An example will be posted in the collection and curation lab. Be sure to neatly arrange the insects under the order label (photo examples follow).

**Insect collection - Arrangement and shipping tips**

| | | |
|---|---|---|
|  |  |  |
| Specimens are placed under the order label. Specimens should be arranged neatly. | Specimens are arranged neatly and extra pins are used to prevent movement in shipment. You may use vials if you are going to hand deliver your collection. | Cardboard goes over the pinned specimens with the index on top. Be sure not to press the cardboard into the pins. |
|  |  |  |
| Group insects by order. | If vials are sent in a collection, they should be secured firmly to prevent damage to pinned specimens. | Glass vials should be seperated from pinned specimens. |

Collections should be mailed or delivered to your instructor or TA (address above). Please contact your instructor or TA for details. If you are mailing your collection, please follow the instructions in the curation lab.

**Collection Packaging Details**

Insects can become damaged in shipping, so please take care when preparing them for shipment. Remember that you may no longer be able to ship alcohol, so may need to pin all specimens. If you have large specimens, please secure them with pins on the sides so they do not spin. Also, please put a piece of cardboard or poster board over your collection so the pins do not bounce loose during shipment (pins will become imbedded in foam, so you should avoid a foam top). All pins should be pushed down in the foam until they reach the bottom of the box. Keep in mind that we have to open and grade the collections, so please do not completely tape around the inner or outer box lid. Test your box by gently rotating it vertically and side to side. If any insects move, be sure to secure them. Also, do not ship vials in the same area as the pinned insects. Vials can destroy your collection if they come loose in transit. You may place the index to the top of the piece of cardboard you add to the top of the pins in the collection box. Please see the information on page one if you would like your collection returned.

Please see the collection grading rubric online. At a minimum your collection should contain:

| **ENY 3005** |
|---|
| 50 **adult** insects of **different** species (No immatures – check for those wing buds).<br>Please do not submit more than 60 total insect specimens.<br>• Duplicate specimens and immature specimens will not be counted.<br>• Specimens may not be purchased, may not come from previously graded collections, or may not come from colonies (USDA, Colleges, etc.)<br>• Up to 10% of your collection may be traded with other students currently enrolled in the class. The collector's name must be included on the label. |
| 14 representative orders |
| 2 Lepidopterans properly spread – All leps must be spread. |
| 5 insects mounted on points |
| 3 non-insect arthropods identified to order (these specimens may be pinned)<br>*these do not count towards your adult insects |
| **Collection index** |
| **ENY 5006** |
| 65 **adult** insects of **different** species (No immatures – check for those wing buds).<br>• Please do not submit more than 75 total insect specimens.<br>• Duplicate specimens and immature specimens will not be counted.<br>• Specimens may not be purchased, may not come from previously graded collections, or may not come from colonies (USDA, Colleges, etc.)<br>• Up to 10% of your collection may be traded with other students currently enrolled in the class. The collector's name must be included on the label. |
| 16 representative orders |
| 4 Lepidopterans properly spread - – All leps must be spread. |
| 10 insects mounted on points |
| 5 non-insect arthropods identified to order (these specimens may be pinned)<br>*these do not count towards your adult insects |
| **Collection index** |

# Course Outline

| Lab | Points | Activity | Complete by: |
|---|---|---|---|
| **Order Collection Equipment**<br>**Complete Pre-Test Online**<br><br>**Read Collection and Curation Lab** | ------- | Get started on your collection. | January 13<br>(Collection due by April 13.) |
| Lab 1 & 2 - Insect Internal and External Morphology | ------- | Interactive self quizzes (un-graded) | January 20 |
| Lab 3 -Using a Key<br>Insect Orders | 15 | Worksheet | January 27 |
| Lab 4 – Pest Management | 50<br>15 | Lab Report and Worksheet<br>(submit two items) | February 3 |
| Work on Insect Collection – Review Collection and Curation Lab | | | February 10 |
| Lab 5 – Soil Arthropods | 15 | Worksheet | February 17 |
| Work on Insect Collection | | | February 24 |
| Work Data collection for Lab 6<br>*This lab is weather dependent<br>*(You have two weeks to prepare this report. Collect data the first week and use the second week to write.)* | ------- | | March 2 |
| Lab 6 - Insect Behavior –Vision or Acoustic Communication | 50 | Lab Report | March 16 |
| Lab 7 – Social Insects | 15 | Watch video of field trip and complete worksheet | March 23 |
| Lab 8 – Forensic Entomology | 20 | Evidence Reports | March 30 |
| **Collection Due**<br>Insect Collection and Curation Lab | **100** | Turn in properly curated collection | **Postmarked or delivered by April 13.** |
| Final Exam (Lab) | 50 | Exam | April 20 – April 23 |

