Introductory Mycology
BIOL 3663

Instructor: Dr. Allison Walker (she/her)
Office: BIO 435
Office hours: Wed 1-3pm
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Lecture: M/W/F HSH 147 11:30AM-12:20PM
Lab: Fridays BIO 230 1-3:50PM

Evaluation	Percentage	Date
3 In-Class Tests	3 x 20% = 60%	Sept 23, Oct 30, Nov 29
Identified Specimen Collection	20	Dec 4
MycoArt	5	Dec 4
Specimen Presentation	5	Nov 22 and Nov 29 (in Fri lab period, 12 students will present on each date)
Journal Club Participation	10	Assessed throughout semester, includes presentation of one paper with partner and leading class discusion

Part 1: Course Information

Course Description

An introduction to the fascinating Kingdom Fungi, including biology, taxonomy, ecology and identification of fungi, with an emphasis on field collection and documenting fungal diversity. Topics include edible, toxic and medicinal fungi, plant-fungal and fungal-animal interactions, fungal genetics & secondary metabolites, marine fungi and industrial, medical, veterinary, forestry and agricultural applications of the study of fungi.
Journal Club: Students will lead presentations and discussions of relevant journal articles in class. Students can suggest papers relevant to any aspect of mycology for approval. Papers will be posted to Moodle; all students will be expected to read and be ready to discuss each paper.

Prerequisites: BIOL 2013, BIOL 2043, BIOL 2053 each with minimum grades of C-, or permission of Instructor

Course Materials & Requirements

- Recommended text: **The Fifth Kingdom, 3rd ed. (Bryce Kendrick).** 2001. ISBN-10: 1585100226. (**or 4th edition**, 2017). Our lectures will follow the content of this book quite closely. Used and new editions should be available at the Acadia Bookstore. Scientific papers will be available as pdfs to supplement text material.
- Recommended lab text: **Mushrooms of the Northeastern United States and Eastern Canada (**Timber Press Field Guide) by Timothy J. Baroni (2017) ISBN-10: 1604696346 is really helpful for identifying fungi in our region and is in stock at the Acadia Bookstore **OR** George Barron's **Mushrooms of Ontario and Eastern Canada** 1999. Lone Pine Publishing. ISBN-10: 1551051990 is also good but currently out of print; used copies may be available online or at the Acadia bookstore. New version (2016) also good and may be available here: http://www.barnesandnoble.com/w/mushrooms-of-northeast-north-america-george-barron/1100004094 Other resources such as websites and handouts will be available for fungal identification.
- Access to course lecture and lab Moodle pages
- Access to course LIBGUIDE http://libguides.acadiau.ca/biol3663
- Laptop

- Lab coat
- Lab notebook

Course Structure

Lecture material will be presented in 50 min lecture slots.
Lectures will take place in HSH 147 @ 11:30AM-12:20PM on M,W,F's: check MOODLE for lecture schedule.
Labs will meet in BIO230 on Fridays from 1PM-3:50PM.

****Labs will begin Fri Sept 13, 2024****

Student Learning Outcomes

· Understand field collection and identification techniques for a broad range of fungi
· Understand fungal culturing and microscopy
· Understand NCBI BLAST search of DNA sequences to aid in species identification
· Understand current mycological literature on a broad range of topics

How to Meet the Learning Outcomes

· Attend lectures and lab sessions, take notes, and ask for clarification when something is unclear
· Presenting a paper in journal club and leading class discussion; participating in your peers' journal club discussions
· Completing a fungal specimen identification project

Part 2: Topic Outline/Schedule

Lecture (Topics by week):

Sept 4 Introduction to course and weekly student journal club
Sept 9 Basidiomycetes, edible, poisonous & hallucinogenic fungi
Sept 16 Ascomycetes
Sept 23 Spore dispersal, food spoilage & lichens
Note no classes Mon Sept 30 (National Day for Truth and Reconciliation)
Oct 2 Fungi in fermentation
Oct 7 Medical and veterinary mycology, Chytrid fungi
Note Thanksgiving & Fall Break Oct 14-18
Oct 21 Mycorrhizae, 'Zygomycetes'
Oct 28 Journals Clubs
Nov 4 Fungal Ecology, fungus-like protists
Note no classes Mon Nov 11 (Remembrance Day)
Nov 13 Aquatic Fungi, Fungi in extreme environments
Nov 18 Plant pathogenic fungi
Nov 25 Fungi and animals
Dec 2 Fungi in bio-control, Mycoremediation

The instructor reserves the right to amend the above course plan with reasonable notice, and in consultation with the class. Journal club presentation schedule and lab schedule will be posted to Moodle.

Part 3: Assessment and Grading

Assessment will be a combination of three in-class tests worth 20% each; an identified specimen collection (20%), a presentation of specimen collection (5%), participation in journal club (10%), and a MycoArt project (5%).

