

**Entomology 2001 – Insects in the Environment**  
**Fall 2003; Louisiana State University – Baton Rouge**  
**Dr. L. Bui; Professor and Primary Course Coordinator**  
**Class Hours: Lecture M, W 9:30 – 10:30 am CEBA 2172**  
**Contact: 578-1832 Office; Lhooper@agctr.lsu.edu**  
**Help Sessions: M, W 10:30-11:30 am 510 Life Science Annex**

**Dr. B. Castro; Lab Coordinator**  
**Laboratory 1:40-3:30 pm Tues or Wed –110 Life Sciences**  
**Contact: [Bcastro@agctr.lsu.edu](mailto:Bcastro@agctr.lsu.edu)**  
**Help Sessions: Tues. and Weds. 3:30-4:30 pm, 472 Life Sciences**

**T.A.'s: Ms. Jessica L. Rosson, Mr. Michael A. Seymour, Mr. Shawn T. Dash**  
**Office hours: Rosson—3:30-4:30 W 568 Life Sciences Bldg., Seymour & Dash—3:30-4:30 T or by appointment, 110 Life Sciences**

**Scope of the Course:** Taught at a sophomore level. Assume prior exposure to basic biology. Classification, anatomy, behavior, ecology, and economic or medical importance of each insect group will be emphasized.

**Goals of the Course:** This course will serve as an introductory entomology course and provide a solid background for students who wish to pursue in depth entomological studies in upper division, employment, or graduate school. It will introduce students to the exciting field of insect biology and service learning and encourage life-long learning of entomology. It will focus on the importance of insects and their relationships with the environment.

**Specific Objectives:** Students will:

1. Be able to explain how scientists conduct science.
2. Learn all the major groups of arthropods and their characteristics.
3. Recall, classify, and identify the orders of insects and some common families.
4. Recognize and be able to label the body parts of different insects.
5. Explain ecological importance of common types of insects.
6. Identify insects (and their sign or damage) of medical, horticultural, agricultural, and urban importance.
7. Organize, categorize, and identify insects for use by an external agency (service learning).
8. Recognize, understand and metacognate on the significance of service learning and how it affects your strength as a person and an LSU student.

**Textbook:** The **required** text for this class is "The Encyclopedia of Insects and Spiders" by Christopher O'Toole. Sept 2002. The cover price is \$40. A recommended text is the Peterson's Field Guide to North American Insects.

**Grading:**

**Exams and Quizzes:** There will be two exams and a generally comprehensive final. The value of the exams, laboratory, projects, etc, are as follows:

Midterm 1	= 12%
Midterm 2 (non-cumulative)	= 15%
Assignments and Discussion	= 11%
Laboratory (quizzes and assignments)	= 22%
Service Learning Project	= 20%
Final Exam (generally cumulative)	= 20%

The exams will have several sections. There will be some matching, fill-in the blank, 2-3 definitions, questions with one-word answers, questions with a couple words or one-sentence answers, and short essay questions. The professor expects students to be able to write intelligently about science and the concepts presented in class, not just regurgitation.

**Grading Policy:** Everyone in this class can **earn** an "A." The professor has not predetermined how many A's, B's, etc. there will be. The grade the student receives at the end of the semester will be the grade he/she **EARNED**. There will be no curve. The professor does not make a distinction between graduate students and undergraduates in grading or expectations. No extra work is required by graduate students who are enrolled in the ENTM 2001 course. If graduate students are enrolled as "Special Topics" students, they will be required to participate in an extra project.

**Grading Scale:**

A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = 59% and below

**Course approach:**

**This is a service-learning course.** Service learning is defined as "a credit bearing, educational experience in which students participate in an organized service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility." (From: Bringle and Hatcher. 1995).

**The Project:** An insect collection to demonstrate the diversity of insects found in a particular area that the student chooses and will deliver the project to an agency such as the BREC Bluebonnet Swamp Nature Center. The objectives of this service-learning project are (1) for students to experience many insect collecting techniques, (2) for students to apply curation and identification techniques, (3) to learn about the diversity of ecosystems in Baton Rouge and Louisiana, and (4) to make a valuable contribution to the community in Louisiana.

