The Ohio State University
1-week course offering at Stone Laboratory
Summer 2016
July 31 - August 6

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

Ubick, D., P. Paquin, P.E. Cushing, and V. Roth (eds). 2005. Spiders of North America: an identification manual. American Arachnological Society. 377 pages.

Bradley, R.A. 2013. Common Spiders of North America. University of California Press. 271 pages, 82 plates.

continued

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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**
Phylogeny Homework	20
Basic Anatomy Quiz	25
Identification Quiz	50
Field Notebook	30
Spider Collection	25
Individual Project Report	50
(Project Paper for Grad Stu.)	(100)
Final Exam	100
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 (Facuty 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/.