Fungi and Civilization

PLPA 2130 - 001 3(3,0)

Spring 2023
MWF 10:10 - 11:00 am
Online Synchronous

Instructor and Office Hours
Dr. Julia Kerrigan
Office: D-137 Poole (P&A)
Office hours: MWF after class or by appointment
j Kerrig@clemson.edu, 864-656-2640
I will try to respond to emails as soon as possible, within 24 hours except for
during weekends and university holidays. If it has been longer than this time
period, feel free to send me a reminder.

Teaching Assistant
Amber Hart
anhart@g.clemson.edu

Course Description

Overview of how fungi affect the lives of humans, both currently and historically.

The diversity of fungi and tremendous roles fungi play on the planet are addressed in
respect to the biological, social, and ethical consequences.

The general nature of this course makes it beneficial to all students regardless of
specialty.

This course satisfies General Education competencies Nat Sci, STS, and Clemson
Thinks2.

Course Objectives

Students will demonstrate:

An understanding of the defining characteristics and basic biology and
ecology of fungi.

An awareness of the diversity of fungi and the roles they play on our planet.

A comprehension of how fungi affect the lives of individuals and societies, both
currently and historically.

Critical evaluation of the social consequences, value judgments, ethical
implications, and other viewpoints regarding the impacts of fungi and civilization.
**Critical Thinking**
This class is participating in the Clemson Thinks2 (CT2) campus-wide Quality Enhancement Plan that focuses on undergraduate critical thinking, a skill that is invaluable for your success in college and in your career pursuits after graduation.

What is critical thinking? A definition provided by CT2 and appropriate for this course is: “Critical thinking is the process of purposeful, reflective judgment. Critical thinking manifests itself in giving reasoned and fair-minded consideration to evidence, conceptualizations, methods, contexts, and standards in order to decide what to believe or what to do” (Facione, 2010). We will cover in more detail the characteristics and mindset of critical thinking. Topics covered in this course deal with fungi and societies and social and environmental consequences, value judgments, ethical implications, and other viewpoints. In-class questions and assignments, particularly Packback and the Fungi in the News assignment, are designed to enhance your critical thinking skills.

**Student Learning Outcomes**

From this course, students will be able to:

1. Define the criteria that unite organisms in the kingdom fungi as to understand the fundamental shared characteristics.

2. Identify and explain relationships between certain fungi and human and societal impacts, through examinations, as to demonstrate their understanding of the relationships and their cause and effects.

3. Collect fungi in their environment, through an assignment that requires exposing a petri plate with medium for fungal growth, and interpret what they have growing to demonstrate their an understanding of the ubiquity of fungi in our environment.

4. Reflect on what they learn each week and, via engaging in Packback, compose open-ended questions related to the course material to examine, question, and or reflect on course material in their lives and/or real-world situations.

5. Evaluate questions from other students, through Packback, provide an answer which explains their idea or concept, and justify their answer with facts to examine specific topics of their choosing in more detail.

6. Create a presentation, specifically an Adobe Express (Spark) webpage, on a news story of their choice that deals with fungi for the purpose of synthesizing what they have learned and thinking critically about both the topic itself and why it became a published news story that deals with a global challenges issue.
Lecture Requirements

**Attendance** is important, we want to see you!

Attendance is important, we want to see you! I record lectures in case a student cannot make class due to an excused absence. This includes a medical reason with documentation, University function with documentation, family emergency with documentation, and similar circumstances. Note that the Canvas notification of absence can be used to inform me of your absence, but you must still contact me directly with your documentation.

Regular attendance is expected and you are responsible for all the information presented in class, whether it is delivered verbally, on PowerPoints, in reading assignments, or on handouts.

I do not take attendance, but once in a while there will be extra credit points for in-class participation.

LPT: Attend class. You will feel like you are part of the class, not worry about what you missed, and if the instructor sees you engaged - that may tip things in your favor if you are between final grades.

**Canvas**

Canvas will be used [http://www.clemson.edu/canvas/](http://www.clemson.edu/canvas/).

Copies of the syllabus, notes, readings, and other materials will be posted; I will let you know specifically where throughout the course. If you cannot find things let me know – I realize instructors have different ways of organizing content.