**Community Partner:** Students will choose their own community partner. This is a person who works for a nature center, science center, or is an elementary school teacher or a high school science teacher. An example: Mrs. Angela Evans. BREC Bluebonnet Swamp Nature Center 10503 North Oak Hills Parkway Baton Rouge, LA 70810 (225) 757-8905.

**Swamp Hours:** 9 a.m. - 5 p.m., Tuesday through Saturday. Noon - 5 p.m., Sunday. Closed Mondays. For more information see <http://www.brec.org/nature /4.html>.

More on the project will come later in this document.

**Lecture:**

The professor will provide notes for every lecture for the students. This will be available before the lecture on Semester Book, which a student can access through the PAWS account. Please come to class with these notes. It is strongly suggested that the student reviews the notes before attending class. The professor will go over the notes, by highlighting key information. During lecture, the class will discuss, summarize, and further define the information in the summary and textbook. The professor will use the notes as a "jumping off" point for class discussion. During this time, the professor will provide connections between the concepts learned in lecture and the service-learning projects. About 30% of the lecture information will be delivered through directed discussions and activities during lecture. The student will need the information from the class discussion and the posted notes for success on the exams. There are corresponding readings in the book that will help

the student maximize learning. Successful students will have read the book prior to coming to class.

The professor has redesigned this class to provide an environment for active learning and for incorporation of service learning and appropriate metacognitive activities. Questions and discussion are strongly encouraged. To be successful, students are encouraged to read the assignment before lecture and review the notes before lecture. Active, consistent and continuous participation in the service-learning project is also necessary for success in the course. After lecture, students are encouraged to reread the professor's notes/slides and their own notes and review any pages in the book the professor has assigned to read. It is suggested that students come to either professor or the TAs for help as soon as they realize that they are having trouble with a concept. Don't wait until it is too late. If a student earns less than 70% on an exam, come see the professor immediately. Together the professor and the student will go over the information, and the professor will explain it until the student understands and will give the student pointers on how to study and remember the information.

This class is challenging, but not impossible. Students have commented on the sheer amount of material presented. Last semester more than  $\frac{3}{4}$  of the students earned an "A." They worked and studied for it!

**Review Sessions:** There will be review sessions one week before each exam during the laboratory. The exams will only cover material that was presented before the review session. The professor will lead the review session, but students are expected to come with questions. It will be important for students to come to the review sessions; the professor will highlight important information for that exam and read questions from the exam. **The student still has to know the information.** Students will get much more out of the review session if they have studied the notes beforehand. The professor wants **all** students to be successful; please come to the review sessions.

**Exam Policy:** There will be no make-up exams except the following: If the student has a conflict of an exam with a religious holiday or a scientific meeting, the student may make arrangements to take the exam early. The make-up exam will be oral and written. These arrangements must be made at least a week prior to the missed exam. The student must provide proof of the holiday or meeting. A student may also miss an exam if he/she is very sick, in the hospital, or in jail. Students will have to take an oral and written exam immediately upon return and upon the surrender of a note from a doctor or attorney (or an extremely believable story). Oversleeping/forgetting are not valid excuses for missing an exam. The simplest thing is not to miss an exam. The professor takes this very seriously and believes it is unfair for one person to take an exam after everyone else has taken the exam. Avoid missing an exam.

The professor makes a concerted effort to grade exams as quickly as possible. Unless the professor is away, the exam scores will be posted on Semester Book (SB) by midnight the day after the exam. If the professor is away, they will be posted by noon the day after the professor returns.

If a student has questions about the grading of an exam or assignment, please submit the question, request for regrade, or objection to the grade in writing to the professor within one week of the return of the exam or assignment. The professor spends a lot of time grading exams and assignments to make sure they are graded accurately and carefully. But if the professor has a temporary loss of sanity and misgrades an exam or assignment, the professor will be happy to correct the mistake.

