

Ecology of Fungi

Pymatuning Laboratory of Ecology

Summer 2014

Lecture and Lab: M-F, 9 AM -5 PM

Credits: 3

Instructor: Dr. Shannon Nix

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Course Description

Fungi *mold* the Earth (pun absolutely intended). Fungi modify the environment and are essential to ecosystem functioning. Fungi are among the organisms that form soil, decay wood and enhance plant growth. Some fungi are agents of plant and animal diseases while others give us invaluable medicine. Fungi feed us, poison us, intoxicate us, and can change our perception of reality. During this course we will explore many aspects of this frequently neglect and often reviled group of organisms with a particular focus on fungal ecology.

Course Outline

This field course will meet 9 am – 5 pm, Monday-Friday for three weeks during Summer Session I at Pymatuning Laboratory of Ecology. This is a course designed to introduce students to collecting, observing, and identifying mushrooms and other fungi from a variety of natural, disturbed and man-made habitats. Students will be instructed in the taxonomy and ecology of this group of organisms with a focus on observational and experimental approaches to testing original hypotheses.

Lectures will typically occur during the first half of the day with the materials presented in lectures and assigned readings subject to critical analysis through in-class discussions. Lectures will be followed by trips to field sites for habitat evaluation and sample collection. Students will be required to keep a field journal to record data and observations. Working in small groups, students will propose and develop a group project dealing with issues related to fungal ecology in NW PA. Students will be given class time to work on projects but will likely need to spend additional time outside of class to complete the project. 2-3 students per group will collaborate on the project and give a short presentation of their results on the last day of course. Day-long and overnight field trips to unique habits may also be incorporated into the schedule.

Student progress, understanding and competency will be assessed through written examination of lecture material, submission of field notebook and specimen collection, and a group project.

Course Objectives and Learning Outcomes

1. To better understand fungal morphology, classification, reproduction, life histories, and ecological importance.
Assessment: quizzes and exams
2. To appreciate how the study of mycology relates to other scientific fields as well as human and nonhuman concerns.
Assessment: quizzes and exams
3. To sight-recognize important taxa of fungi through a study of their characteristics in the classroom and in the field.
Assessment: specimen collection
4. To learn essential mycological lab skills such as aseptic technique, light microscopy (including differential stains and spore measurements), and thin section preparations.
Assessment: laboratory practical and specimen collection
5. To learn how to identify common fungi of the NE United States through experience in the use of field guides, keys, web sites, and descriptions.
Assessment: field trips, quizzes and specimen collection
6. To gain experience in properly collecting, preparing, labeling, and preserving fungal specimens
Assessment: field note book and specimen collection

Required Texts

- * Arora, David. 1986. **Mushrooms Demystified, 2nd edition**
- * Lincoff, Gary. 1981. **National Audubon Society Field Guide to North American Mushrooms**
- * Roody, William. 2003. **Mushrooms of West Virginia and Central Appalachia**

Required Materials

- * Collection basket
- * Knife
- * Field notebook
- * Ruler

Guides available in lab as a reference library

- * Bessette, Alan, A. Bessette, & D. Fischer. 1997. **Mushrooms of Northeastern North America**
- * Bessette, Alan, & W. Roody, A. Bessette. 1997. **North American Boletes**
- * Miller, O. K. and H. H. Miller. 2006. **North American Mushrooms**
- * Phillips, Roger. 2010. **Mushrooms and other Fungi of North America, 2nd reprint edition**

Course Work (Approximate)

Exams (2)	30%
Group Project	30%
Specimen Collection*	40%

* Specimen collection

A representative collection of field-collected specimens reflecting the diversity of fungi from local habitats will be required of each student. Collections will consist of 12 dried specimens identified to genus and species, with notes on fresh and microscopic characteristics. Detailed collection requirements will be handed out during lab. You are required to keep a field notebook. See handout for guidelines.