**Lecture Requirements**

**Textbook**

Magical Mushrooms, Mischievous Molds by George Hudler is required. A copy is on course reserve at the Cooper Library. This may be purchased at the bookstore and inexpensive, used versions are available through online sellers.
Examinations

You will take tests on Canvas, administered via Respondus Monitor. This requires a webcam, so please make sure you have a functioning one well before the first quiz. Here is a link with information about it: https://www.clemson.edu/online/tools/responduslockdown.html

And here is how to install and update it: https://clemson.app.box.com/s/50yo4k65vtpgr63nrks9icfppud9eru6

I will provide a practice so you can test the Respondus Monitor works on your machine.

Three examinations and six quizzes - based on lecture materials, relevant readings, videos, and discussions - will be given during lecture periods and the final exam schedule. Exams and quizzes are scheduled so that there is a relatively uniform number of lecture dates between each.

Test content will cover topics in lectures covered since the previous exam. Previous exam questions and answers will be posted on Canvas to help you prepare for each test. Quizzes typically contain questions on just a few lectures and ask about more detailed information, while comprehension of overall principles and concepts is expected in the exams.

Make-up for an exam will be given only if a valid, documented excuse for your absence (i.e. medical emergency, proof required) is provided within 24 hours after an exam is given. Note that the Canvas notification of absence can be used to inform me of your absence, but you must still contact me directly with your documentation. Missed exams without an acceptable, timely excuse will receive a grade of zero. Make-ups are not given for quizzes. One quiz score will be dropped, this may include a quiz missed or your lowest score. I will remove the lowest grade on Canvas after you have taken Quiz 6. The third and final exam is not cumulative, and everyone is required to take it.

If you have a scheduled absence for a valid reason (i.e. University function with paperwork is valid, going on a family/friend trip for spring break is not valid) and will be unable to attend a quiz or exam, you must convey that at least one week before the test and we will schedule a time for you to take it (proof required).

During tests, all work must be your own. You may not use notes or any other external source for your information other than yourself. Any violation of this will be submitted to the Office of Academic Integrity.

Additional information, details, and support will be given before each test.
Assignments (there are three)
Details will be provided in separate handouts for each assignment.

1. Packback
2. Sampling Airborne Fungi
3. Fungi in News assignment

To get the maximum points, be sure to read the assignment requirements carefully and turn things in before the deadlines.

How will I be graded?

Grading System
Clemson University's grading system is described in the Undergraduate Announcements. Please see the Registrar's web site at http://www.registrar.clemson.edu/html/finalGrades.htm. Scores will be calculated following a ten point (%) grading scale:

A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: below 60%.

Grades will be maintained on Canvas. You can see how you are doing in the course anytime by looking up your scores.

<table>
<thead>
<tr>
<th>Points / Percent</th>
<th>Points / Percent</th>
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<tbody>
<tr>
<td>Exams (100 points x 3 exams)</td>
<td>= 275 / 55%</td>
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<tr>
<td>Quizzes (20 points x 5 quizzes)</td>
<td>= 100 / 20%</td>
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<tr>
<td>Packback</td>
<td>= 50 / 10%</td>
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<tr>
<td>Sampling Fungi</td>
<td>= 25 / 5%</td>
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<tr>
<td>Fungi in the News</td>
<td>= 50 / 10%</td>
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<tr>
<td>Total</td>
<td>= 500 / 100%</td>
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Course Format

I will post lecture notes ~24 hours before class. These notes are an outline and do not replace attending class, listening, and taking notes yourself.

Critical thinking and class participation is encouraged through Packback responses, in-class assignments, and discussions.

The information in this course is primarily based on biological and historical facts, but our critical examination of WHY these events occurred will be raised throughout the course
A welcoming learning environment for all

I like to have an informal atmosphere in my classes, but I also want an atmosphere of mutual respect.

If you have any questions about accessing Canvas, Packback, your grades, etc. please ask. I know for many of you this may be your first semester on campus and we are happy to help!

I do not take attendance, as I expect you to be responsible on your own (you are adults and were accepted into Clemson University).

I recorded Zoom lectures but I do not post them. They are only shared if you have a valid reason for you absence (proof required).

It is difficult to both lecture and check the Zoom chat, doing so is distracting while talking.I also cannot see all of you to see if you raised your hand. Because of this, feel free to ask questions during my lectures. I will try to pause to provide opportunities for you to interject. The more questions and discussions the better.

