

PLP2060: Schedule At-A-Glance

Date		Topic	Outside of Class
Jan	06 (R)	Introduction & Course Mechanics A&D 01: Classification Activity & Discussion (10 pts)	• Read A&D 01: Classification
	11 (T)	Lecture: Defining and Naming Fungi	
	13 (R)	Basics of Fungal Structure A&D 02: Mushroom Exploratory Activity (10 pts)	÷Online 01 due Sunday 11:59P
	18 (T)	3, 2, 1 ... Liftoff! Fungal Dispersal	
	20 (R)	Mushroom Identification 101 A&D 03: Fungal Structures Activity (10 pts)	÷Online 02 due Sunday 11:59P
	25 (T)	Common Edible Mushrooms	
	27 (R)	Common Poisonous Mushrooms A&D 04: Misidentified Mushrooms Activity (10 pts)	÷Online 03 due Sunday 11:59P
Feb	01 (T)	Hallucinogenic Mushrooms	
	03 (R)	Medicinal Mushrooms A&D 05: Scrutinizing Popular Press Activity (15 pts)	• Read A&D 05 Articles ÷Online 04 due Sunday 11:59P
	08 (T)	Exam 1	
	10 (R)	Mycorrhizae: The Great Plant-Fungal Alliance A&D 06: Exploring Symbiosis Activity (10 pts)	÷Online 05 due Sunday 11:59P
	15 (T)	Lichens	
	17 (R)	Insects and Fungus Gardens A&D 07: Fungal Symbiosis Art Gallery (25 pts)	* Symbiosis Art due in class ÷Online 06 due Sunday 11:59P
	22 (T)	Daily Bread: Yeasts in Baking	
	24 (R)	Strange Brews: Beers, Wines, Ales, and Meads A&D 08: Fermentation Science Activity (10 pts)	÷Online 07 due Sunday 11:59P
Mar	01 (T)	Industrial-Strength Fungi	
	03 (R)	A&D 09: Fungal & Lichen Dying Activity (10 pts)	* Outside Activity Proposals Due
	07-11	Spring Break: No Classes!	
	15 (T)	The Enemy of My Enemy: Fungal Antibiotics	
	17 (R)	Insect Mycoses A&D 10: Fungi in Biocontrol Discussion (10 pts)	• Read A&D 10 Articles ÷Online 08 due Sunday 11:59P
	22 (T)	Exam 2	
	24 (R)	Irish Potato Famine & the Most Famous Fungus that Wasn't A&D 11: Plant Pathogenic Fungi (10 pts)	* Video Topics Due ÷Online 09 due Sunday 11:59P
	29 (T)	Stealing Your Lunch: Wheat Rust and Other Bullies	* Videos Due on Wednesday
	31 (R)	Step Aside, Paul Bunyan: Chestnut Blight & Dutch Elm Disease A&D 12: What's Rotting Film Festival (25 pts)	
Apr	05 (T)	Ergot, Ergotism, and LSD	
	07 (R)	Mycotoxins: Introduction & Aflatoxins A&D 13: Mycotoxin Detection (10 pts)	÷Online 10 due Sunday 11:59P
	12 (T)	Sick Buildings	≈ Bonus Scavenger Lists Due
	14 (R)	Mycoses: Fungi That Will Eat You for Lunch A&D 14: Fungal Toxins and Pathogens Activity (10 pts)	÷Online 11 due Sunday 11:59P
	19 (T)	Potluck: Eat Fungi for Lunch!	
	29 (F)	Final Exam 7:30-9:30 AM (regular classroom)	

PLP2060 Fungus Among Us: Mushrooms, Molds, and Civilization
Spring, 2022

Course: PLP 2060, Section 052H, 3 credits. This course qualifies for the Biological Sciences (B) portion of the General Education Requirement.

