

BIOD26H3F
Fall 2019
Fungal Biology and Pathogenesis
Course outline

Instructor:

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Objectives of this course.

To provide an overview of the fungal kingdom with emphasis on the unique nature of fungal biology, the diversity of fungi and their role as important players in the ecosystem both beneficial and as pathogens of plants and animals. Students will be provided with an overview of the major beneficial roles as well as important fungal diseases that threaten plant and animal (including human) health. An appreciation of this understudied and under appreciated kingdom is critical from an ecological, agricultural, biotechnological and human health perspective. Within this context the economic implications of plant and animal pathogens to agriculture and the significance to human health will be explored

We will assess and analyze the host/symbiont and host/ pathogen interaction in plants and host/pathogen interaction in animals, We will discuss the role of virulence factors and the types of treatments and prevention available for fungal infection of plants and animals. Throughout the course we will specifically address the clinical implications of fungal diseases in the immunocompromised population, a fast growing group of patients in the hospital and community setting. We will use both lecture and research paper discussions in the lecture section. The tutorial will permit development of translational skills and will be used for student presentations. **Each student is encouraged to ask questions, and participate in class. Often times a question can lead to an interesting discussion for all students.**

There is no text for this course. The lectures come from a number of sources including primary papers, and reviews. However, the textbook used for BIOC17 (or any microbiology or immunology text with a fungal section) will have some good background information. I will post some primary source material from which the lectures are drawn when required

BIOD26 is a **lecture/seminar** based course with a **tutorial** used for activities related to tips on how to research a topic, writing of papers and how to do oral presentations and may include a lecture if necessary given the large class size and the need to provide a minimum of four full weeks for presentations. Once student presentations begin (the last four weeks of class and if necessary tutorial in week 8) the lecture and tutorial time will be used for student presentations. **Attendance at student presentations is mandatory**

**Tutorial dates for presentation and review writing:
first tutorial will be Thursday Sept 12.**

We will hold tutorials on Sept 12, 19, 26 and Oct 3. We may have a tutorial Oct 17 to finalize any outstanding material. Once presentations start likely at the beginning of November tutorials will be used every week. **Attendance at Tutorials is Mandatory.**

Communication

I prefer to meet with you to answer your questions. For this reason I have an **open door policy. The best way to reach me is**, to drop by and see me or come by during my office hours. If I am in my office my door will be open and I will be available for questions related to course work and any other inquires.. If you wish to see me at a specific time (and not just drop by) outside of the office hours then email me a request for an appointment and we can meet then. I will answer emails when I am on campus. I am on campus generally Monday through Friday. If you send me emails on the weekend I will respond no later than the following Monday. **Please use utoronto accounts for email (I will not answer emails from non-U OF T accounts) and please indicate the course in the subject heading.**

- General announcements and any material needed for the course will be posted on Quercus

Formal Office hours:

Wednesday 11:30 to 12:30 pm

Thursday 11 to noon until the first week of October

- -for Oct it will be Tuesday from 2:30 to 3:30 and return to Thursday 11 to noon for November

Accessibility:

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the *AccessAbility* Services Office as soon as possible. I will work with you and *AccessAbility* Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC *AccessAbility* Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca.

Academic integrity/plagiarism

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/codeofstudentconduct.htm>)

(<http://www.utsc.utoronto.ca/vpdean/academic-integrity>)

outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences as outlined by the University Academic integrity office include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

- Using or possessing unauthorized aids.
- Looking at someone else's answers during an exam or test.
- Misrepresenting your identity.

In academic work:

- Falsifying institutional documents or grades.
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see <http://www.utsc.utoronto.ca/aacc/academic-integrity>)

All written assignments will be deposited to turnitin via quercus submission

"Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The

terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site”.

Course schedule:

Two hours of lecture per week and two hours of tutorial (schedule will be posted but for approximate dates see above). Tutorials will start week of Sept 12 see above

Grade breakdown:

For any assignment that can not be handed in on time you must contact me via email the day it is due. There is no acceptance of late assignments. If you are self declaring you must contact Jennifer Campbell within three days the assignment is due with the appropriate paper work (see course site for information). Keep in mind that your short review is due November 28th and the last day to hand in term assignments (with an excused absence) is Dec 3 which is a Registrar set date.

Midterm- In Tutorial Thursday Oct 3 from 9 to 11 am

15%

Format: short/long essay

You must inform me no later than 48 hr after the midterm if you are ill and provide a properly filled out UTSC medical certificate. Makeup exam will be held within a week of the midterm.

Final exam (in final exam period, format as for midterm). Cumulative in concepts and ideas

30%

Format: short/long essay, will include questions on student presentations and any other material discussed in lecture or tutorial. Will be cumulative in application. You may be given data to interpret.

