BIO 3218G Course Outline

1. Course Information

Course Information

BIO 3218G "Winter 2024" (Jan-Apr 2025)

Lectures: Tuesday & Thursday 11:30 am -12:20 pm

Labs: alternating Wednesdays 2:30-5:30 pm

Tutorials: alternating Wednesdays 2:30-5:30 pm

Pre-Requisites: At least 1.0 course in Biology at the 2200 level or higher.
Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Extra Information: 2 lecture hours, 3 laboratory/tutorial hours, 0.5 course. **This is a lab and essay course – you must pass both those components to receive credit for the course.**

Required:

Stable internet connection

Laptop or computer

Working microphone

Lab coat and safety glasses for in-person labs

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Greg Thorn	rgthorn@uwo.ca	3047 BGS	X88647	By appointment
Tutorial TA Bruce Malloch	bmalloch@uwo.ca	N/A	N/A	By appointment
Tutorial TA Natalie Tateishi	ntateish@uwo.ca	N/A	N/A	By appointment
Lab TA Ada Jarosch	ajarosch@uwo.ca	N/A	N/A	By appointment

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please

include Bio 3218G in the subject line. Responses can normally be expected within 48 hours.

3. Course Syllabus, Schedule, Delivery Mode

Synopsis: This course provides an introduction to the fungi with emphasis on their biology, ecology, genetics and interactions with other organisms, including humans and their crops. Emphasis is on the true fungi, including yeasts, with brief treatment of other fungus-like microbes of the Kingdoms Chromista and Amoebozoa.

Description:

The biological world can be divided up into producers (e.g., plants), consumers (e.g., animals) and decomposers (e.g., fungi). While this is very much an oversimplification it does convey a sense of the importance of fungi. Fungi are extremely important in many ways - think of food (bread, wine, cheese), magnificent forests (trees and many other plants need fungi to survive), of drugs such as penicillin or cyclosporine, of diseases of plants such as blights, mildews, rusts and smuts or diseases of animals such as ringworm, athlete's foot, thrush, and deadly systemic mycoses. Then remember all those hidden species so busily decomposing dead material. In this course we will be emphasizing not just the different types of fungi but exploring their impact on humans and the ecology of the world we live in.

Learning Outcomes:

At the end of this course, successful students will be able to:

1. Describe and differentiate the major groups of fungi and fungus-like organisms by recognizing, describing, and illustrating their characteristic features and life cycles.
2. Describe the major ecological roles and economic value, including industrial uses, of different fungi and fungus-like organisms.
3. Describe and differentiate various types of symbioses between fungi and other organisms, including plants, microbes, animals, and other fungi, and explain their ecological and economic importance.
4. Perform culturing and microscopy to detect, enumerate and identify fungi, including fungal spores in building air and fungi on/in plants or plant products.

Objectives

Become familiar with: the major kinds of fungi and fungus-like organisms, their names, their features, and their importance; how fungi live - their basic biology, physiology, and genetics; some of the most important activities of fungi in nature - symbioses (good & bad) with plants and animals, including mycorrhizae, lichens, plant diseases, human & animal diseases, plus decomposition & nutrient cycling; and some of the most important activities of fungi in industry and commerce - fermentations, production of enzymes and antibiotics, food production (and spoilage), biological control (or warfare?).

Course Calendar [Note: We may not stay on schedule!]

LECTURES (all lectures):

Week	Dates	Subject material
1	Jan 7/9	Lectures 1-2, Logistics, Introduction [Classes begin Jan 6]
2	Jan 14/16	Lectures 3-4, "Basal Fungi"
3	Jan 21/23	Lectures 5-6, "Zygomycota", Glomeromycota, Mycorrhizae
4	Jan 28/30	Lectures 7-8, Ascomycota, moulds and yeasts
5	Feb 4/6	Lectures 9-10, Medically important fungi and Lichens
6	Feb 11/**13**	Catch-up/review **/ Midterm [in class time:]**
X	Feb 18/20	**No Classes: Reading Week**
7	Feb 25/27	Lectures 11-12, Basidiomycota [Makeup midterm 6:00 pm 26 Feb]
8	Mar 4/6	Lectures 13-14, Mushroom poisoning, fungal ecology
9	Mar 11/13	Lectures 15-16, Fungal ecology II, dispersal
10	Mar 18/20	Lectures 17-18, Fungal physiology
11	Mar 25/27	Lectures 19-20, Plant pathology (Intro to 4218)
12	Apr 1/3	Finishing up / Review, **[Classes end Apr 4]**
	Exam period (TBA): Final exam (3 hours; 30%)	

Labs & Tutorials:

Date	Section 002	Section 003
Jan 8	OFF - no labs	Tutorial 1 –
Jan 15	Tutorial 1 –	OFF - no labs
Jan 22	Lab 1 –	Tutorial 2 –
Jan 29	Tutorial 2 –	Lab 1 –
Feb 5	Lab 2 –	Tutorial 3 –
Feb 12	Tutorial 3 –	Lab 2 –
Feb 19	**Reading Week – No Labs or Tutorials**	
Feb 26	Lab 3 –	Tutorial 4 –
Mar 5	Tutorial 4 –	Lab 3 –
Mar 12	Lab 4 –	Tutorial 5 –
Mar 19	Tutorial 5 –	Lab 4 –
Mar 26	Lab 5 –	Tutorial 6 –
Apr 2	Tutorial 6 **–**	Lab 5 –

Attendance at laboratories and tutorials is required.

