

BIOLOGY OF FUNGI, P BIO 177

Summer, 2016 (May 20 – June 13); NOTE: This course is an approved elective for “Food Systems” students!

Mondays-Thursdays, 9 AM-12:45 PM, Jeffords 100

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See a video of the class: <https://www.youtube.com/watch?v=Zp5Js84ezb4>

Course description:

- 1) Learn about FUNGI through regular field trips and collections, lectures and discussions, and lab study. You will use microscopy and chemical tests on fresh specimens to thoroughly analyze each specimen.
- 2) Learn the unique and shared features of each group, including biology, form, reproductive strategies, key roles as ecosystem members, pathogens on other creatures, and value as foods, poisons and drugs. We will highlight many species that have had large impacts on human health and culture!
- 3) Survey, identify and study the major fungal groups, especially basidiomycetes (e.g. mushrooms, rusts and smuts) and ascomycetes (e.g. morels, yeasts).
- 4) Analyze and identify field-collected mushrooms and other macro-fungi, using visible, microscopic and other features for identification. Create herbarium-quality preserved specimens for archiving at the University of Vermont.
- 5) Cultivate fungi! We will culture fungi from nature, and work to establish pure strains. We will discuss cultivating wild mushrooms on organic substrates.

Expectations: Have a lot of fun and learn a lot! Read the assigned material prior to class, attend and participate in the field trips and lectures, and be engaged in the laboratory. Produce a collection of approx. 15 preserved and characterized mushrooms or other macro-fungi. Some independent research is required to collect and to study the specimens you will collect. Students will also make a verbal presentation to the class on a fungus of their choosing.

Readings: 1) **The Fifth Kingdom**. W. Bryce Kendrick (4th Edition, 2017) Hackett Publishing Company ISBN: 978-1-58510-459-8; 2) **Mushrooms of the Northeastern United States and Eastern Canada**. Timothy J. Baroni (2017), Timber Press. ISBN-13: 978-1604696349. (OPTIONAL): **Mushrooms of Northeastern North America** (1996), by Alan Bessette, Arleen Bessette, David Fischer.

Assessment (weights may be adjusted): Fungal Collection (specimens with data), 50%; Quizzes and take home exam: 20%; Student Presentations: 15%; Participation: 15%; Bonus!: TBA.

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Summer 2019 Schedule (tentative)

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#	Date	Day	Lecture Topic; Field-TBA: Field Trips (subject to weather)	Kendrick (online)*
1	5/20	M	Introductions and orientation; characters of fungi, data collecting, spore-printing mushrooms. Lab time: Microscope training, ocular micrometer, view/measure basidiospores; *Local Field Trip: EASTWOODS (BURLINGTON).	
2	5/21	T	*Field Trip: FORT JOHNSON (COLCHESTER); In lab, setup spore prints.	Preface, Intro, Chap 1
3	5/22	W	*Field Trip: JERICHO RESEARCH FOREST (JERICHO); In lab, manage collections.	Chaps 3a, 3b
4	5/23	Th	Lecture topic: Kingdom Fungi, Eumycota diversity: Chytrids, Zygomycetes. Basidium/ascus development. Lab time: Oil immersion; Melzer's reagent, fungal ultrastructure; hymenium study.	Chap 4a
-	5/27	M	Memorial Day Holiday (No Class). Optional-Find on your own, one or a few new specimens to explore this week.	Chap 4b
5	5/28	T	*Field Trip: PEASE MOUNTAIN (CHARLOTTE); In lab, manage collections.	Chap 5a Chap 5b
6	5/29	W	*Field Trip: RED ROCKS PARK (S. BURLINGTON); In lab, manage collections.	Chap 5c
7	5/30	Th	Basidiomycetes morphology and general features, Important orders, identification. Review session , Lab time.	Chap 5d
8	6/3	M	*Field Trip: Niquette Bay (Colchester); In lab, manage collections.	Review Lect Notes
9	6/4	T	Lab Time	Chap 18
10	6/5	W	*Field Trip: UVM Hort Farm (S. Burlington); In lab, manage collections.	Chap 22
11	6/6	Th	Review session , Fungal foods and fungal products. Fungal toxins and deadly fungi.	
12	6/10	M	Lab time	
13	6/11	T	*Field Trip: Bolton Farm (Bolton Mountaint, VT); In lab, manage collections.	
14	6/12	W	Lab time	
15	6/13	Th	Student Presentations. Review session	
-	6/14	Fr	Take-home exam ad collections due by end of day Friday, June 17.	

*Readings are from **The Fifth Kingdom**. W. Bryce Kendrick (4th Edition, 2017).

*Field sites, to be announced; according to time and weather). Possible: Burlington: Centennial Woods, East Woods Forest, Red Rocks Forest, UVM Horticulture Farm; Charlotte: Mount Philo, Pease Mountain; Colchester: Fort Johnson, Niquette Bay; Jericho: Jericho Research Forest.