Oral presentation (work in pairs)- fungal biology topic of choice

16%

Includes the presentation in detail of a Research paper from a peer reviewed journal This presentation will require a general introduction, presentation of data, data interpretation, conclusions and future/directions/relevance to the field of research. The paper must not be more than 3 years old. (work in pairs approx 20 min with 5 minutes for questions)

- Students must give an oral presentation. Use of self declaration will not excuse students from giving an oral presentation
- presentation on a topic of your choice as long as it addresses a **topic in fungal biology**. It can be a pathogen interaction or a

symbiotic interaction. It can be from a clinical, molecular ecological or economic perspective

- we will discuss the full specifics in class, but you will be given the latitude to present a topic that is of interest to you.

Short Review:

16%

area of research relating to fungal biology that interests you.

The written review must be based on current research and may address the topic from a molecular, clinical, agricultural, ecological or economic perspective. The topic can be related to the paper you present in your oral presentation

-no more than 7 pages double spaced (does not include references or figures if used)

- a minimum of 15 primary source papers (this does not include published reviews).

-At least 12 publications must be published in the last 3 years

-the final section should be a suggestion of future research based on the review.

(Due date: **Wed Nov 27, 2019 by 11:59 pm posted to Quercus . Failure to submit a readable document will lead to a grade of zero. You should receive a similarity report**

Assignment

7 %.

Research a fungal pathogen of a non-human vertebrate, invertebrate, plant, protist not covered in class and find an article/story **that is in the recent mainstream media from the last two years (2018/ 2019)** (i.e. in the news, electronic, paper or video). **Construct a mini talk of no more than 6 powerpoint slides** (which must tell a story) that provides a layman explanation and post to the course site for all students to read. Do not include your student number on the report. The topic must not be the same as that of your oral presentation or review.

Due date Thursday November 7, 2019 by 11:59 pm to Quercus

Summaries/outlines/one minute write-ups/ clinical thinking group activities/annotated bibliography/concept maps in class and take home assignments (10%: lecture 5%, tutorial 5%)

- take place in both lecture and tutorials
- for lectures you must participate in 80%of the activities to receive full credit (this means you will be allowed one excused/unexcused absence from this lecture participation and still receive full grades. Self declarations will not be accepted for missing more than one lecture participation. Two absences will result in receiving 50% of the grade, Three absences 20%

of the grade. If you miss more than three of the class participations you will not receive a class participation grade.

- One-minute write ups/case studies , concept maps or short written responses to a question posed in class/reflections/discussion of research papers.
- Tutorial will include small assignments, concept maps, abstracts, writing assessments, annotated bibliography and reflection. You must participate appropriately and hand in all requested work to receive a grade for the work. Attendance at tutorials is Mandatory you will be allowed to have one excused absence (using a self declaration) for the tutorials. Any assignments missed during this tutorials can not be made up. If you miss more than two you will lose all grades associated with the tutorial component of this course

If you wish to opt out of **the lecture portion** you may and the percentage will be moved to your final exam. **You cannot opt out of the tutorial work**

Lecture	5%
tutorial	5%

Student presentation attendance: 6%

- participation and attendance is required (to receive the full grade you must participate by asking questions) during the student presentations (which

may include write-ups/reflections. Questions based on concepts from Oral presentations will be part of the final exam.

You may have one excused absence during the 8 to 9 days of oral presentations. Any subsequent absences will result in a loss of grades If you miss three days of presentations you will receive zero.

Bonus grade of 2 % :

post potential short answer question based on student mini talk assignment which could be used in an exam as a short answer . [Posted by Dec 1 by 11:59 pm](#) . a minimum of two of these questions will be used in the final exam

Lecture schedule (lectures will be posted prior to class). Some topics may include student led discussions regarding assigned readings or posted lecture material

I have given topic numbers rather than dates. More than one topic may be covered in one lecture. Most topics will be covered over more than one lecture as the topics are very broad in nature. If I am covering a paper that relates to the topic, the paper will be posted at least four days prior to allow you time to look at the paper.

Topic 1: Introduction/ overview to the fungal Kingdom and characteristics of fungi:

- Diversity of Fungi and fungal-like organisms
- The interrelationship of fungi and other organisms, economic importance

Topic 2: Overview of plant and animal pathogens:

- Host-pathogen interactions
- role of virulence factors:
- biological control

Topic 3: Human pathogens

- Major fungal disease of humans

Topic 4 Treatment of mycoses with emphasis on human infections

- Diagnosis
- Role of immune system
- Clinical implications/resistance

If you have an interest in a particular area you wish to see covered let me know in advance and I will try to incorporate the topic into my lectures