



# Fungi and Civilization

PLPA 2130 - 001 3(3,0)

Spring 2020

MWF 12:20 - 1:10 pm

Poole Agricultural Center (P&A) 174



## Instructor and Office Hours

Dr. Julia Kerrigan

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Office hours: MW 1:15 - 2:30, or by appointment

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## 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 in Science and Technology in Society, Natural Science, and Clemson Thinks2.

## 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.**

## Learning Outcomes

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 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.

## CT2

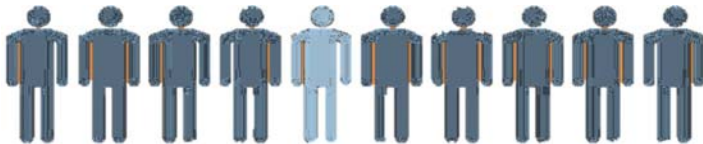
This class is participating in the Clemson Thinks2 (CT2) campus-wide Quality Enhancement Plan that focuses on undergraduate critical thinking, a skill that is invaluable for your success in college and in your career pursuits after graduation.

In-class questions and assignments, particularly Packback and the Fungi in the News assignment, are designed to enhance your critical thinking skills.

You will take the California Critical Thinking Assessment Test (details will be provided) at the beginning of the term and at the end of the term to measure how your skills have improved.

## Lecture Requirements

Attendance is important



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.

Typically, poor class attendance is reflected in grades.

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

### Assignments

Details will be provided in separate handouts for each assignment.

Critical Thinking (CT2) pre- and post- tests  
Packback  
Sampling Airborne Fungi  
Fungi in News Adobe Spark page.

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



The academic resources of Clemson University are provided for the intellectual growth and development of students. Class attendance is critical to the educational process; therefore, students should attend scheduled courses regularly if they are to attain their academic goals."

If you miss class you are responsible for getting notes from other class members. Get contact information from at least three other students enrolled in this class so you can easily share notes. I am always willing to clarify information if you need help after acquiring notes from someone in the class.

Laptops and similar devices are only permitted for taking notes. Doing other activities is distracting to those around you. Please be respectful and limit use to taking notes for this course. I recommend you print the ppt's, listen, and take notes. You will find this provides a focused and effective learning environment!

# Lecture Requirements



## Textbook

Magical Mushrooms, Mischievous Molds by George Hudler is required.

Additional reading materials from other sources will be provided throughout the term.

## Canvas

Canvas will be used  
<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.

You can learn more about Canvas here  
<https://community.canvaslms.com/docs/DOC-4121>

## Examinations

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 detailed information, while comprehension of overall principles and concepts is expected in the exams.

Make-up exams will be given only if a valid, documented excuse for your absence (i.e. medical emergency) is provided within 24 hours after an exam is given. Missed exams without an acceptable, timely excuse will receive a grade of zero.

The third and final exam is not cumulative and everyone is required to take it.

One quiz score will be dropped, this may include a quiz missed because of an undocumented absence or your lowest score.

If you have a scheduled absence for a valid reason (i.e. University function) 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. After that no exceptions will be granted unless exemplary conditions exist (proof required).



# Lecture Requirements

## 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.

|                            |   | <u>Points / Percent</u> |
|----------------------------|---|-------------------------|
| Exams(100pointsx3exams)    | = | 300 / 60%               |
| Quizzes(20pointsx5quizzes) | = | 100 / 20%               |
| Packback                   | = | 50 / 10%                |
| CT2 (10 points x 2 tests)  | = | 20 / 4%                 |
| Sampling Fungi             | = | 10 / 2%                 |
| Fungi in the News          | = | 20 / 4%                 |
| Total                      | = | 500 / 100%              |

## Class Conduct



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

Be on time. It is disruptive to your classmates and me if you come to class after it has started. In addition, I provide important instruction about exams and assignments at the beginning of class.



Do not pack up until after I indicate the class is over. It only takes seconds to put your things away. This is a large class, if everyone starts packing up before the end of class it is difficult to hear my instruction.



Smart/cell phones may only be used for answering participation questions. Be an active listener, critical thinker, and participate. Enjoy the break from texts and social media!



Please be respectful of those around you. This is a large class, space is tight, and the room is full. Everything you do affects your neighbors. Do not have conversations, use you phone, or otherwise engage in activities that will bother your neighbors.



