

**BIOD26H**  
**Winter 2016**  
**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, biotechnological and human health perspective. We will assess and analyze the host pathogen interaction in plants and animals, address virulence factors and the types of treatments and prevention available for fungal infections. Throughout the course we will address the clinical implications of human pathogens. We will also address the economic implications of plant and animal pathogens to agriculture. . We will use both lectures and research paper discussions. **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 (Wiley , Prescott or Brock or the custom text from BIOC17 summer 2013/2014) or immunology does have some good background information. I will post some primary source material from which the lectures are drawn.

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 lecture and tutorial time will be used for student presentations. The tutorial will not meet every week.. I/or the TA will post announcements when the tutorials will be used. **The first tutorial will be Wed Jan 13, 2016. There will be four to five tutorials in January through mid-February.** However the last four weeks of classes (both lecture and tutorial times) will be taken up with oral presentations.

**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 inquiries.. 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 blackboard

#### **Formal Office hours:**

Monday from noon to 2 pm

#### **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](mailto: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.governingcouncil.utoronto.ca/policies/behaveac.htm>) 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> )

*"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). Tutorials will start week of Sept 17 (likely 5 tutorials in a row and then we will use the tutorials once presentations start)

**Grade breakdown:**

**Midterm (TBA)** 17%  
Format: short/long essay

**Final exam (in final exam period)** 30%  
Format: short/long essay, will include questions on student presentations and any other material discussed in lecture or tutorial. May be cumulative in application

### **Oral presentation**

**Includes the presentation of Research paper in a peer reviewed journal by each student.** These papers should be in some manner related and you will require a general introduction. The paper must not be more than 3 years old.  
(work in pairs approx 20 min with 5 minutes for questions) 15%

- 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 clinic, 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. It 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 14 primary source papers (this does not include published reviews).

-At least 10 publications must be published in the last 3 years.

-Published Reviews may be used in addition to the 14 primary source papers  
(Due date: **Wed March 23rd 2016 at the beginning of the class or a time posted on blackboard**). It is your responsibility to properly submit to turnitin. Failure to submit a readable document will lead to a grade of zero

### **assignment**

7 %.

Research a topic of general interest **that is in the mainstream media from the last two years** regarding fungi (i.e. in the news, electronic, paper or video). Then go to the literature for support of the media report. **Construct a mini talk of no more than 6 powerpoint slides**(which must tell a story) and post to the course site for students to read.

**Due date Mon Feb 29, 2016 by midnight on blackboard**

### **Summaries/outlines/one minute write-ups/ clinical thinking group activities in class**

- take place in both lecture and tutorials
- for lectures you must participate in 80% to receive full credit One-minute write ups/case studies, concept maps or short written responses to a question posed in class.
- Tutorial will include small assignments, concept maps, abstracts and you must participate appropriately and fully in 100% of the classes

If you wish to opt out of **the lecture portion** you may and the percentage will be moved to your final exam.

Lecture tutorial	4%
	5%

**You may not opt out of attending the class presentations**

-**participation and attendance during the student presentations** (which May include write-ups. Oral presentations will be part of the final exam

6%

**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 March 28, 2016 by midnight.** One or more of these questions will be used in the final exam

**Lecture schedule (lectures will be posted prior to class)**

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 (including insect and fish) 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