**Cheating Policy: *Don't.* Cheating and plagiarism will not be tolerated!** The professor and Laboratory Coordinator will report any student suspected of academic

misconduct to the Dean of Students, Dr. Jim Welles. Check with the professor or the Code of Student Conduct([http://appl003.lsu.edu/slas/judicialaffairs.nsf/\\$Content/Code+of+Student+Conduct?OpenDocument](http://appl003.lsu.edu/slas/judicialaffairs.nsf/$Content/Code+of+Student+Conduct?OpenDocument)) if there are questions on this matter; it is better to find out all the information needed up front vs. asking for forgiveness later! The reporting process would be agonizing for all, but the professor will do it if necessary. As a faculty member of LSU, it is the professor's responsibility to uphold academic integrity and the reputation of this university. The professor takes this responsibility very seriously.

**Attendance Requirements:** There are no class attendance requirements **for the lecture** except if the student wants to take the exams. The students need to be in class when the exam is offered. However, the professor may conduct learning exercises in class that will be turned in and will count as "participation." Students who attend lab and stay the entire class time are much more successful than students who do not attend or leave early.

**Other Miscellaneous Stuff:** If a student misses a lecture, the information can be obtained from SB. A student should ask their fellow classmates for any additional notes. If you are going to miss a lab, permission can be obtained from the laboratory coordinator to attend the other lab section.

### **Laboratory:**

Dr. Boris Castro will coordinate the laboratory. He is fully in charge of the laboratory, and Dr. Bui will facilitate the service-learning project. The first few weeks of laboratory will be spent learning insect anatomy and the remainder will be spent learning the orders and more important families and identifying insects for the service-learning project. Plan to spend the entire period in lab. Dr. Castro will be there the whole time to help. There will be announced laboratory quizzes.

### **Insect Collection:**

Everyone is **required** to participate in creating a comprehensive insect collection for a community partner such as the BREC Bluebonnet Swamp Nature Center. This is the service-learning project that is mentioned above. The project will consist of:

1. Visiting with the community partner to learn the rules of conduct for volunteers at the site (if necessary).
2. Conduct an interview with the person who will be the recipient of the collection. This can be a teacher, county agent, 4-H agent, nature center director, park ranger, or other responsible individual. Write a short paper (no more than one page) describing what you decided that the recipient needs and how your collection can fulfill those needs. One of the most important question the student will answer in this paper is "How can your participation in this project change viewers' or visitors' experiences?"
3. The insect collection: The student is expected to collect at different hours of the day and night, using different techniques (the professor will provide a handout) and to collect throughout the semester. It is strongly suggested that students collect as many insects as possible early in the semester. As it gets colder, there will be fewer insects available.
4. Insect identification: Insects will be identified to order and family and a common name included.
5. Students will be asked to keep a journal of where and when they collect the insects and also to record their collection techniques. This information will be transferred to the locality label that is traditionally part of the insect curation. One of the goals of the journal is to teach students how to record data as a scientist would in a field notebook.
6. Additionally, the professor will also pose leading questions in the lectures whose answers will be incorporated into the journal. Typically there will be one question per week. These questions are designed to have the student link the course concepts with

the service experience. Questions such as “why are some species/individuals more prevalent?” Or “what effect does spraying for mosquitoes have on diversity?” “Do you think they should spray for mosquitoes?” Students will be asked to record observations of insect ecology, behavior, or physiology that they experience while collecting. This will provide a connection between the information they are learning in the lecture and the field experiences. The students will be asked to address their observations during class and encouraged to ask questions about their observations. The journals will be reviewed once every two weeks in the lab, and students will be given oral and written feedback at that time. The journals will be turned in at the end of the semester with the collection. Metacognition: In the journals the student will be asked to record some metacognition – this means that the professor would like the student to think about what they know and how they came about knowing it.