Class Meetings: T Period 4 (10:40-11:30AM), R Period 4-5 (10:40-12:35); PSF 05

Instructor: Dr. Brantlee Spakes Richter
Office: 2519 Fifield Hall
Office hours: Thursdays 3:00-4:30 (drop-in), and by appointment
Email: Please use the email system within Canvas.
Phone: 352-273-2014

Course description: This class covers the role of fungi in human affairs, including their uses as food or medicine, in religious activities and industrial processes, and in synthesis of many of our most important drugs. We will also look at their impacts on society as pathogens of plants and animals, in the deterioration of food and fabric, and in the vital roles that they play in maintaining ecosystems and natural resources.

Course Texts:

Recommended text: *Magical Mushrooms, Mischievous Molds*, by George Hudler (1998).

Required and recommended readings: Readings throughout the semester will be made available in the “Modules” section on the class website; these will be denoted as “required” (you are expected to read these), “recommended” (better coverage of a class topic than the Hudler text, likely to be helpful to your understanding), or “further reading” (strictly optional, for those who are interested in pursuing a topic further).

Learning Objectives: The primary objective of this course is “fungal appreciation.” By the end of the course students should be able to:

- distinguish fungi from other types of living organisms, and describe their relationship to other major groups, such as plants and animals;
- describe the basic characteristics of fungi which can be used to identify mushrooms and molds;
- give examples of human uses of fungi in food, medicine, religion, and industry;
- use historic and current examples to explain how fungi impact human food supplies and natural resources;
- relate both positive and negative roles of fungi in human and animal diseases;
- illustrate the various ways in which fungi help maintain ecosystem function.

Grading:

- **Exams & Project (60%):** There will be two midterm exams and one final exam (non-cumulative), each worth 100 points, and one project worth 50 points.
- **In-Class Activities (25%):** There will be 14 (weekly) activities, worth 10-25 points each.
- **Homework (15%):** There will be 11 online modules, each worth 10 points, with the lowest score dropped. There will be at least two optional extracurricular activities, each of which may be used to replace an online assignment.
- **Extra credit (+2%):** There will be one extra credit opportunity, as described below.

Grade Scale:

Final course grades will be determined on the following scale. You will be able to keep track of your points throughout the semester in your Canvas grade book. If you find that you are not on track to achieve your desired grade, please make an appointment or drop in during office hours for additional help. Do not wait until the last few weeks of the semester to ask for help! And definitely don't wait until the semester is over, and then ask for your final grade to be "adjusted." I am more than happy to help you individually with the course material, but you must earn your own points.

Letter Grade	Percentage
A	92.00 - 100
A-	90.00 - 91.99
B+	88.00 - 89.99
B	82.00 - 87.99
B-	80.00 - 81.99
C+	78.00 - 79.99
C	72.00 - 77.99
C-	70.00 - 71.99
D+	68.00 - 69.99
D	62.00 - 67.99
D-	60.00 - 61.99
E	00.00 - 59.99

Grade Points:

For information on current UF policies for assigning grade points, see:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Absences & Make-up Work:

Class attendance is expected. Only material which is covered or assigned in class will appear on exams, so it is in your best interest to participate fully. The lecture slides used in class will be available on the class website, but slides will be used to organize and illustrate information in the lectures, and the information on printed slides will not be sufficient to understand the lecture material. If you must miss a class, you are strongly encouraged to get notes from other students to supplement the lecture slides. In-class assignments and demonstrations are participatory in nature and not all of these can be made up. Activity descriptions and outcomes will be posted to the class website.

If you must miss an exam due to illness or other extenuating circumstances, notify the instructor as soon as possible. If your absence is excused, you will be given opportunity to take a make-up exam. Make-ups must be completed prior to the next regularly scheduled exam.

