**EEOB 5210: Spider Biology**

**Semester Credit Hours**: 2 under/grad

**Prerequisites**
At least junior standing by the summer of enrollment, minimum GPA of 2.5, and completion of 12 semester credit hours or equivalent of biological sciences OR permission of instructor.

**Course Description**
A comprehensive course in the biology of spiders (Order Araneae) including; functional anatomy, senses and perception, behavior, webs and web-building, identification, classification and relationships, field techniques, and ecology.

**Course Objectives**
To provide advanced undergraduates or graduate students with a detailed introduction to the study of spiders. After successful completion of the course you will have:

- learned to appreciate the diversity and relationships among spiders
- learned the functional anatomy of spiders
- become proficient in advanced spider identification
- learned to conduct field study of spiders using standard techniques
- learned to recognize and understand common spider behaviors
- experienced the micro and macro habitat preferences of spiders
- designed and conducted a small research project

This is an intensive residential course to be held at F. T. Stone Laboratory, Gibraltar Island. Students will attend morning lectures and afternoon laboratory and field sessions. There will be outdoor (field) exercises on Gibraltar Island as well as a field excursion to South Bass Island.

**Texts**


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**Instructor:**
Dr. Richard A. Bradley  
Ohio State University at Marion &  
Department of Evolution, Ecology, and Organismal Biology  
Room 1380F Museum of Biodiversity, 1315 Kinnear Road  
Columbus, Ohio, 43212  
Phone: (614)292-7180  
Email: bradley.10@osu.edu
Lectures

1. What are spiders? (Arachnology, Araneology)
   Relationships of spiders to other arachnids
   Diversity of spiders

2. Spider Taxonomy
   What is a phylogenetic hypothesis?
   Suborders of Spiders
   Families of Spiders
      Overview of world families
      Local (Ohio) families
      The Ohio Spider fauna

3. Functional Spider Anatomy I
   Internal anatomy
      Circulatory and respiratory systems
      Digestive system
      Muscular and hydrostatic system
      Nervous system

4. Spider behavior
   Thinking like a spider
   Movement
   Daily activity cycles
   Webs & Silk
      Functional types (retreat, egg sac, capture web)
      Classification of webs
   Courtship and mating

5. Spider Ecology
   Predatory behavior
      Detection methods
      Prey capture
      Ingestion
   Spiders’ importance to ecosystem function
   Functional guilds

6. Spiders and humans
   Spider venom and dangerous spiders
   Spiders’ importance to agriculture
   Spider-related organizations
      American Arachnological Society (AAS)
      The International Society of Arachnology (ISA)
Laboratories

1. Functional Spider Anatomy II
   External anatomy
   Exoskeleton
   Body regions
   Appendages
   Mouthparts
   Palps
   Legs
   Spinnerets
   Sensory structures
   Eyes
   Setae (spines and hairs)
   Trichobothria
   Pit organs
   Slit organs
   Reproductive structures
   Epigynum
   Male palp

2. Spider identification
   Part I
   Review of anatomy used for identification
   Main features for quick identification to families
   Recognition of Ohio spider families
   Part II
   Advanced spider identification
   Keying spiders to Genus
   Species-level identification

3. Field techniques in Araneology
   Observing and recording spider behavior
   Sweep sampling
   Focal visual sampling
   Litter sifting
   Litter funnel extraction
   Pitfall trapping
   Pan traps
   Sticky traps
   Refuges as baits
   Photography
**Course Schedule**

Sunday evening (Arrival)
- Orientation to Franz Theodore Stone Laboratory
- Introduction to course, personnel, texts etc.
- Nocturnal observations of spiders

Monday
- AM – Lecture topics 1&2
- PM – Laboratory topic 1
- EVE spider hunt
- Phylogeny homework assignment

Tuesday
- AM – Lecture topics 3&4
- PM – (Basic Anatomy Quiz) Laboratory topic 2 (part I)
- EVE – Individual topic discovery

Wednesday
- AM – Lecture topic 4 & Laboratory topic 3
- PM – Laboratory topic 2 (part II)
- EVE – Individual project data collection

Thursday (weather dependent switch with Wednesday)
- AM field trip to South Bass Island
- PM/EVE – Individual projects data collection

Friday
- AM – Lecture topics 5&6
- PM – (ID quiz) Individual projects
- EVE – Video presentation

Saturday
- AM – Final exam & Individual project reports
- PM – Departure

### Evaluation Points

<table>
<thead>
<tr>
<th>Evaluation</th>
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<tbody>
<tr>
<td>Phylogeny Homework</td>
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<tr>
<td>Basic Anatomy Quiz</td>
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<td>Identification Quiz</td>
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<td>(Project Paper for Grad Stu.)</td>
<td>(100)</td>
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<td>Final Exam</td>
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**Total**                                **300**

**Total (Grad. Stu.)**                    **400**

Grading Options: A 93%, A- 90%, B+ 87%, B 83%, B- 80%, C+ 77%, C 73%, C- 70%, D+ 67%, D 60%, or E
Academic Misconduct
It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with assignments or examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp).

IMPORTANT NOTICE
You should be aware that in biology classes at the Ohio State University we provide a variety of experiences. Some of these will require particular skills and abilities for full appreciation, or for optimal performance on evaluations. The course content may include one or more of the following activities, for example:

- Viewing or handling live animals, plants or other organisms.
- Use of microscope to view organisms and sometimes to manipulate them.
- Viewing video presentations and listening to audio-taped animal sounds.
- Viewing preserved organisms or illustrations of organisms and their parts.
- Field trips as well as impromptu "field" excursions outdoors, sometimes off of paved paths or walks sometimes on uneven terrain.
- Use of chemicals and glassware.
- Use of measurement equipment, such as scales and rules.

Anyone who feels that they may need an accommodation based on the impact of a disability should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format, anticipate your needs and explore potential accommodations. I rely on the Office for Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted the Office for Disability Services, I encourage you to do so.

The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; http://www.ods.ohio-state.edu/.