7. The project will be 20% of the students’ grade. The journal will compose 5% of the final project grade, and the content of the collection will be 15%. All individuals will be graded, and if there is a group effort, the grading criteria for the content of each group insect collection will be as follows: the students will be ranked from 1 to 5 on (1) perceived group effort, (2) self evaluation, (3) quality of curation, and (4) the difficulty of the insects collected. Students will be ranked from 1-10 on the number of insects they collected, curated and identified. If there are unequal numbers of individuals in the groups, the number of people in the group will be subtracted and a final number will be tabulated. The maximum number of points obtained on the group collection will be 30 (or 25 if there are unequal numbers in the groups). The individual collection grade will be modified to reflect the group effort. Each student is still responsible for collecting and identifying insects (see below) the group effort, if done correctly should enhance your grade.
8. Each student will be required to pin, curate and identify (to family) at least 75 different species insects to guarantee a C.

**Everyone is required to create a collection that follows the following grading scheme:**

<b>Grading of the Collection:</b>	<b>Example w/ 75 insects</b>
<b><u>Class:</u></b> 1 point	4
<b><u>Insect Orders:</u></b> 1 point each	15
<b><u>Families:</u></b> 0.5 points each	0.5 X 75
<b><u>Each species:</u></b> 0.25 point (except no more than 6 different species counted in each family)	75 X 0.25
<b><u>Mis-identification:</u></b> minus 0.25 point each specimen	0
<b><u>General curation and organization:</u></b> 15 points	<u>15</u>
= 100 points total	90.25

As an individual, students can earn extra credit (20 points) by collecting and identifying more insects. In the laboratory, there will be deadlines throughout the semester for which insects will be brought in for points. This is to keep the students on schedule for a successful collection. The points will count in the laboratory grade.

The collection will be made of insects (adults) and other arthropods as discussed in the laboratory. Most adult insects should be pinned (pin nos. 1-3). Those insects that are soft-bodied can be placed in vials of alcohol. Insect pins, alcohol and some vials will be provided. Some of the smaller insects will need to be pinned on paper points. Please follow the handout provided in lab. All pinned insects must be placed in a box that is assigned to the student. This box has a glass lid and cannot leave the classroom. Cigar boxes or small storage boxes with Styrofoam in the bottom can be used to transport the insects. Each student group will be graded on the arrangement of the specimens. **The order the insects are placed in the box**

**must correspond to that which they are listed in the handout the professor gives the student on the orders. Also the student must include with the submitted collection an inventory list of insects in the collection.**

Insects should be pinned as soon as possible after collected or they will become brittle and must be relaxed (a technique that will be explained in lab). Also the insects will become moldy if they are not stored properly. The professor **will not** accept moldy specimens. Also, put the insects in the freezer if they are not going to be processed immediately. Freezing insects can also kill them quickly. If the insects are left alive together in a jar they may eat each other or beat each other to pieces with their wings. Each student will need to bring a wide mouth jar so the TAs can make a killing jar for each student. Tostitos salsa or glass peanut butter jars with a metal lid work well for this purpose.

**Collecting Equipment.** Students will be provided with most tools and supplies needed for insect collecting, preserving, identification, and final presentation of a good quality collection. All tools and equipment must be returned prior to the end of the semester in order to receive a grade. Students will be supplied with the following:

- 1 Cornell Drawer with a glass top. Each drawer will be assigned by name and must be kept in the Laboratory room at all times.
- 1 Schmitt Box to transport pinned insects.
- 1 insect net
- Insect pins (no. 2)
- 1 stepped pinning block
- 1 spreading board
- 1 book: An Introduction to the Study of Insects by Borror, Triplehorn, and Johnson. Books will be numbered and must be kept in the laboratory at all times. Each student is responsible for the care of each assigned book while in use.
- Insect labels
- Some vials and alcohol (diluted 70%) to preserve soft bodied arthropods
- Ethyl acetate to charge killing jars (student must supply own jar as mentioned above)

**Laboratory Quizzes.** Short quizzes will be given as indicated in the laboratory syllabus. Quizzes will cover the material taught in lab practices up to that date. The objective of each quiz is to evaluate the students' ability to sight-identify insect orders and important insect families or insect structures. In addition, quizzes will be used by the professor to assess not only student knowledge on the material presented but also to make modifications to teaching methods if needed for a more enjoyable learning process. All quizzes will be given at the beginning of each indicated laboratory. Students are cautioned not to arrive late to the laboratory because they may miss the quiz.