Lecture Requirements

Important dates

M 1/16  Martin Luther King, Jr. day
W 1/25  Quiz 1 and signed acceptance of syllabus (on quiz) required. 1st Packback due
W 2/8  Quiz 2
W 2/15  Exam 1
W 3/1  Quiz 3
W 3/15 Quiz 4
M 3/20-24 Spring break!
W 3/29  Exam 2
F  4/7  FIN due
W 4/12 Quiz 5. Packback ends
M 4/26 Quiz 6
T  5/2  Exam 3/Final 3–5:30pm, not cumulative, mandatory
Lecture Topics

Format:
Clever lecture title
The actual topic that will be presented and discussed

Introduction to the course format, policies, and content
Overview of the importance of fungi and human affairs

What are fungi?
Introduction to the characteristics of fungi and what makes a fungus a Fungus

Lifestyles of the sick and famous
The functional roles of fungi in our environment

CT2
Critical thinking and why we need it more than ever

Mushrooms and boletes and stink horns, oh my
Diversity of fungi: Basidiomycota

Molds and mildews. Have any questions? Just asus.
Diversity of fungi: Ascomycota

The mushroom treatment...to be kept in the dark and fed lots of manure
Cultivating mushrooms

Can you eat it?
Wild edible mushrooms, their nutritional values, and mushroom hunters

Mushrooms as medicine
Overview of common medicinal fungi and discussion on how different cultures use fungi for health

“The discovery of antibiotics is perhaps the most important discovery in the history of therapeutic medicine.
Antibiotics have saved more lives than any other medical therapy”
Antibiotics and antibiotic resistance

Just remember...all fungi are edible, but some will kill you
Poisonous and hallucinogenic mushrooms, their active compounds

What do Santa Claus, shamans, fairies, and Wasson have in common?
Ethnomycology: Discussion on the social values of psychoactives, why some cultures embrace their use while others outlaw it

Critical thinking is something we do every day, but like most skills we can improve on it through practice - we will practice throughout the term. Examples of CT2 questions will be included with these Lecture Topics. I will pose several critical thinking questions during most lectures.
It makes your skin crawl
Medical mycology

Home sick?
Sick house syndrome and allergens

Fungal excrement
Yeast: An overview of fermentation, bread, and alcohol

Fungi and food – the good
The advantages of asexual fungi, their ubiquity, and many uses

Fungi and food – the bad
Mycotoxins: Historical examples and current concerns and treatments

Fungi and food – the ugly
Diseased grain, ergotism, and the Salem Witch Trials

“God caused the potato blight but England caused the Famine”
Overview of the Irish potato famine and the religious and political influences

Wrath of Grapes and no chestnuts roasting over an open fire
The immense repercussions of imported pathogens

Monocultures and the fungi that love them
Examples of epidemics due to monocultures and why monocultures--from turf to timber--are still common practice

Rotten to the core
Ecology of wood rottting fungi and their importance

Who’s eating who?
The first agricultural societies and fungi and bugs eating each other

Fantastic Fungi: The Movie

Tradd Cotter from Mushroom Mountain

About me, your instructor:
I am a scientist who studies mycology and plant pathology. I did not plan to studies these disciplines but fell in love with them while in college. Although I teach about mushrooms and organize a mushroom club, my research focused on the basic biology of fungi, typically microscopic species.

I love academia because it allows me to study the fields about which I am passionate while also sharing these topics with others. I am excited for students’ opportunities to find their passions and experience new things.
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<thead>
<tr>
<th>Date</th>
<th>Lecture Topic (topics will be added throughout term)</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1 Jan 11</td>
<td>Syllabus. Introduction to the significance and biodiversity of fungi.</td>
<td>Introduction</td>
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<td>2 Jan 13</td>
<td>What are fungi?</td>
<td>Chapters 1-2</td>
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<td>3 Jan 16</td>
<td>Martin Luther King, Jr. Day <a href="https://www.clemson.edu/centers-institutes/gantt/mlk/">Link</a></td>
<td>Chapters 1-2</td>
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<td>5 Jan 20</td>
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<td>6 Jan 23</td>
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<td>7 Jan 25</td>
<td>Quiz 1, signed acceptance of syllabus required. First Packback due</td>
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<td>13 Feb 8</td>
<td>Quiz 2</td>
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<td>16 Feb 15</td>
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<td>21 Mar 1</td>
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<td>Midterm evaluations</td>
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<td>Last day to drop without a final grade.</td>
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<td>Mar 20-24</td>
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<td>36 Apr 12</td>
<td>Quiz 5 Packback stops.</td>
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<td>43 Apr 28</td>
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<tr>
<td>44 May 2</td>
<td>Exam 3/Final 3–5:30pm in regular classroom</td>
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Interested in learning more about fungi? SCUMS is a local group with monthly speakers and forays. Go to SCUMSonline.com for more information.