

# Introduction to Fungal Biology - PIPa 5203

## Syllabus

Spring semester 2015

3 credits

Lectures: Tuesday and Thursday from 8:30 a.m. - 9:20 a.m.

Room: 491 Borlaug Hall

Laboratory: Monday from 9:35 a.m. – 11:30 a.m.

Room: 296 Borlaug Hall

Lecture Instructor/Coordinator: Dr. Brett Arenz @ aren0058@umn.edu

Office location: 105A Stakman

Office hours: Tuesday 9:30-11am or by arrangement

Laboratory Instructor/Coordinator: Todd Burnes @ burne002@umn.edu

Course prerequisites: Biology 1009 or equivalent

### Course description

Fungi are a critical component of the diversity and function of terrestrial ecosystems. They regulate decomposition rates, facilitate plant nutrient uptake and have a profound impact on agriculture, economics and human affairs. The goal of this course is to provide an introduction to the key components of fungal biology, including ecology, physiology, genetics and diversity. The course will cover major groups of fungi and their key morphological features and lifecycles. Laboratories are intended to give hands-on experience with the diverse range of fungal organisms covered in lectures.

### Required text and laboratory manual

The text book assigned for this course is *Introduction to Fungi* 3<sup>rd</sup> Edition, John Webster & Roland W.S. Weber, Cambridge Press, 2007. Cambridge University Press. The Edinburgh Building Cambridge CB2 2RU, UK. 841p. A laboratory manual is also required for this course and is available for purchase at the St. Paul UMN Bookstore.

### Student outcomes for this course

Students that complete this course will have knowledge of the “True” Fungi as well as the simply “fungal-like” organisms and the important roles they play in plant and animal communities and their biology, modes of dissemination and survival in the environment.

Students will also gain skills working with selected fungal organisms during the laboratory section of the course.

#### Course Objectives

1. To give the student an overview of the taxonomy and biology of fungi
2. Review the phylogenetic relationships between phyla
3. To observe the morphological characteristics among classes of fungi
4. Provide demonstrations and exercises during laboratory to gain experience working with fungi by using the microscope to help identify fungal species and learn techniques for isolating and storing fungi.
5. Discuss the essential role fungi play in the ecosystem and in human affairs

## Schedule for lecture and reading assignments

Date	Lecture	Topic: New Name from Tree of Life Project tolweb.org, (followed by old name from textbook in parenthesis)	Instructor (if other than Arenz)	Assigned readings from text "Introduction to Fungi"
Tuesday; January 20	1	Introduction to Class		
Thursday; January 22	2	Mycology 101		Chapter 1
Tuesday; January 27	3	Basids 1: Agaricomycetes 1 (Homobasidiomycetes)		Chapter 18, 19
Thursday; January 29	4	Basids 2: Agaricomycetes 2 (Heterobasidiomycetes)		Chapter 20, 21
Tuesday; February 3	5	Basids 3: Pucciniomycotina (Urediniomycetes)		Chapter 22
Thursday; February 5	6	Basids 4: Ustilaginomycotina (Ustilaginomycetes)		Chapter 23
Tuesday; February 10	7	<b>Exam 1: Basidiomycota</b>		
Thursday; February 12	8	Ascos 1: Taphrinomycotina (Archiascomycetes) & Saccharomycetes (Hemiascomycetes)		Chapter 8,9,10
Tuesday; February 17	9	Ascos 2: Eurotiomycetes (Plectomycetes)		Chapter 11
Thursday; February 19	10	Ascos 3: Sordariomycetes (Pyrenomycetes)		Chapter 12
Tuesday; February 24	11	Ascos 4: Pezizomycetes (Pezizales)	Kielsmeier-Cook	Chapter 14
Thursday; February 26	12	Ascos 5: Leotiomycetes (Erysiphales & Helotiales)		Chapter 13, 15
Tuesday; March 3	13	Ascos 6: Dothidiomycetes (Loculoascomycetes)		Chapter 17
Thursday; March 5	14	Zygos 1: Mucoromycotina		Chapter 7
Tuesday; March 10	15	<b>Exam II: Ascomycota</b>		
Thursday; March 12	16	Zygo 2: Entomophthoromycotina & Glomeromycota		
Tuesday, March 17	Spring Break	(No Class)		
Thursday, March 19	Spring Break	(No Class)		
Tuesday; March 24	17	Chytrids 1: Blastocladiomycota (Blastocladales)		Chapter 6
Thursday; March 26	18	Chytrids 2: Chytridiomycota (Chytridiales)		
Tuesday; March 31	19	Oomycota 1: Saprolegniales		Chapter 4, 5
Thursday; April 2	20	Oomycota 2: Pythiales		
Tuesday; April 7	21	Myxogastria (Myxomycota) & Cercozoa (Plasmodiophoromycota)		Chapter 2, 3
Thursday; April 9	22	Fungi as Insect Pathogens	Bushley	TBA
Tuesday; April 14	23	Mycorrhizae	Kennedy	TBA
Thursday; April 16	24	Fungal Communities	Kennedy	TBA
Tuesday; April 21	25	Industrial Fungi	Schilling	TBA
Thursday; April 23	26	Lichens		Chapter 16
Tuesday; April 28	27	Fungi as Food	Silver-Ramp	TBA
Thursday; April 30	28	Fungal Anthropology	Blanchette	TBA
Tuesday; May 5	29	Student presentations		
Thursday; May 7	30	Review/Student Presentations		