If you are distracted because of your surroundings please move to a different seat as well as let me know your concerns. This is a large room and my focus is on presenting the material, thus I often do not hear or see side activities.

# Lecture Requirements

## Important dates

- W 1/15 Packback begins
- M 1/20 Martin Luther King, Jr. day
- W 1/22 Quiz 1 and signed acceptance of syllabus (on quiz) required
- M 1/27 CT2 Pre-test deadline
- W 2/05 Quiz 2
- W 2/12 Exam 1
- W 2/19 Academic Continuity Exercise
- W 2/26 Quiz 3
- W 3/11 Quiz 4
- M 3/16–20 Spring break!
- W 3/25 Exam 2
- F 4/3 FIN due
- W 4/8 Quiz 5
- W 4/15 Packback ends
- M 4/20 Quiz 6
- W 4/22 CT2 Post-test deadline
- M 4/27 Exam 3/Final 8-10:30 am  
not cumulative, mandatory, in  
the regular classroom



# University Policies

## Class cancellation

As written in the Clemson University's Undergraduate Class Regulations: "Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless contacted by the instructor. Any extension or postponement of assignments or exams must be granted by the instructor via email or Blackboard within 24 hours of the weather related cancellation."

## Clemson University's Copyright Statement

"Materials in some of the courses are copyrighted. They are intended for use only by students registered and enrolled in a particular course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. Students should be reminded to refer to the Use of Copyrighted Materials and "Fair Use Guidelines" policy on the Clemson University website for additional information: <http://www.clemson.edu/library/reference/qr/patents.html>."

# University Policies

## Clemson University's Academic Integrity Policy

"As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning'. Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form."

## Academic Honesty

You are expected to do your work independently of other students unless instructed to do otherwise by Dr. Kerrigan. You must use the Top Hat app yourself, having other students use it is for you is considered academic dishonesty. Any student suspected of academic dishonesty will be referred to the committee on academic integrity for action.

Clemson University's Title IX (Sexual Harassment) Policy "The Clemson University Title IX (Sexual Harassment) statement must be included: Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at: <http://www.clemson.edu/campus-life/campus-services/access/title-ix/>. Mr. Jerry Knighton is the Clemson University Title IX Coordinator. He also is the Director of Access and Equity. His office is located at 110 Holtzendorff Hall, 864.656.3184 (voice) or 864.565.0899 (TDD)."

## Clemson University's Accessibility Statement

Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing [studentaccess@lists.clemson.edu](mailto:studentaccess@lists.clemson.edu), or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if at all possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here:

<http://www.clemson.edu/campus-life/campus-services/sds/>.

# Lecture Topics

0. Lecture title  
Topic

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

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

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

4. CT2  
Critical thinking and why we need it more than ever

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

6. Morels, molds and mildews, lichens  
Diversity of fungi: Ascomycota

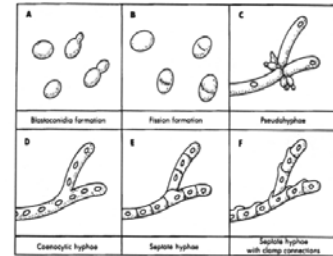
7. The mushroom treatment...to be kept in the dark and fed lots of manure  
Cultivating mushrooms

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

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

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

11. Santa Claus, shamans, fairies, and Wasson  
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.



**About me, your instructor:**

I am a scientist who studies mycology and plant pathology. I did not plan to study 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.

# Lecture Topics

## 12. Fungal excrement

Yeasts: An overview of fermentation, bread, and alcohol



## 13. Fungi and food – the good

The advantages of asexual fungi, their ubiquity, and many uses

## 14. “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



## 15. It makes your skin crawl

Medical mycology



## 16. Fungi and food – the bad

Mycotoxins: Historical examples and current concerns and treatments

## 17. Home sick?

Sick house syndrome and allergens



## 18. Fungi and food – the ugly

Diseased grain, ergotism, and the Salem Witch Trials

## 19. “God caused the potato blight but England caused the Famine”

Overview of the Irish potato famine and the religious and political influences



## 20. Wrath of Grapes and no chestnuts roasting over an open fire

The immense repercussions of imported pathogens

## 21. Monocultures and the fungi that love them

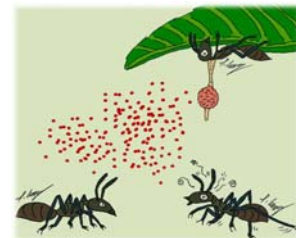
Examples of epidemics due to monocultures and why monocultures--from turf to timber-- are still common practice

