

# BIOD29H: Pathobiology of Human Disease

Dr. Aarthi Ashok  
Department of Biological Sciences, UTSC  
Course Syllabus  
Winter 2020

## Course description:

This course will examine human disease pathogenesis from two distinct perspectives: infectious and inherited. The first part of the course will explore human viral pathogens, their characteristics and the pathogenesis of their associated diseases. Topics will include the pathogenesis of human retroviruses, influenza and hepatitis viruses. The latter part of the course will focus on the pathogenesis of genetically inherited disorders. Selected topics will encompass both single gene and complex multigenic disorders. The course will also include an examination of unconventional diseases such as those associated with bioterrorism agents and prion diseases. The course will follow lecture/seminar/discussion format and will require critical evaluation of primary scientific literature.

**Co-requisites:** BIOC10H or BIOC20H or BIOC39H

**Enrollment limit:** 35

## Time and Location:

**Lectures:** MONDAYS, 11AM -NOON, BV 355

**Discussion sessions:** WEDNESDAYS, 11AM-1PM, BV 355

**Student Reading groups\*:** MONDAYS, 4-5pm, BV 355 (\*This is a peer-based learning session in which you will develop skills to dissect primary literature)

## Online course resources:

Login and access the Quercus site for BIOD29H for Winter 2020

This site will contain:

- The course syllabus – including a course description & schedule.
- Contact information for the instructor & TA
- Important announcement regarding lectures, tutorials or course content – **please check this site regularly for any such announcements.**
- Lecture outlines will be posted prior to each class.
- Links to primary literature assigned will be posted prior to each week of discussions.
- Slides from student presentations that will be study material for exams.

## **Evaluation:**

**1. Pop-quizzes:** multiple-choice/short-answer format – at any time in the course  
= total value of **5%**

**2. Class presentations** of critically evaluated primary literature = **25%**

- Students will be divided into 8 groups of ~3-5 students
- Mini group presentation – Week 3 = 5%
- Full-length group presentation – Weeks 4-12 = 17%
- Revised full-length group presentation – Weeks 4-12 = 3%

**3. In-class participation and weekly prepared questions** = Week 2 and Weeks 4-12 (except for the week that you are presenting in)- total of 8 weeks = **8%**

**4. Reading group participation** = **2%**

**5. Midterm test** in week 7 (likely in-class; dependent on enrolment) = **20%**

Could include either or both of the following:

- Multiple-choice questions about material covered in the course
- Short answer/ data analysis questions on papers covered in the course

**6. Biology outreach project** (deadlines will be in March, likely) = **15%**

**8. Final exam** (2 hours) during exam period (Date & time TBA) = **25%**

Could include any or all of the following:

- Answer 2 questions out of 3 choices – essay style
- Multiple-choice questions about material covered in the course
- Short answer/ data analysis questions on papers covered in the course

## **Course staff:**

**Instructor:** Dr. Aarthi Ashok

aashok@utsc.utoronto.ca

Office hours: Tuesdays, 1-2pm

Office location: SW 521D

**TA:** Luke Ajay David

ajay.david@mail.utoronto.ca

**Reading group peer moderators:** Myuran Yoganathan.

Contact info will be available through Dr. Ashok or the TA.

