

BIOS 4090
M-Th 12:40-3:35 pm
Biology Rm 216

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ENTOMOLOGY FOR TEACHERS

Course overview

The course will introduce participants to basic information about insects, review basic techniques for collecting and curating an insect collection, build competence in insect identification, and introduce simple exercises that may be adapted for teaching concepts related to organismal biology, behavior, ecology, and evolution using insects. Participants will learn where and how to collect insects for collections and experiments in the metro area, using inexpensive methods. Classes will be held in workshop format in the laboratory, and we will take regular field trips to several sites on the south shore. The course will concentrate on developing expertise among the participants in general entomology, generating and testing hypotheses, and analyzing and communicating information, rather than presenting exercises that may be directly implemented in a particular grade.

The course will focus on activities that emphasize participation and discussion, rather than passive listening. We will emphasize exercises that are inexpensive, easily implemented, and do not require traveling long distances to pristine habitats. Whenever possible we will utilize local insects and plants, or those easily acquired from biological suppliers. The content of each exercise will be linked to the Louisiana Science Content Standards published by the Louisiana State Department of Education.

Class Schedule

Each exercise will be prefaced by a brief presentation on the concepts underlying the topic, followed by the activity, analysis, and discussion. We may undertake more than one simple exercise in a single session. On field days, course participants should expect to spend an hour or more outside on summer afternoons, and dress accordingly. Bring water and a hat. Sturdy shoes should be sufficient for all field trips; rubber boots are unlikely to be necessary but may be helpful. Field trips may require significant exertion at times; participants must be in good physical condition and prepared to walk significant distances and climb hills as necessary to carry out exercises. In addition, participants must accept heat, rain, mud, and biting insects as companions on field exercises. Our activities require the sacrifice of animals for scientific purposes. If your ethics or religious beliefs preclude this, please drop the course immediately. No alternative exercises are available. The schedule below is tentative; the scheduling of field exercises will be dependent on the weather.

Schedule of Activities:

Wed June 30 Introduction to the insects; sight recognition

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|-----|---------|------------------------------------------------------------------------------------------|
| Thu | July 1 | Field trip to City Park, making kill jars, specimen preparation, sight recognition drill |
| Mon | July 5 | 4th of July Holiday |
| Tue | July 6 | Field trip to Bonnet Carre Spillway, specimen preparation |
| Wed | July 7 | External anatomy, sight recognition drill |
| Thu | July 8 | Introduction to dichotomous keys, sight recognition and anatomy drill |
| Mon | July 12 | Field trip to Bonnet Carre Spillway, specimen preparation |
| Tue | July 13 | Teaching with mealworms, phototaxis, keying, sight recognition & anatomy drills |
| Wed | July 14 | grasshopper diet selection, ant colony dispersion and aggression |
| Thu | July 15 | Insect community diversity recruitment, flower visitors and color |
| Mon | July 19 | Insect adaptations, keying, sight recognition & anatomy drills |
| Tue | July 20 | Evolution and systematics, kin recognition |
| Wed | July 21 | Learning |
| Thu | July 22 | anatomy, sight recognition, dichotomous key tests |
| Fri | July 23 | Turn in specimens and grade-appropriate exercises (4090G) |

Text: Peterson field guide to the insects

Grading:

Grading will be based on attendance and participation, on four skill sets: sight recognition of orders, keying, knowledge of external anatomy, and specimen preparation, and on one lab report on an exercise of the participant's choice. Reports will follow a conventional format of Introduction, Materials and Methods, Results, and Discussion/Conclusions, as described separately. Graduate participants must demonstrate mastery of the course material at an advanced level required to instruct others. This requirement will be satisfied by preparing a lesson plan for a *grade-appropriate* exercise utilizing insect in the classroom (not limited to those covered in class) and linking the exercise to content standards appropriate to the grade for which it is intended. The grade-appropriate exercise will be in lieu of a lab report for those enrolled in 4090G.

Grade breakdown

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|-------------------------------------------|-----|
| Attendance/Participation: | 20% |
| Sight recognition: | 15% |
| Keying: | 15% |
| External anatomy: | 15% |
| Specimens: | 15% |
| Lab report or Grade appropriate exercise: | 20% |