The final exam is scheduled for Tuesday, May 12 from 8:00 am – 10:00 am.

## Schedule of laboratory and topic covered

Date	Laboratory	Topics
January 26th	1	Introduction to fungi and laboratory techniques
February 2nd	2	<b>Basidiomycota I:</b> Agaricomycotina (Jelly Fungi and Mushrooms)
February 9th	3	<b>Basidiomycota II:</b> Pucciniomycotina (Rusts) Ustilaginomycotina (Smuts)
February 16th	4	<b>Ascomycota I</b>
February 23rd	5	<b>Ascomycota II</b>
March 2nd	6	<b>Ascomycota III</b>
March 9th	7	<b>Ascomycota IV</b>
<i>March 16th</i>	No Lab!	<i>Spring Break!!!</i>
March 23rd	8	<b>Zygomycota &amp; Glomeromycota</b>
March 30th	9	<b>Chytridiomycota &amp; Blastocladiomycota</b>
April 6th	10	<b>Oomycota</b>
April 13th	11	<b>"Slime Molds"</b>
April 20th	12	Mycorrhizae
April 27th	13	Lichens and Fungal Garden trip
May 4th	14	Field Foray

Note: The schedule may be modified during the semester. You will be notified in lecture and or by e-mail of any substantial changes to the schedule above.

### Student expectations for this course

Students are expected to attend each lecture and laboratory period during the semester and be prepared by reading all the assignments before class. The laboratory section will involve hands-on exercises and display material that will need to be completed each week so it is essential that the student read the laboratory manual before each class. No make-up laboratory times will be offered because of the time it takes to set-up a laboratory, scheduling of the room and the sensitive nature of the material presented in the laboratory section each week. Please contact the instructor as soon as possible if you need to miss a laboratory class period.

### Student assessment

Midterm I: 15%

Midterm II: 15%

Final Exam: 25%

Assignments/Activities 7.5%

Student Project: 12.5%

Laboratory: 25%

Midterms I and II

The two lecture exams will include the material covered in class since the time of the previous exam and will include short answer and multiple choice questions from lecture AND laboratory material.

Final Exam

**The final exam is scheduled for Tuesday, May 16 from 8:00 am – 10:00 am.**

The final exam will be comprehensive and include questions from both lecture and laboratory material.

Laboratory worksheets

A worksheet will need to be completed for each laboratory session and handed in the same day at the end of the class period by 11:30 a.m. These worksheets will be evaluated, graded and handed back to you in the next laboratory period. If you miss a laboratory you will not get credit for the worksheet. Missing three or more laboratory sessions will result in a failing grade.

Assignments/Activities

Throughout the semester there will be approximately 10 in-class activities or short assignments that will be described on the day they are conducted. Credit will be given for adequately completing the activity or assignment.