## Course Schedule:

Class	Date	Topic	Notes	Reading group?
1A	Jan 6	Course introduction	Syllabus and course goals; group and topic assignments	NO
		Biology of viruses	Introduction to viruses	
1B	Jan 8	Antivirals and vaccines	Vaccines, antiviral drugs & targets	NO
		Critical reading of scientific literature	Reading and note-taking strategies, common techniques in cell & molecular biology	
2A	Jan 13	Outreach Project discussion	Q&A	YES
		Pathogenesis of positive stranded RNA viruses	Picornaviruses & Coronaviruses	
2B	Jan 15	Picornaviruses & Coronaviruses	Primary literature (learning to read critically)	
3A	Jan 20	Pathogenesis of negative stranded RNA viruses	Paramyxoviridae, Rhabdoviridae & Filoviridae	NO
3B	Jan 22	Filoviruses	<b>Mini presentation – ALL groups</b>	
4A	Jan 27	Pathogenesis of DNA viruses	HSV-1, HSV-2, Varicella zoster, Epstein-Barr & Cytomegalovirus	YES (Group 1 members do NOT attend)
4B	Jan 29	Herpes Viruses	<b>Group 1 presentation</b>	
5A	Feb 3	Pathogenesis of T-lymphotropic viruses	HTLV-1, 2, 3 & 4.	YES (Group 2 members do NOT attend)
5B	Feb 5	T-lymphotropic viruses	<b>Group 2 presentation</b>	
6A	Feb 10	Pathogenesis of Hepatitis viruses	Hepatitis A, B, C, D & E	YES (Group 3 members do NOT attend)
6B	Feb 12	Hepatitis viruses	<b>Group 3 presentation</b>	
		<b>Reading Week</b>		
7A	Feb 24	Additional office hours	Midterm, outreach project discussions.	NO
7B	Feb 26	<b>Midterm test:</b> Weeks 1-6 inclusive	In-class or outside of class TBD (enrollment)	
8A	Mar 2	Biological agents of bioterrorism & warfare	Anthrax, Plague, Smallpox & viral hemorrhagic fevers	YES (Group 4 members do NOT attend)
8B	Mar 4	Biological agents of bioterrorism & warfare	<b>Group 4 presentation</b>	
9A	Mar 9	Prion disease pathogenesis	Infectious versus genetic forms	YES (Group 5 members do NOT attend)
9B	Mar 11	Prion disease pathogenesis	<b>Group 5 presentation</b>	
10A	Mar 16	Prion disease pathogenesis part II	Prion-like propagation in other diseases	YES (Group 6 members do NOT attend)
10B	Mar 18	Prion disease pathogenesis part II	<b>Group 6 presentation</b>	
11A	Mar 23	Single gene disorders 1	OI, Sickle cell anemia & Huntington's disease	YES (Group 7 members do NOT attend)
11B	Mar 25	Single gene disorders 1	<b>Group 7 presentation</b>	
12A	Mar 30	Single gene disorders II	Lysosomal storage disorders	YES (Group 8 members do NOT attend)
12B	Apr 1	Single gene disorders II	<b>Group 8 presentation</b>	

## Accessibility Needs:

(Text provided by Centre for Teaching and Learning, UTSC)

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:

(Text provided by The Centre for Teaching and Learning, UTSC)

Please consult: <http://www.utoronto.ca/academicintegrity/resourcesforstudents.html>.

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensure 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 include, but are not limited to:

**On tests and exams:** using or possessing unauthorized aids, looking at someone else's answers during an exam or test or misrepresenting your identity.

**In academic work:** falsifying institutional documents or grades or 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. There are other offences covered under the Code, but these are the most common. ***Please respect these rules and the values that they protect.***

## Special Notes:

- If you miss the midterm exam due to a medical illness, you will need to both notify

the instructor as well as provide the department of Biological Science's course coordinator, Jennifer Campbell, with a UTSC medical certificate

(<http://www.utsc.utoronto.ca/registrar/sites/utsc.utoronto.ca/registrar/files/resource-files/UTSCmedicalcertificate.pdf>) within 48 hours of a missed exam. Ms.

Campbell's office is located in SW421D and can be reached via email: [jacampbell@utsc.utoronto.ca](mailto:jacampbell@utsc.utoronto.ca)

- A single makeup midterm exam may be offered to students who provide significant evidence of extenuating circumstances/illness. Note that the structure of the makeup midterm will differ significantly from the normal midterm for the course and will likely be an oral exam or a written essay style exam.
- There is no makeup opportunity for a missed lecture or reading group.

- If you are ill during the term, and this illness influences your ability to attend a assessed lecture or reading group, you can submit a Self-Declaration of Student Illness form, indicating the days in which you were ill. This form is meant to take the place of the more typical medical form, and is available on the department's website: <http://www.utsc.utoronto.ca/biosci>.

Please note the following aspects related to this Self-Declaration of Student Illness form:

- o Similar to the submission of a medical form, **YOU ARE RESPONSIBLE** for contacting the course coordinator (Jennifer Campbell; see contact information above) to make arrangements for an accommodation for your absence.
- o You may use the Self-Declaration of Student Illness form **ONLY** for class absences, and cannot be used for any missed term test or final exam in this course (or any other course).
- o You may use the Self-Declaration of Student Illness form up to three times in this course. If you require an additional accommodation for a term assignment you must then use the standard Verification of Student Illness form.
- o You must submit the Self-Declaration form within 3 days of a missed class.
- o Please note that submitting a false Self-Declaration of Student Illness form constitutes academic misconduct, and could lead to serious sanctions under the Code of Behaviour on Academic Matters.
- o Please note that makeup opportunities are not available for all course components and hence some components may need to be re-weighted for some absences; the instructor will make this decision on a case by case basis.