**Laboratory Grading.** The laboratory portion of the course will make 22% of the final grade. The break-down of laboratory points will be as follows:

Progress Assessment: 100 points = 5%

Quiz 1: 20 points

Quiz 2 thru Quiz 7 (10 points each): 60 points

Assignments, discussions, progress assessments: 20 points  
= 100 points total (17% of the final course grade)

There will be an optional quiz at the end of the semester (see laboratory syllabus), which can be used to make up for a missed quiz or to drop the lowest quiz grade from quiz 2 thru 7.

**DO NOT PROCRASTINATE.** Students who wait until the last few weeks of the semester to collect and/or identify insects will produce a very poor collection resulting in a poor grade. **Do Not Procrastinate.** The progress assessment is designed to prevent procrastination. It takes a lot of time to collect a wide variety of insects and even more time to curate and identify them. Also, the final arranging and labeling of the collection can take between 3 -12 hours of work. Do not leave this for the night before or the day it is due. The collections are due no later than the end of the student's respective lab period on November 25 or 26. Late collections will be docked 5 points for every hour they are late. Although the preparation of an accurate, neat, and comprehensive insect collection is considerable work, many students consider it one of the most interesting and instructive parts of the course. The last week, the corrected collection can be fixed up by the student, reorganized if needed and moved to a new box for presentation to the community partner at the End-of-the-Semester Service-Learning Celebration. More on this later.

**Identification of Insects:** Students will be required to learn to sight-identify the common orders of insects. Students will be required sight ID some common families and to know how to identify other families using a key.

**Cheating and Plagiarism on the Collection:** Don't. See policy above. In the laboratory portion of this course, cheating and plagiarism is also buying, stealing, using, procuring, and borrowing another person's insects without that person's permission or acknowledgment. No buying or selling of insects is allowed. Trading is allowed within reason.

**Field Trips:** There will be several optional field trips in this class. The first **optional** field trip will be to Burden Research Station on 6 September. An **optional** one-day (all day long) field trip to Sandy Hollow (a huge experiment is going on here) will be on Saturday September 13<sup>th</sup>. Another will be an **optional** overnight field trip to Kisatchie National Forest where the class will **camp** overnight on Saturday night. The class will leave on Friday (19<sup>th</sup>) afternoon or early on the 20<sup>th</sup> September and come back in the evening of the 21<sup>st</sup>. Students are responsible for their own food on this trip. If students do not have camping equipment, check with the Rec center, they have the equipment for rent. The class will do some black-lighting at the Swamp at nights. These trips are open to everyone and will be announced in class and in the laboratory. The class will probably go to Idlewild on Friday September 26<sup>th</sup>. Additional field trips may be scheduled if the weather permits and there is interest.

**Students are required to turn off cell phones, pagers, and other communication/noise-making devices when they come to class or help sessions. Students are also required to be respectful of everyone in class, especially during class discussions.**