Excused absences are generally those due to illness or emergency. You may be asked to provide documentation, such as a doctor's note. Student athletes will be excused for official events through the University Athletic Association. If you know that you will be missing a class for observation of a religious holiday or participation in an academic or professional event, you must contact the instructor *in advance* of the expected absence to arrange for make-up work. Absences due to personal planning (leaving town, attending club functions, picking someone up at the airport, etc.) will not be excused. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

General Education Credits

This class carries general education credit for Biological Sciences (B). The assigned “General Education Student Learning Outcomes” for this class are as follows:

SLO	How this course meets the SLO
Know the basic concepts, theories and terminology of natural science and the scientific method within that discipline.	We will cover the basic terminology of the field of mycology, and students will use the principles of the scientific method to critically evaluate real-life situations, from home-brewing failures to claims of medical miracles.
Know the major scientific developments within that discipline and the impacts on society and the environment.	Students will learn about the major impacts of fungi, both historical and modern, on many aspects of life, including food production, medicine, military campaigns, and forest composition.
Know relevant processes that govern biological and physical systems within that discipline.	Students will learn about how fungi acquire their nutrition, and what the consequences are to the fungi, to us, and to the environment. Students will also learn about symbiotic relationships between fungi and a variety of other organisms.
Formulate empirically-testable hypotheses derived from the study of physical processes and living things within that discipline.	Students will formulate hypotheses about fungal biology, effects of environmental factors and nutrient sources on fungi (including those used in brewing), and potential effects that fungi may have on plants and animals.
Apply logical reasoning skills effectively through scientific criticism and argument within that discipline.	Students will use critical evaluation skills as we explore sources of information (and misinformation) about fungi, and will use critical observation skills in examination of fungi and fungal species descriptions.
Apply techniques of discovery and critical thinking effectively to solve experiments and to evaluate outcomes.	Students will formulate hypotheses, conduct several demonstration experiments, and examine important concepts such as detection limits, as they apply to scientific testing.
Communicate scientific findings clearly and effectively using oral, written and/or graphic forms.	Students will be using a variety of formats (written, visual, multi-media) to present scientific information and outcomes of experiments and class activities.
Write effectively using several types of writing, such as research papers and laboratory reports.	Online assignments and exams will both require students to effectively communicate scientific knowledge in writing. Individual feedback will be provided on written assignments.

In order to receive General Education credit for a course, you must earn a final grade of “C” or better. For complete information on the General Education Requirements, see:

<https://catalog.ufl.edu/ugrad/current/advising/info/general-education-requirement.aspx#learning>

Academic Honesty:

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”* It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of

disciplinary action. For more information regarding the Student Honor Code, please see:
<http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources:

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Training Programs
 - Community Provider Database
- *Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*

Services for Students with Disabilities:

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. For more information, contact the Disability Resource Center at: 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Activities & Discussions (A&D)

10	Classification and Decision Trees Student groups will be given a set of living organisms, and will decide how to group them. They will then build a dichotomous key to their organisms. We will compare keys and examine the traits selected by each group to classify their organisms.
10	Mushroom Exploration Student groups will examine and label fungal specimens, applying the terminology presented in lecture.
10	Fungal Structures Activity Students will divide into teams and play “Fungal Structure Pictionary,” using the vocabulary terms presented in class.
10	Misidentified Mushrooms Each student group will be assigned a pair of “look-alike” mushroom species, one edible and one poisonous, and will use keys to identify key features that separate the species. Each group will then teach the rest of the class how to distinguish them from one another.
10	Scrutinizing Popular Press Student groups will be presented with popular press articles relating to medicinal mushrooms and will subject them to critical analysis, ultimately deciding how trustworthy they consider each to be.
10	Exploring Symbiosis Students will work together to build concept maps of mycorrhizal relationships.
25	Fungal Symbiosis Art Gallery* Each student will bring to class a model of a fungal symbiosis (endomycorrhizae, ectomycorrhizae, lichen, or other). Students will rate each other’s models, and winners in each category will receive a prize during the final class potluck.
10	Fermentation Science Student groups will be presented with case studies from home brewers who have encountered problems, and we will troubleshoot potential reasons for their brewing catastrophes.
10	Fungal & Lichen Dying Students will get a hands-on demo in fungal dying, and will get to take home samples of dyed yarn.
10	Fungi in Biocontrol Discussion Students will be presented with a case study in fungal biocontrol. In a class discussion, we will examine the feasibility and problems with its use, based on fungal biology and the biocontrol principles discussed in lecture.
10	Plant Pathogenic Fungi Students will work with samples of fungal plant diseases, and will use resources to develop hypotheses about the causal pathogens.
25	What’s Rotting Speed Presentations* Each student group will prepare a 5-minute speed presentation on a fungus that causes disease or rot on a plant or plant product. Students will rate one another’s presentations on educational and interest values.
10	Mycotoxin Detection Students will participate in a demonstration activity on sampling and detection limits. We will discuss detection methods, detection ranges, and regulatory issues.
10	Fungal Toxins and Pathogens Students will review for the exam and test their knowledge by playing a fungal trivia game based on Jeopardy. Categories will come from all of the materials covered after Exam 2.