Format of the Course

The course consists of lectures, laboratory exercises, and tutorials. Lectures will be illustrated using Powerpoint and these lecture outlines will be available to you on this course Web site. There will be two exams: one midterm and one in the final exam period. Laboratories will involve both observation of and experimentation with fungi as well as demonstration material and will require you to write brief lab notes in a permanent lab book, which will be graded at midterm and end of term.

During the term you will be expected to research an assigned fungus species, give a 10-12 min seminar on 'your' fungus, and submit a "Fungus Profile" essay of 2500-3000 words (see below for details). Tutorials will feature student seminars and discussion. Students will be expected to attend and ask sensible questions during seminars given by others. Lack of participation in tutorials may mean marks will be deducted from your seminar grade.

TEST FORMAT: Mid-term and Final Exams will have a mixture of multiple-choice questions, fill-in-

the-blank and short to 1-2 paragraph written questions (the final will have more of the latter, and longer).

4. Course Materials

Lab Manual: Thorn, R.G. 2025. Bio3218G Lab Manual **(required; supplied weekly on OWL)**

A Useful Text (<u>not required</u>; some chapters, provided on OWL, will be Required Readings):

1. Petersen, J.H. 2013. The Kingdom of Fungi. Princeton U Press.

All course material will be posted to OWL: https://westernu.brightspace.com/
Students are responsible for checking the course OWL site (https://westernu.brightspace.com/) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class. If students need assistance with the course OWL site, they can seek support on the OWL Brightspace Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

Fungus Profile Essay 20% [Due Mar 28 11:59 pm]
Fungus Profile Seminar 20% [When scheduled; first seminars Jan 22 / 29]
Lab Books 20% [Submitted through OWL on the Friday after each lab]
Midterm Exam 15% (50 minutes, in class) Thursday Feb 13 [Make-up Feb 26, 6:00-6:50 pm]
Final Exam 25% (3 hours, semi-cumulative, TBA)

This is a lab and essay course – you must pass <u>both</u> those components to receive credit for the course. If you miss one or both of these requirements because of illness or excused absence, you will be able to receive a grade of "INC" (incomplete) (available only by appeal to your dean's advisors) and complete them the next time the course is offered (probably Jan-Apr 2026).

Statement on Use of Electronic Devices: **No electronic devices** will be allowed during tests and examinations; ScanEX and remote proctoring will **<u>not</u>** be used in this course.

Fungus Profile Essay

Your essay assignment (worth 20%) is to research and write a brief report on your assigned fungus - concentrating as appropriate on: a) its classification, b) its biology and lifecycle including formation and type of sexual and asexual spores, and c) its importance to humans or to ecology, including details of any disease it causes. These three required topic areas are not intended to be equal and do not have to form subheadings. The report should about 10 text pages - double spaced - font size 12 (2500-3000 words not counting references); subheadings are permitted and encouraged if they help with the organization and flow. Illustrations (not counted in the 10 pages) are essential and must be properly referenced. Provide references to all important statements and list these in the References Cited section using the style found in the journal Botany (details provided in Assignments page on OWL). The report should be based primarily on scientific articles published in scientific books or journals. Web based references are NOT acceptable as primary sources (but they may be used assources of illustrations for your tutorial presentation or written essay). Grading is primarily based on content (completeness, accuracy) but style (absence of excessive typos or bad sentence structure) and use of the literature will also be taken into account. IMPORTANT: Make sure that the report is your own work - see note below about plagiarism/academic integrity. Rewrite material you find in your sources <u>in your own words</u>. Quote from a source ONLY if the wording is exceptionally compelling, and make sure it is

clear that it is a quote - use quotation marks and cite the reference. Failure to comply will be treated as an academic offence. These reports must be submitted as follows:

Submit your FINAL copy electronically to Turnitin on our Brightspace Essay site by 11:59 pm Mar 28, 2025. Details on how to do this will be provided on the course website under Fungus Profile Essay. Do NOT submit directly to Turnitin.com. You may submit a draft version to Turnitin on our course website if you wish to check your plagiarism score - but don't leave this to the last minute or you may find it difficult to resubmit your final draft!

** NO printed copy IS REQUIRED **

Note. Penalties will apply to late submissions (Your grade out of 15 is reduced by 1 for each day or part day late after 31 Mar; i.e., any time on 1 Apr = minus 1 point). A grading rubric is posted on the Assignments page of the class website in OWL. Academic Considerations will only be allowed if submitted by Mar 28.

