

## Fungi in the Environment

11:776:400 (3 credits)

Fall Semester (yearly)

### CONTACT INFORMATION

Instructor: Dr. James White  
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Office Hours: by e-mail appointment

### COURSE DESCRIPTION

This course provides an introduction to the fungal kingdom through fungal taxonomy and ecological function through lecture, a limited number of laboratory sections, and an individual fungal collection. The role of fungi in ecosystem processes and interactions with humans as food, diseases, medicinal products, and environmental pollution are emphasized. All students are involved in a group project to investigate an area of mycology that is of interest to them.

### COURSE WEBSITE, RESOURCES AND MATERIALS

- Course website: Sakai
- Required texts:
  - Hudler GW. 2000. *Magical Mushrooms, Mischievous Molds*. Princeton University Press
  - Kendrick B. 2001. *The Fifth Kingdom*, 3<sup>rd</sup>. Focus

### PREREQUISITE

01:119:115 General Biology OR 01:119:103 Principles of Biology

### COURSE LEARNING GOALS

(Link to Plant Biology Undergraduate Program Goals: <http://plantbiology.rutgers.edu/undergrad/plantbiology/>)

By the end of this course, the student will be able to:

1. Demonstrate a basic knowledge of fungal taxonomy (addresses program goal 1)
2. Demonstrate a basic knowledge of the functional diversity of fungi (addresses program goals 1 and 2)
3. To link the diversity of fungal functionality to ecosystem processes (addresses program goal 2)
4. To link fungal diversity to medicine, diseases, industrial processes, food production, and environmental pollution (addresses program goal 2)

5. To improve the capacity to communicate in oral and written forms (addresses program goal 3)

## ASSIGNMENTS/RESPONSIBILITIES AND ASSESSMENT

### Grading (390 points)

- Group project oral report 20 points
- Group project written report 50 points
- In-class exams (3 at 100 points each) 300 points
- Fungal collection (20 specimens at 1 point each) 20 points

Grades will be classified based on Rutgers approved system: A, B+, B, C+, C, D, and F (10-point scale).

### Learning goals assessment:

- Quizzes to assess understanding of course material (course learning goals 1 to 4)
- Written exams to understand the linkages between elements learned in each class (course learning goals 3 and 4)
- A fungal collection with putative identification to understand fungal taxonomy (course learning goal 1)
- A research project to collaborate with others in a group to investigate in detail an aspect of mycology and hypothesis generation (course learning goal 5)

The percentage score on these assessments will determine the level of mastery: >90% outstanding; 80-89% good; 70-79% satisfactory; <69% unsatisfactory.

## PARTICIPATION GRADE AND ABSENCE POLICY

Students are expected to attend all classes. Students who expect to miss one or two classes may use the University absence reporting website (<https://sims.rutgers.edu/ssra/>) to indicate the date and reason for the absence. An e-mail is automatically sent to the instructor.

## COURSE SCHEDULE

Lecture	Topic
1	Introduction-background and context (White; Hudler chapter 1)
2	Fungal structure and properties (White)
3	Ecosystems and fungi (Dighton)
4	Non-fungi: Oomycetes, Chytrids, and slime molds (White; Kendrick chapter 1)
5	Fungi and primary productivity: soil formation processes (Dighton; Hudler chap. 12)
6	Lab-making media, culturing fungi, isolation from soil (Bergen/White)
7	Fungi and primary productivity – mycorrhizae (Dighton; Hudler chap. 14)
8	Lab-use of microscopes and identification of microscopic soil fungi (Bergen/White; Hudler chap.1; Kendrick chap. 1)
9	Fungi and primary productivity – mycorrhizae Lab (Dighton)
	<b>Exam 1 (100 pts)</b>
10	Plant pathogenic fungi (Dighton)
11	Fungi as food (Dighton)
12	Ascomycete identification: structures and literature (White; Kendrick chap. 4)
13	Fungi in the built environment (Dighton)

**Lecture Topic**

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14	Medical mycology (Dighton)
15	Mushrooms (White; Kendrick chap. 5)
16	Begin group projects
17	Rusts, smuts, and jelly fungi (White; Kendrick chap. 5)
18	Industrial mycology (Dighton)
	<b>Exam 2 (100 pts)</b>
19	Endophytes and other symbiotic fungi (White; Kendrick chapters 16 and 17)
20	Fungi and human cultures (White)
21	Meet your Thursday class
	<b>Thanksgiving (no class)</b>
22	Fungi and pollution (Dighton)
23	Class group oral presentations
24	Class group oral presentations
25	Class group oral presentations

**Final exam (date to be determined)**

**Collections due**

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**FINAL EXAM/PAPER DATE AND TIME**

The final exam (100 points) is comprehensive and includes material from group oral presentations.

The Online Final exam Schedule: <http://finalexams.rutgers.edu/>

**ACCOMODATIONS FOR STUDENTS WITH DISABILITIES**

Please follow the procedures outlined at <https://ods.rutgers.edu/students/registration-form>. Full policies and procedures are at <https://ods.rutgers.edu/>

**ACADEMIC INTEGRITY**

The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu>

The principles of academic integrity require that a student:

- Properly acknowledge and cite all use of the ideas, results, or words of others.
- Properly acknowledge all contributors to a given piece of work.
- Make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- Obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- Treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- Uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that:

- Everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.

- All student work is fairly evaluated and no student has an inappropriate advantage over others.
- The academic and ethical development of all students is fostered.
- The reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

## STUDENT WELLNESS SERVICES

**Just In Case Web App** <http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

**Counseling, ADAP & Psychiatric Services (CAPS)**

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901 / [www.rhscaps.rutgers.edu/](http://www.rhscaps.rutgers.edu/)

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

**Violence Prevention & Victim Assistance (VPVA)**

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / [www.vpva.rutgers.edu/](http://www.vpva.rutgers.edu/)

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

**Disability Services**

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

**Scarlet Listeners**

(732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.