## EVALUATION

| | |
|---|---|
| Collection | 100 |
| Lab 3 Worksheet | 15 |
| Lab 4 Report | 50 |
| Lab 5 Report | 50 |
| Lab 5 Worksheet | 15 |
| Lab 6 Worksheet | 15 |
| Lab 7 Worksheet | 15 |
| Lab 8 Data | 20 |
| Lab Exam | 100 |
| Total | 380 |

| **FINAL GRADING**<br>Scale: Percentage | |
|---|---|
| 100-93 | A |
| 90-92 | A- |
| 87-89 | B+ |
| 83-86 | B |
| 80-82 | B- |
| 77-79 | C+ |
| 73-76 | C |
| 70-72 | C- |
| 67-69 | D+ |
| 63-66 | D |
| 60-62 | D- |
| 0-59 | E |

Please visit
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html for the UF policy on grading.

## Text and Supply information

The lecture textbook will be used for some lab assignments. An optional book that will be helpful for this lab is the Photographic Atlas of Entomology and Guide to Insect Identification by J. L. Castner. This book is about $35 and has nice photographs that will help you in identification of your collection specimens.

### Collecting Kit

Each student is *required* to make an insect collection that will be mailed or hand delivered to the instructors for grading. You may purchase a kit of collecting supplies or follow the collection and curation lab instructions on how to make a net and kill jar. Either way, you will need to submit a properly curated insect collection. Here are three purchasing options for collecting kits. Feel free to shop around on your own. Just be sure to make your purchase within the first week of class so you can begin collecting.

The source most entomologists use for their collecting supplies is http://www.bioquip.com. The Student Insect Collecting Kit #1138 is $38.65 and has a net, jar, pinning block, pins, spreading board, box, etc. This is a nice kit, but has a small box for the collection. You may need an additional box to house your collection, especially if you collect large dragonflies or butterflies.


Entomology collecting kit # EL201 is available from http://educationalscience.com/merchant.ihtml?pid=3129&step=4&merchantid=4&repid=0&passwordstatus=passed The kit is approximately $39.00 + $7.00 shipping and taxes according to your geographical area. The kit includes all of your basic collecting equipment (net, jar, pinning block, pins, foam spreading board, and cardboard collection box). It takes about three business days for the kit to arrive, so please order it before you get to the collection and curation lab. This kit is the most popular with students, but the box is only for temporary storage of your specimens.

If you prefer a wooden and glass box, you can order the Entomology Starting Kit from Canada. This is a higher quality box, but it is smaller than the one from Educational Science. This kit can be viewed at http://www.quebecinsectes.com/pages/pages_english/macrodontia_english.html. You would want #300 Entomology Starting Kit. The cost is listed in Canadian dollars, but is around $38. Note that a net and pins would need to be ordered in addition to the collection kit. The net is #100 (~$15) and the pins (100 size 2) are # 135 (~$7.00). This site has quality collecting gear, but you cannot place online orders, you must call.

### Other Lab Purchases

The Vision and Pest Management labs require items (i.e. 3 types of light bulbs, fly paper, live insects, household cleaner, cups with lids, paper towels), so be sure and make a list of needed items for both labs. It is very important to watch the weather and make sure that you have proper conditions when running the experiments. Also, these two experimental labs will take some time to set up and perform. It is important to read them ahead of time so you have time to properly set up the experiment. There are some supplies (above) you will need to purchase, so keep that in mind. You may need an extra couple of days to work out some details, so don't wait until the last minute. You have been allotted two weeks for these labs. You will need that long to complete the experiment, find your references, and write the report.

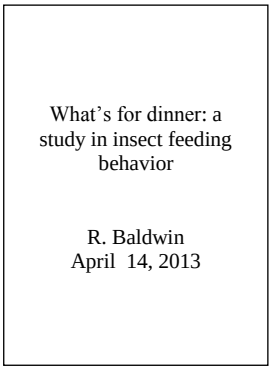
## Exam

The lab exam will consist of fill in the blank, matching, short answer, and identification. It will be online through Sakai. The exam will be worth 100 points. If you are unable to take the exam on the posted date, please contact your instructor to make other arrangements.