Student Project

This is an individual project involving the identification of an unknown fungal culture that we provide to you in lab. After making and confirming the identification with one of the instructors, students will be expected to write a descriptive paper on the fungal species and make a short in-class presentation at the end of the semester. More specific instructions and a grading rubric will be supplied separately.

Attendance

Your attendance in lecture will not be recorded but the periodic short in-class assignments/activities that will not be announced in advance. So missing class will impact your grade if you miss an assignment. If you that you will be absent for legitimate (University-approved) reasons please let me know beforehand. It is much easier to excuse your absence beforehand than after the fact.

## Academic Dishonesty

Academic dishonesty in any portion of the academic work for this course shall be grounds for awarding a grade of F (represents failure).

## Personal Electronics

Please do not use any cell phones or texting devices in a way that is disruptive to your classmates during lecture or laboratory periods.

## Grading

*Letter grades will be calculated by the following formula;*

A = achievement that is outstanding relative the level necessary to meet course requirements.

B = achievement that is significantly above the level necessary to meet course requirements.

C = achievement that meets the course requirements in every respect.

D = achievement that meets the course requirements in every respect.

F = represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not complete and there was no agreement between the instructor and the student would be awarded an Incomplete (I).

I = (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances, e. g., hospitalization, a student is prevented from completing the work of the course on time. This grade requires a written agreement between instructor and the student.

Total Percentage of points	Letter grade
93.00 -100	A
90.00-92.99	A-
87.00-89.99	B+
83.00-86.99	B
80.00-82.99	B-
77.00-79.99	C+
73.00-76.99	C
70.00-72.99	C-
65.00-69.99	D+
60.00-64.99	D
59.99 and below	F

## Exam Policy

Students are expected to take exams at the times scheduled in the syllabus and or arranged by the instructor and the final exam at the time shown in the University of Minnesota calendar. Possible exceptions include serious illness, family emergencies or a legitimate conflict with recognized University activities. If you are unable to take an exam at the scheduled time please contact the instructor as soon as possible to make other arrangements.

*If you miss an exam;*

Contact your instructor immediately. Students missing exams for valid (e.g., medical/bereavement) reasons must notify the instructor in advance, where possible and provide documentation if requested. If a student is able to sit the exam within 48 hours of the original exam time they may arrange to do so without penalty. If a student is unable to sit an exam within 48 hours of the original exam time they will have their final exam weighted proportionally more. Students who miss an exam for a non-valid reason may request to take the exam within 48 hours of the original exam time, although they will have a 20% penalty deducted from their score. If a student is unable to sit an exam within 48 hours of the original exam time they will be assigned a score of zero for the exam.

*If you are unable to take the final exam;*

If a student is unable to take the final examination at the scheduled time for medical or other adverse reason, she or he can and should apply for a special examination. Applications made on medical grounds should be accompanied by a medical certificate; those on the other grounds must be supported by a personal declaration stating the facts on which the application relies. Also, if you have a conflicting final exam time or three final exams within 16 hour period, you may request a time adjustment by contacting your college office and the instructors. Students should contact their instructor at least 1 week prior to the scheduled exam time to request consideration for a special examination.

### Grading Disputes

Students who feel an assignment or exam questions have been graded incorrectly should submit a written explanation within one week of having the assignment or exam returned. If the disputed graded is a matter of opinion, the work will be given to two others (instructors, laboratory coordinator or TA'S) for re-grading. Their decision will be final. Errors due to miscalculation will be corrected immediately. The student Resolution Center is also available to help resolve grade conflicts.

### Students with disabilities

The Department of Plant Pathology is committed to providing all students equal access to learning opportunities. If you need different accommodations that what is provided please let the instructor know as soon as possible. We are happy to work with you to provide reasonable accommodations. If you need further information contact Disabilities Services (McNamara Alumni Center, 200 Oak Street SE, Suite 180, Minneapolis Campus at 612-262-1333). Students registered with Disability Services, who have a letter requesting accommodations, are encouraged to contact the instructor early in the semester. Students who have, or think they may have, a disability, are invited to contact Disability Services for a confidential discussion at 612-626-1333 (V/TTY) or [ds@umn.edu](mailto:ds@umn.edu). Additional information is available at the Disabilities Services website <http://ds.umn.edu>.