

# BIOD29H3S: Pathobiology of human disease

**Dr. Aarthi Ashok**  
Department of Biological Sciences, UTSC  
**Course Syllabus**  
**Winter 2013**

## **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:** BGYC17H3

**Enrollment limit:** 40

## **Time and Location:**

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

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

**Student Reading groups:** MONDAYS, 4-5pm, SW 403

## **Intranet course resources:**

Login and access the BLACKBOARD SITE FOR BIOD29H for Winter 2013

This site will contain:

- The course syllabus – including a course description & schedule.
- Contact information for the instructor & TA– please respect the office hour timings listed.
- Important announcement regarding lectures, tutorials or course content – **please check this site regularly for any such announcements.**
- Lecture outlines (Powerpoint slides) will be posted prior to each class.
- Primary literature assigned will be posted prior to each week of discussions.
- Slides from student presentations as study material for exams.

## **Evaluation:**

- 1. Class presentations** of critically evaluated primary literature = 25%
  - students will be divided into 8 groups of ~2-4 students
  - mini group presentation – Week 3 = 5%
  - full-length group presentation – Weeks 4-12 = 20%
- 2. Mid term test** in week 7 of the class = 20%

Could include any or all of the following:

  - answer 1 question out of 3 choices – essay style
  - answer questions on a short recent paper of relevance to the course
  - multiple-choice questions about material covered in the course
  - short answer questions on papers covered in the course
- 3. Pop-quizzes** that are all multiple-choice/short-answer format worth 2% -5% each – at any time in the course = total value of 10%
- 4. Final exam** during exam period = 25%

Could include any or all of the following:

  - answer 2 question out of 3 choices – essay style
  - multiple-choice questions about material covered in the course
  - Short answer questions on papers covered in the course
- 5. Attendance and in-class participation** = 5%
- 6. Weekly Prepared questions** = 8%
- 7. Peer evaluation** =2%
- 8. Creative project** performed in Week 7 of the course = 5%

## **Course staff:**

**Instructor:** Dr. Aarthi Ashok  
aashok@utsc.utoronto.ca  
Office hours: Tuesdays, 2-3pm  
Office location: SW 521D

**TA:** Darren Gigliozzi  
darren.gigliozzi@utoronto.ca  
Office hours: by appointment

## Course Schedule:

Class	Date	Topic	Notes
1A	Jan 7	Course introduction	Syllabus and requirements; group and topic assignments
		Biology of viruses	Intro to viruses & classification
1B	Jan 9	Antivirals and vaccines	Intro to live versus killed vaccines; immune sera; antiviral drugs & targets
2A	Jan 14	Pathogenesis of positive stranded RNA viruses	Picornaviruses & Coronaviruses EX: Poliovirus, Rhinovirus, SARS
2B	Jan 16	Picornaviruses & Coronaviruses	Primary literature (AA)
3A	Jan 21	Pathogenesis of negative stranded RNA viruses: Mononegavirales	Paramyxoviridae, Orthomyxoviridae, Rhabdoviridae, Filoviridae & Bornaviridae EX: influenza, measles, borna, ebola and rabies
3B	Jan 23	Order: Mononegavirale	Primary literature (ALL groups)
4A	Jan 28	Pathogenesis of DNA viruses: Herpes viruses	HSV-1, HSV-2, Varicella zoster, Epstein-Barr & cytomegalovirus
4B	Jan 30	Family: Herpesviridae	Primary literature (group 1)
5A	Feb 4	Pathogenesis of Human retroviruses	HIV and HTLV-1 & 2
5B	Feb 6	Human retroviruses	Primary literature (group 2)
6A	Feb 11	Pathogenesis of Hepatitis viruses	Hepatitis A, B, C, D & E; Picornavirus, Hepadnavirus, Flavivirus & Calcivirus
6B	Feb 13	Hepatitis viruses	Primary literature (group 3)
		<b>Reading Week</b>	
7A	Feb 25	<b>Mid term test (1hr)</b>	
7B	Feb 27	<b>Individual creative projects</b>	3 minutes & a mike!
8A	Mar 4	Biological agents of bioterrorism & warfare	Anthrax, Plague, Smallpox & viral hemorrhagic fevers (Ebola & Marburg) Ricin, Agent orange
8B	Mar 6	Biological agents of bioterrorism & warfare	Primary literature (group 4)
9A	Mar 11	Prion disease pathogenesis	Infectious v genetic forms
9B	Mar 13	Prion disease pathogenesis	Primary literature (group 5)
10A	Mar 18	Prion disease pathogenesis part II	

10B	Mar 20	Prion disease pathogenesis part II	Primary literature (group 6)
11A	Mar 25	Single gene disorders: defects in structural proteins	OI, EDS & Marfan's syndrome
11B	Mar 27	Single gene disorders 1	Primary literature (group 7)
12A	April 1	Single gene disorders: defects in receptors and enzymes	Familial hypercholesterolemia & lysosomal storage disorders
12B	April 3	Single gene disorders 2	Primary literature (group 8)

### 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 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 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. 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. There are other offences covered under the Code, but these are the most common. ***Please respect these rules and the values that they protect.***