*****Tentative Lecture Topics*****

- Defining Fungi
- Reproduction
- Dispersal
- Basidiomycota
- Ascomycota
- Lichens
- Mycorrhizae
- Plant and Animal Pathogens
- Fungi as Food
- Mycotoxins and Medical Mycology
- Mushroom Intoxication
- Fungi and Society

*****Tentative Lab Schedule*****

Date	Topic/Activity
Week 1	
Monday 12	-Collecting, identifying, and preserving fungi -Collection requirements -Mushroom characteristics
Tuesday 13	- Field Trip -Microscopic examination of fungal structures
Wednesday 14	Field Trip
Thursday 15	Field Trip
Friday 16	Field trip
Week 2	
Monday 19	Work on Collection
Wednesday 20	Work on Collection
Wednesday 21	Finalize and submit collection
Wednesday 22	Group Project
Wednesday 23	Group Project
Week 3	
Monday 26	Group Project
Tuesday 27	Group Project
Wednesday 28	Group Project
Thursday 29	Group Project
Friday 30	Group Presentations

Polices, Procedures and Requirements

A. Grading

1. Exams

- There are no make-up exams for this course, with the exception of a verifiable written excuse. If a make-up exam is allowed, the format will be all essay.
- If you arrive late for any reason you will be given the exam during the time that remains for the designated examination period.

2. Final grades

- The letter grade will be determined at the end of the semester by the percentage of points you earn during the semester. During the semester, you can make a rough estimate of your provisional grade using the following scale:

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

B. Special Services

- Any student requiring accommodations for taking notes or exams should meet with me at the beginning of the course. Students who need accommodations are required to register with the Office of Disability Services. Documentation from Academic Support is required.

C. Academic Integrity (from the Clarion Undergraduate Catalog)

Students at Clarion University shall maintain a high standard of honesty in scholastic work. As members of the university community, students have a responsibility to be familiar with the conduct regulations found in the university catalogs; Student Calendar Handbook; Campus Living Handbook; Student Rights, Regulations, and Procedures Handbook; and other university documents.

Among the conduct regulations addressed are acts of academic dishonesty, including plagiarism or cheating on assignments, examinations, or other academic work, or without prior approval of the instructor, submitting work already done for another course. Students shall avoid all forms of academic dishonesty, including, but not limited to:

1. Plagiarism—the use of another’s words without attribution or without enclosing the words in quotation marks. Plagiarism may also be defined as the act of taking the ideas or expression of ideas of another person and representing them as one’s own - even if the original paper has been paraphrased or otherwise modified. A close or extended paraphrase may also be considered plagiarism even if the source is named.
2. Collusion—collaborating with another person in preparation of notes, themes, reports, or other written work offered for credit unless specifically permitted by the instructor.
3. Cheating on an examination or quiz—giving or receiving information or using prepared material on an examination or quiz.
4. Falsification of data—manufacturing, falsification of information, including providing false or misleading information, or selective use of data to support a particular conclusion or to avoid conducting actual research.

My Policy: First time offense = grade of 0 (zero) for the work. Second offense = grade of E for the course.

D. Attendance:

- Class attendance is essential and expected. You are allowed to miss 1 lecture without penalty. Missing 2-3 lectures will result in dropping your final calculated grade to the next lower letter grade. Missing more than 3 lectures will result in failing the class. If you miss a class, it is your responsibility to get the class notes from a fellow student. **I will not provide them.**
- Lab attendance is essential and expected. Labs cannot be made up. A single missed lab will be counted the same as 3 missed lectures.

F. Classroom Comportment:

- **CELL PHONES:** Turn them off and put them away. You will be asked to leave if you use your cell phone or it goes off during class.
- **BEHAVIOR:** Be courteous to your classmates and your instructor. Interrupting, vulgarity, and/or other inappropriate behaviors will not be tolerated and will result on your exodus from class and potentially dismissal and failure of the course.
- No smoking or smokeless tobacco (snuff, chew) use, even when in the field.