

# **BIOC10H: Proteins from birth to death**

**Dr. Aarthi Ashok**  
**Department of Biological Sciences, UTSC**  
**Course Syllabus**  
**Winter 2015**

## **Course description:**

This course builds on fundamental cell biological concepts using primary literature. This course will examine specific organelles and their functions in protein biogenesis, modification, trafficking and quality control within eukaryotic cells. The experimental basis of knowledge will be emphasized and students will be introduced to hypothesis-driven research in cell biology.

**Pre-requisites:** *BIOB10 & BIOB11 (or BIOB10Y)*

**Recommended Preparation:** *BIOC12H*

**Enrollment limit:** 50

## **Time and Location:**

**Lectures:** WEDNESDAYS, 2PM -4PM, BV260

**Tutorial sessions:** MONDAYS, 3-4PM, SW 319

## **Course staff:**

**Instructor:** Dr. Aarthi Ashok

aashok@utsc.utoronto.ca

Office hours: Mondays, 2-3pm

Office location: SW 521D

**TA:** Katrina Hiiback

Email: k.hiiback@mail.utoronto.ca

## **Online course resources:**

Login and access the blackboard site for BIOC10H for Winter 2015. It contains:

-The course syllabus – including a course description & schedule.

-Contact information and office hours for the instructor & TA

-Important announcement regarding lectures, tutorials or course content – **please check this site regularly for any such announcements.**

-Lecture outlines (slides) for some broad discussion lectures may be posted after some of the classes to provide an overview of what was discussed in each class. **Please note that you are responsible for taking your own notes during the class.**

-Primary literature assigned will be posted prior to each week of discussions.

## **Evaluation:**

- 1. Pop-quizzes** that are all multiple-choice/short-answer format worth – at any time in the course = **total value of 10%**
- 2. In-class (Lec 2) peer-review process assignment = 2%**
- 3. Contribution to tutorials = 7%**
- 4. Questions and In-class participation = 12%**  
Breakdown is as follows:
  - A. 4% = questions asked/turned in following each group's presentation in Weeks 9 & 10 (quality is important)
  - B. 3% = Participation; this entails answering questions voluntarily or when called upon to interact in the class.
  - C. 5% = Group debate in Week 12 (due in class – Week 12)
- 5. Midterm exam = 22%**  
-short answer or data interpretation style questions on papers covered in Weeks 2-6. Exam will be in class in Week 7.
- 6. Student (group) presentations** on 3 consecutive papers on a topic of relevance to cell biology- Weeks 7 &8 = **12%**
- 7. Final exam = 35%**  
Could include any or all of the following:
  - answer 1 question out of 3 choices – essay style
  - answer questions on a recent paper of relevance to the course
  - short answer questions on papers covered in the course

## **Special Notes:**

If you miss a class, tutorial or exam due to illness, you will need to provide a UTSC medical certificate to Dr. Ashok within 48 hours of the missed class/exam in order to not be penalized for any course evaluation components that may have occurred in your absence.

## Course Schedule:

Week	Lec/Tut #	Date	Topic	Details/ papers
1	Tut 1	Jan 5	Introduction to tutorial expectations	Assignment of groups & reading in "sections" with model paper
1	Lec 1	Jan 7	Course introduction	Syllabus & schedule
			Reading Scientific Literature	Types of scientific literature; how to dissect a paper; Active learning with model paper
2	Tut 2	Jan 12	Introduction to tutorial expectations - repeat (10 mins)	Jigsaw model & confirmation of groups
			Introduction to student presentations in weeks 7 & 8 (20 mins)	Guidelines on choosing papers; deadlines for approval of paper choices & plan for presentation
			Midterm exam expectations (20 mins)	Guidelines on what to expect on the exam
2	Lec 2	Jan 14	Scientific publishing: the peer-review process	In-class peer-review activity of analyzing papers
			Introduction to Lec 3	Secretory pathway & signal sequences
3	Tut 3	Jan 19	Student group learning	Levine et. al., 2005
3	Lec 3	Jan 21	Protein import into the early secretory pathway: co-translational	Levine et. al., 2005
			Introduction to Lec 4	Protein quality control (ERAD) & proteasomal degradation
4	Tut 4	Jan 26	Student group learning	Mangeat et. al., 2009
4	Lec 4	Jan 28	Understanding the components of the ubiquitin-proteasome system	Mangeat et. al., 2009
			Introduction to Lec 5	The ER membrane
5	Tut 5	Feb 2	Student group learning	Inoue et. al., 2011
5	Lec 5	Feb 4	Modes of entry into the ER	Inoue et. al., 2011
			Introduction to Lec 6	Unfolded protein response
6	Tut 6	Feb 9	Student group learning	Lin et. al., 2007
6	Lec 6	Feb 11	UPR & cell fate decisions	Lin et. al., 2007
			Reading Week	
7	Tut 7	Feb 23	Extra time for questions; Pick out group presentation days	Questions about midterm exam or presentations
7	Lec 7	Feb 25	Midterm test	Content of weeks 2-6 will be tested
8	Tut 8	Mar 2	Student Group learning	Bahadoran et. al., 2001
8	Lec 8	Mar 4	Vesicular trafficking in melanocytes	Bahadoran et. al., 2001
9	Tut 9	Mar 9	Presentations: Group 1	25 min pres + 5 min Qs= 30mins; Only groups 1-5 attend
9	Lec 9	Mar 11	Presentations: Groups 2, 3, 4 & 5	Only groups 1-5 attend

<b>10</b>	Tut 10	Mar 16	Presentations: Group 6	Only groups 6- 10 attend
<b>10</b>	Lec 10	Mar 18	Presentations: Groups 7, 8, 9 & 10	Only groups 6- 10 attend
<b>11</b>	Tut 11	Mar 23	Student group learning	Marks et. al., 2012
<b>11</b>	Lec 11	Mar 25	Determinants of lysosomal trafficking	Marks et. al., 2012
			Introduction to Lec 12	Debate expectations
<b>12</b>	Tut 12	Mar 30	Student group learning	Papers relevant to your debate perspective
<b>12</b>	Lec 12	Apr 1	Exosomes and therapy (DEBATE)	Exosomes in cancer therapy
			Course summary	Final exam expectations

### 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.***