A Note on Academic Integrity from the UWO Senate:

Plagiarism is a serious Scholastic Offence. Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing through citations. Plagiarism is a major academic offence. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Seminar on 'your' fungus (20%)

You will be asked to give a talk of 10-12 minutes about your fungus, with 3-5 minutes for questions - during which you must cover the three areas mentioned above (classification, lifecycle, and importance to humanity/ecology). You should use Powerpoint. Use pictures to explain a lot of material quickly. Try to be clear, well-organized and give some thought to how to make your 'delivery' interesting. You will be graded on content, delivery, quality of visual aids and ability to answer reasonable questions. **A demonstration Fungus Profile seminar will be given in Tutorial #1 (don't miss it!)**. A grading rubric is posted on the Tutorials page of the class website in OWL.

Attendance at Laboratories and Tutorials

Mycology is a laboratory-based science. Approaches to the study of fungi and the skills required to gather information can best be obtained through laboratory exercises. The time you spend in the laboratory is an essential component of the course. Attendance at laboratory sessions is compulsory and will be monitored - a missed lab will be deducted in your lab book grade.

Tutorial participation will be evaluated on attendance, as follows: 5 seminars that "count" – i.e., one free absence (or late) out of 6. Beyond that, arriving late or leaving early = 1 time absent; 1 absence = deduction of 5% of seminar grade = 1% final course grade. Being there is just part of participation: we count on your involvement in tutorials as you listen to other student seminars - i.e. ASK QUESTIONS - GOOD ONES!

Submission of Laboratory Exercises

In past years we have used hard-bound laboratory books with blank pages, available at the bookstore, but going with the times, online submissions will be required. You may take your lab notes and make your drawings on paper (and then scan and submit as a pdf) or make them electronically using a note-taking and graphics software on your iPad or other device. You will submit your "laboratory books" online after each lab. Always bring your lab book or tablet to the laboratory and keep your notes up-to-date – **NO second-hand notes copied from a lab-partner allowed**. 20% of the course is assigned to your lab books.

Grades: Click here for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average*
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

*This implies a class average in the 70s, which is normal for our course.

6. Student Absences

General information about missed coursework

Students must familiarize themselves with the University Policy on Academic Consideration – Undergraduate Students in First Entry Programs posted on the Academic Calendar: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf

This policy does not apply to requests for Academic Consideration submitted for attempted or completed work, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult Accessible Education.

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage: https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests normally must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request without supporting documentation in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Examinations scheduled during official examination periods (Final Exam)
- Your Fungus profile presentation (seminar)

When a student mistakenly submits their one allowed Academic Consideration request without supporting documentation for the assessments listed above or those in the Coursework with Assessment Flexibility section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Missed Midterm: There will be one make-up midterm given at 6:00-6:50 pm on Wednesday February 26. If you also miss this exam due to excused absence, the weight will be added to that of your final exam – and you may be asked to write a special, comprehensive final exam.
Missed Presentation: If you miss the assigned date for your Fungus Profile presentation, please get an excused absence through the Student Absence Portal and contact your instructor rgthorn@uwo.ca as soon as possible. If you know you in advance that will be unable to attend, please email your TAs. You will automatically be assigned the next tutorial date to present in. If your presentation was to be on the last day, you will present in person to the instructor and TAs at an assigned time, avoiding exam conflicts.
Missed essay deadline: If you miss the assigned date for your Fungus Profile essay submission, please get an excused absence through the Student Absence Portal and contact your instructor rgthorn@uwo.ca as soon as possible. Your essay will be due 24 hours after the end of your academic consideration period, because you will have had all semester to write your essay. After this, the regular late penalty of 5% per day applies.
Missed Final Exam: If you miss the Final Exam, please contact the Student Absence Portal as soon as you are able to do so. Your dean's advisors will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam). You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examinations).

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays: https://www.edi.uwo.ca

7. Land acknowledgment

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous peoples (First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society. A number of my graduate students and I have had the privilege of being guided in our search for fungal diversity on unceded

territories and reserves, both local and distant, by members of several Indigenous Nations, and we count them as valued knowledge keepers and colleagues.

8. EDI statement

The pronouns used by:

- The instructor, Dr. Greg Thorn: he/him
- The TAs, Bruce Malloch: he/him; Ada Jarosch and Natalie Tateishi: she/her.

9. Accommodation and Accessibility

Accommodation Policies
Students with disabilities work with Accessible Education (formerly SSD), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf

10. Academic Policies

The website for Registrarial Services is http://www.registrar.uwo.ca

In accordance with policy, https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Professionalism & Privacy:

Western students are expected to follow the Student Code of Conduct. Additionally, the following expectations and professional conduct apply to this course:

☒ Students are expected to follow online etiquette expectations provided on OWL
☒ All course materials created by the instructor(s) are copyrighted and cannotbe sold/shared
☒ Recordings are not permitted (audio or video) without explicit permission
☒ Permitted recordings are not to be distributed
☒ Students will be expected to take an academic integrity pledge before some assessments
☒ All recorded sessions will remain within the course site or unlisted if streamed

11. Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: https://www.uwo.ca/se/digital/

Learning-skills counsellors at the Student Development Centre (http://www.sdc.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mentalhealth) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC: https://westernusc.ca/your-services/

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Advising site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at ssc@uwo.ca.