## 22. Rotten to the core

Ecology of wood rotting fungi and their importance

## 23. Who's eating who?

The first agricultural societies and fungi and bugs eating each other



|    | Date   | LT # | Lecture Topic (topics will be added throughout term)   | Reading      |
|----|--------|------|--|--------------|
| 1  | Jan 8  | 1    | Syllabus. Introduction to the significance and biodiversity of fungi.  | Introduction |
| 2  | Jan 10 | 2    | What are fungi?  | Chapters 1-2 |
| 3  | Jan 13 | 3    | Fungal Ecology. <i>Go Tigers!</i>  | Chapters 1-2 |
| 4  | Jan 15 | 4    | Critical Thinking. <i>Packback starts.</i>   | Chapters 1-2 |
| 5  | Jan 17 | 5    | Basidiomycota.   | Chapters 1-2 |
|    | Jan 20 |      | <i>Martin Luther King, Jr. Day</i> <a href="https://www.clemson.edu/centers-institutes/gantt/mlk/">https://www.clemson.edu/centers-institutes/gantt/mlk/</a> |              |
| 6  | Jan 22 | 6    | <b>Quiz 1</b> , signed acceptance of syllabus required. Ascomycota.  | Chapters 1-2 |
| 7  | Jan 24 |      |  |              |
| 8  | Jan 27 |      | <i>CT2 Pre-test deadline</i>   |              |
| 9  | Jan 29 |      | The Magic of Mushrooms   |              |
| 10 | Jan 31 |      |  |              |
| 11 | Feb 3  |      |  |              |
| 12 | Feb 5  |      | <b>Quiz 2</b>  |              |
| 13 | Feb 7  |      |  |              |
| 14 | Feb 10 |      |  |              |
| 15 | Feb 12 |      | <b>Exam 1</b>  |              |
| 16 | Feb 14 |      |  |              |
| 17 | Feb 17 |      |  |              |
| 18 | Feb 19 |      | Academic Continuity Exercise   |              |
| 19 | Feb 21 |      |  |              |
| 20 | Feb 24 |      |  |              |
| 21 | Feb 26 |      | <b>Quiz 3</b>  |              |
| 22 | Feb 28 |      | Midterm evaluations  |              |
| 23 | Mar 2  |      |  |              |
| 24 | Mar 4  |      |  |              |
| 25 | Mar 6  |      |  |              |
| 26 | Mar 9  |      |  |              |
| 27 | Mar 11 |      | <b>Quiz 4.</b>   |              |
| 28 | Mar 13 |      | Last day to drop without a final grade.  |              |



|    | Date      | LT # | Lecture Topic                                      | Reading |
|----|-----------|------|--|---------|
|    | Mar 16-20 |      | Spring Break!                                      |         |
| 29 | Mar 23    |      |  |         |
| 30 | Mar 25    |      | <b>Exam 2</b>                                      |         |
| 31 | Mar 27    |      |  |         |
| 32 | Mar 30    |      |  |         |
| 33 | Apr 1     |      |  |         |
| 34 | Apr 3     |      | <i>FIN due</i>                                     |         |
| 35 | Apr 6     |      |  |         |
| 36 | Apr 8     |      | <b>Quiz 5</b>                                      |         |
| 37 | Apr 10    |      |  |         |
| 38 | Apr 13    |      |  |         |
| 39 | Apr 15    |      | <i>Packback stops.</i>                             |         |
| 40 | Apr 17    |      |  |         |
| 41 | Apr 20    |      | <b>Quiz 6</b>                                      |         |
| 42 | Apr 22    |      | <i>CT2 Post-test deadline</i>                      |         |
| 43 | Apr 24    |      |  |         |
| 44 | Apr 27    |      | <b>Exam 3/Final 8–10:30am in regular classroom</b> |         |



Interested in learning more about fungi?  
 SCUMS is a local group with monthly speakers and forays.  
 Go to [SCUMSonline.com](http://SCUMSonline.com) for more information.