Part 4: Course Policies

In this course, students are expected to submit work that reflects their own ideas and engagement with the course materials as well as their writing ability. Engaging with the work of others is an important part of academic writing. All ideas borrowed from other sources must be carefully cited.

Students may not use generative AI, such as Chat GPT to help them complete assignments.When an assignment is suspected of having been completed with the aid of one of these programs, the procedure for investigating academic integrity infractions will be followed (pages 40-41 of Acadia's Academic Calendar at https://registrar.acadiau.ca/AcademicCalendars.html).

The use of generative AI or paraphrasing software **without citation** counts as a form of plagiarism. In this course, the use of generative AI or paraphrasing software constitutes cheating.

Students are expected to attend all class sessions.
Studies have shown that students who take notes by hand (rather than typing on a computer) perform significantly better in their ability to retain information. While you are permitted to use laptops or tablets to take notes in lecture, please limit their use to classroom material only. Using them for other purposes (i.e. social media) will negatively impact your ability to learn, and it is distracting to myself and others. Please don't do it.
A missed test requires a doctor's note. **Makeup tests will not be given, rather the final test (Test #3) will then be worth 40% of the final grade.**

Participation in labs is mandatory. Please bring your lab coat, lab notebook and laptop to the labs.
Failure to hand in lab assignments (collections, MycoArt) without submission of a Declaration of Cause form to the Registrar, will result in marks of zero for those assignments.
All assignments must be submitted directly to Dr. Walker (Allison.Walker@acadiau.ca) and are due by 5pm on the day specified. Late assignments will have 5% per day deducted from the grade.

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: https://registrar.acadiau.ca/welcometotheregistrarsoffice.html

Equity, Diversity and Inclusion

Acadia University is committed to becoming a culturally safe and anti-oppressive community. This can only be achieved where there are simultaneous efforts to eliminate all forms of discrimination and harassment from our campus community, including the elimination of all discrimination, harassment and violence based on one's identity, including but not limited to, gender, race, class, ethnicity, sexual orientation, disability, gender identity, gender expression, and Indigeneity. The policy against harassment and discrimination, and resources for students who believe they may have experienced, or witnessed, discrimination or harassment, are available here: https://www2.acadiau.ca/student-life/equity-judicial/equity.html

Acadia's Human Rights and Equity Office is responsible for the management and implementation of Acadia's Policy Against Harassment and Discrimination. This Policy is underpinned by a commitment to deconstructing the problematic structures of systemic racism and discrimination within the University Community. Acadia upholds a commitment to fostering a culture within the University Community that is welcoming and reflective of the diverse individuals that comprise this community and to fostering cultural safety, anti-oppression and anti-racism within the University Community, making it our goal to achieve a culture where our diversity is our strength. For more information, please contact the Human Rights and Equity Office at equity@acadiau.ca

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here: https://registrar.acadiau.ca/AcademicCalendars.html

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully participate in class should contact Accessible Learning Services directly as soon as possible. https://www2.acadiau.ca/student-life/accessiblelearning.html

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: https://registrar.acadiau.ca/AcademicCalendars.html

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: http://libguides.acadiau.ca/c.php?g=433650&p=5027078

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, and tests) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g., guest speakers, other students) who may be captured in such recordings. In the case of personal use by students with disabilities, the instructor's consent shall not be unreasonably withheld.

Part 6: Program Learning Outcomes

Foundations of knowledge		**Course specific examples**	**Proficiency** 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	How to read primary mycological literature broadly and deeply to improve scientific communication	3
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	Historical overview of mycologists who have made major contributions to the discipline	2
Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems	Learning to identify the fungal biodiversity of Nova Scotia, learning fungal ecology with a focus on coastal, agricultural and forest habitats	3
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	Evolutionary genetics of fungi	3
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	Role of fungi in human and environmental health	3
Lab and field skills			
Experimental design	Gain experience in applying the scientific method	How to conduct fungal biodiversity surveys	2

Safety	Work safely and productively in lab and field settings	Learn how to collect fungi safely and work with fungi and chemicals in the lab for identification	2
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry	Learn a variety of lab techniques used to culture, observe and identify fungi	3
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change	Field collection of fungi including lichens, citizen science (iNaturalist)	3
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	How to interpret and communicate statistical results in scientific writing	2
Statistical analysis	Use R and or other programs to analyze biological data		
Professional skills			
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity and understand the principles of EDI in science	Learn the importance of underrepresentation in mycology, critique primary literature for ethical data collection and publication, how to spot predatory journals	3
Collaboration and group work	Work effectively in groups within and across disciplines	Labwork and journal clubs will be done in pairs	3
Critical thinking	Analyze and evaluate information to make science-based decisions	Learning to critique primary mycological literature and websites	3
Computer proficiency	Use common and discipline- specific software	iNaturalist, DNA databases, PowerPoint	2
Scientific communication	Communicate science effectively to both scientific and general audiences	Communicating mycology through art, communicating biodiversity knowledge to citizen scientists	3