Note: activities with asterisks (*) will require advance preparation!

Outside Project (50 Points)

This is a highly customizable assignment, intended to encourage students to take their fungal studies a little further, in any chosen direction. You will be asked to submit your idea for approval, then execute your project and submit a product. This can be done at any time during the semester, but must be completed by the listed due date. A few ideas for the type of activity that would be encouraged:

- Try cultivating your own (legal) mushrooms
- Go on a foray and document your findings
- Make a fungal-themed game
- Put fungi on the Free Expression Wall
- Use fungi to make art
- Make a video or hands-on activity about some concept in fungal biology

The one stipulation is that your activity must demonstrate some learning about fungi. See the assignment details in Canvas for a full description.

Potluck

The last day of class will be a Fungal Feast. Bonus points will be given for contributions of fungal foods or (non-alcoholic) drinks. To receive points, each item must have some fungal component and must be correctly labeled with the fungus name and its role in the dish (Ex.: "Stir fry with tempeh (*Rhizopus oligosporus*), portabella mushrooms (*Agaricus bisporus*), and soy sauce (*Aspergillus sojae* and *Saccharomyces cerevisiae*)").

Extra Credit Assignment: Fungal Scavenger Hunt

Fungi are used in a wide array of products, many of which you might not expect! Your task is to find as many products as possible that contain fungi or were made using fungi. The rules are:

- (1) Each product must be available for sale through a verifiable retailer. This can be a supermarket or other local store or an online retailer, but not some guy on a street corner.
- (2) Each product on your list must be unique. Using 4 different flavors or brands of the same kind of food doesn't count! You can, however, use multiple products that contain or utilize the same fungus.
- (3) You must document the fungal component, and give the name of the fungus used.
- (4) This is an individual assignment; do not share your lists. If your list has >50% similarity to another student's list, both lists are automatically eligible for only half-credit.

What you will hand in:

You will upload a table with 7 columns: Sample number, Product description (brand name, product name, anything that would be needed to find and verify this item), Date (date you found the product), Retailer (name of store or venue), Location (store location or web address if online), Fungus (Genus, or Genus and species name), Role (how the fungus is used; i.e., is it an ingredient, or what ingredient was it used to produce). This table will be available as an Excel template on the course website. **Lists will be due by 11:59pm on Tuesday, 12 April**, and will be submitted electronically through the assignments section of the course website. This portal will close at exactly 11:59pm on the due date, and **no late submissions will be accepted**.

Grading: If you hand in a table with a minimum of 25 unique items, appropriately documented, you will receive 10 bonus points. The students with the three longest lists (>30) will receive an additional 5 bonus points each. The student who builds the longest list will also receive a prize!*

*There is no guarantee that prizes will have any cash value, aesthetic value, or general utility, but heck, it'll be a WIN!