**Syllabus****Lectures:**

<b>Week 1: Aug. 25, 27</b>	Syllabus, Introductions, and Gallery Walk; Introduction to the study of insects
<b>Week 2: Sept. 1, 3</b>	<b>No class;</b> and Introduction of service-learning projects
<b>Week 3: Sept. 8, 10</b>	Video: Secret Weapons; What is an Insect? And Taxonomic Classification
<b>Week 4: Sept. 15, 17</b>	Anatomy; Entognathous Hexapods
<b>Week 5: Sept. 22, 24</b>	<b>Exam;</b> Gallery Walk, Ephemeroptera, Odonata
<b>Week 6: Sept 29, Oct 1</b>	Plecoptera, Orthoptera; Phasmida, Mantodea Mantophasmatodea
<b>Week 7: Oct. 6, 8</b>	Dermaptera, Zoraptera, Blattodea, Embioptera; Isoptera
<b>Week 8: Oct. 13, 15</b>	Psocoptera, Phthiraptera; Thysanoptera, Hemiptera
<b>Week 9: Oct. 20, 22</b>	Hemiptera, Survey, Neuroptera, Mecoptera
<b>Week 10: Oct 27, 29</b>	<b>Exam;</b> Coleoptera
<b>Week 11: Nov. 3, 5</b>	Coleoptera
<b>Week 12: Nov. 10, 12</b>	Strepsiptera, Trichoptera; Lepidoptera
<b>Week 13: Nov. 17, 19</b>	Siphonaptera; Diptera
<b>Week 14: Nov. 24, 26</b>	<b>Exam,</b> Survey; Diptera
<b>Week 15: Dec 1, 3</b>	Hymenoptera
<b>Final Exam: Dec 9</b>	3:00-5:00



**Laboratory:**

- Week 1: Aug. 26, 27** Introduction; Discuss laboratory; Discuss collection, Service Learning Projects (SLP), and field trips. Bring a jar (5 points).
- Week 2: Sept. 2, 3** Collecting and mounting techniques, Check out nets. Pass out collection materials.
- \*\*Saturday Sept. 6\*\* Morning Field Trip: Burden Research Station \*\* ~ 8:00 am - noon.**
- Week 3: Sept. 9, 10** Phylum Arthropoda; Insects & Arthropod Relatives; Entognathous Hexapods; SLP: ID community partner due (5 points)
- \*\*Saturday Sept. 13\*\* Day Field Trip: Sandy Hollow \*\* ~ 7:00 am.**
- Week 4: Sept. 16, 17** Insect Morphology; External Anatomy of Head (head regions, antennae, mouthparts), thorax (structures, types of legs), and abdomen; SLP: Interview summary due (20 points)
- \*\* Sept. 19 - 21\*\* Weekend Field Trip: Kisatchie Nat. Forest\*\* ~ 7:00 am.**
- Week 5: Sept. 23, 24** Insect Growth and Development; SLP: 30 insects due (10 points)
- \*\*Sept. 26 (Friday) Idlewild Field Trip. TBA**
- Week 6: Sept. 30 Oct 1** **Quiz 1;** Insect Taxonomy. The Orders of Insects; SLP: 40 curated insects due (10 points)
- Week 7: Oct. 7, 8** Orders Thysanura, Ephemeroptera, Odonata; ID Families; SLP
- Week 8: Oct. 14, 15** **Quiz 2;** Orders Phasmida, Orthoptera, Mantodea, Blattodea: ID Families; SLP: insects due (see handout - 20 points)
- Week 9: Oct. 21, 22** **Quiz 3;** Orders Isoptera, Dermaptera, Embioptera, Plecoptera, Psocoptera, Phthiraptera; ID Families, SLP.
- Week 10: Oct 28, 29** **Quiz 4;** Orders Hemiptera, Thysanoptera, Neuroptera; ID Families. Bring in 10 families, SLP: 40 insects ID'd to family (20 points)
- Week 11: Nov. 4, 5** **Quiz 5;** Orders Coleoptera, Mecoptera, Trichoptera; ID Families, SLP.
- Week 12: Nov. 11, 12** **Quiz 6;** Orders Lepidoptera, Siphonaptera ID Families, SLP.
- Week 13: Nov. 18, 19** **Quiz 7;** Orders Diptera, Hymenoptera; ID Families, SLP: 75 identified insects (10 points)
- Week 14: Nov. 25, 26** **Quiz (optional);** Collection curation; Lab review. Collection is due by the end of this lab period.
- Week 15: Dec 2, 3** SLP

**\*\*\*\*\*Bring the insect collection to every lab\*\*\*\*\***