## Reports

There are two lab reports that must be completed. They should be posted to ELearning by the due date to avoid a late penalty (5 points per day). Please contact the TA/instructor if you cannot meet the deadline. Each report should be typed using Times New Roman font with 12-point type. The report should be double-spaced and pages should be numbered, except page 1. Be sure to perform spell check on your report and proof read

it for any errors. The title page should contain your name, the title of the lab, and the date of the lab. If you post the report as an attachment, please begin the file name with your last name then the title with no spaces (i.e. Baldwinvisionreport). The reports must be submitted as .doc or .docx format. If you do not have MS word, contact the TA to make other arrangements (Sakai only accepts some document formats).




Title page example.

**Each report should contain the following sections: title page, abstract, introduction, materials and methods, results (graphs), discussion and references.**

| | |
|---|---|
| **Abstract** | This is a brief (1 paragraph) overview of the entire paper.<br><br>Basically the abstract consists of 1-3 introductory sentences, a sentence stating your objective, 1-2 sentences discussing your materials and methods, 1-2 sentences stating results, and 1-2 conclusion sentences. Although this is one of the first sections in your lab report, it is easiest to write this section last, after all of the other sections have been completed. Feel free to pick up a science journal at a nearby library or online source and see how this is written. |
| **Introduction** | Give some background information about the lab activity. What was the lab set up to teach and why?<br><br>This section should provide a good rationale for why your study was important and introduce what you plan to do. This portion of the paper is where you provide relevant background information on the subject. The introduction includes everything a person needs to know in order to understand the experiments. You will want to find references for this section. Visit http://guides.uflib.ufl.edu/distancelearners for e-resources. |
| **Materials and Methods** | A detailed description of the equipment and procedures used to conduct this lab.<br><br>I should be able to replicate your experiment from the information you give me here. This is not a shopping list of what you used. It must be written in complete sentences (paragraph format) and not in first person. Example: INCORRECT- I poured one tablespoon of dishwashing liquid into the handheld spray bottle. CORRECT - One tablespoon of dishwashing liquid was added to a hand held sprayer. You have completed the experiment at this point, so should report in past tense. |
| **Results** | A detailed report of what you discovered as a result of this lab.<br><br>Here, you describe *what* happened, not *how* or *why* (don't interpret the information). You do not explain what the results mean, just what they are. Any **graphs or tables** should be included here. Failure to include the appropriate table and graphs will result in a poor grade on this section. Each chart, table, graph, etc. **requires** a title and a caption that explains it. If you have, for example, two tables separated by a graph, you have Table 1, then Figure 1, then Table 2. |

| | |
|---|---|
| **Discussion** | Here is where you explain the results. Why did the results turn out this way? Are there any special circumstances that affected the experiment? Did you have to modify anything? Do you have any missing data? What did you learn from this experiment? These types of questions should be answered in the discussion section.<br><br>This section is not merely a brief repeat of the Results section. Here, you explain how and why (or why not) the results you obtained actually occurred and how this related to your hypothesis. This is the section where you *must* think critically and analyze, providing explanations for what you observed and measured. Failure to do it thoroughly will result in a poor grade on the lab report. |
| **References** | Include an alphabetical list of your references using the ESA style guide, http://entsoc.org/pubs/publish/style/#References_Cited. ESA is the Entomological Society of America.<br><br>In this section, provide the complete literature citation (author(s), date, title, journal, volume, pages) for all works **you cited within the paper**. Here, you are to provide a MINIMUM of five (5) references that pertain to the subject of your lab report. These can be books or journal articles. For this report, they can NOT be newspaper articles, popular press magazines or web URL's. I suggest looking at the reference section of a scientific paper for some guidelines. *Just as a reminder: in the text portion (introduction or discussion) of the report, you would place your reference in parentheses like this (Amrine and Noel 2006). If more than two authors are in the citation, then (Baldwin et. al 2008).*<br><br>Example of a reference in the reference section:<br>Amrine, JW, and R. Noel. 2006. Formic acid fumigator for controlling varroa mites in honey bee hives. International Journal of Acarology. 32(2):115-24. |

Enjoy the semester and good luck on your collection!

## UF POLICIES

**UF Counseling Services:**

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling [Infirmary]) 392-1575, personal and career counseling.
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling.
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual assault counseling.
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

**Academic Honesty:** As a result of completing registration at the University of Florida, every student has agreed to the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University." **We, the members of the University of Florida community, pledge to hold our peers and ourselves to the highest standards of honesty and integrity.**

Copying, screen printing, or photographing of exam materials is a violation of the UF Honor Code. Plagiarism in this class will not be tolerated. For more information about plagiarism, please see http://web.uflib.ufl.edu/msl/subjects/Physics/StudentPlagiarism.html . You may also wish to read www.nursing.ufl.edu/Plagiarism%20Handout%208_17.doc. All work submitted must be in your own words and proper citations must be given for sources of ideas. 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.