

# **BIOC10H3S: Cell Biology: Intracellular Compartments and Protein Sorting**

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

## **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, BV 363

## **Course staff:**

**Instructor:** Dr. Aarthi Ashok

aashok@utsc.utoronto.ca

Office hours: Mondays, 2-3pm

Office location: SW 521D

**TA:** Nizanthan Rathitharan

n.rathitharan@mail.utoronto.ca

Office hours: by appointment

## **Online course resources:**

Login and access the BLACKBOARD SITE FOR BIOC10H for Winter 2013. 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 (Powerpoint slides as PDFs) will be posted AFTER each class and will provide only an overview of what was discussed in each class. **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 2% - 5% each – at any time in the course = total value of 15%
2. **In-class (Lec 2) peer-review process assignment** = 3%
3. **Attendance and contribution to tutorials** = 7%
4. **In-class participation** = 15% = 12% for regular lectures and 3% for the questions turned in following each group presentation in Weeks 7&8. For weeks 3, 4, 5, 6, 9, 10, 11 & 12 students must turn in 2 questions about the paper at the beginning of class. Please note that simply turning in questions will not satisfy the “participation” component of this grade.
5. **Student (group) presentations** on 3 consecutive papers on a topic of relevance to cell biology- Weeks 7 &8 = 18%
6. **Final exam = 42%**  
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

## Course Schedule:

Week	Lec/Tut #	Date	Topic	Details/ papers
1	Tut 1	Jan 7	Introduction to tutorial expectations	Assignment of groups & reading in "sections" with model paper
1	Lec 1	Jan 9	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 14	Introduction to tutorial expectations	Jigsaw model & confirmation of groups
			Introduction to student presentations in weeks 7 & 8	Guidelines on choosing papers; deadlines for approval of paper choices & plan for presentation
2	Lec 2	Jan 16	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 21	Student group learning	Levine et. al., 2005
3	Lec 3	Jan 23	Protein import into the early secretory pathway: co-translational	Levine et. al., 2005
4	Tut 4	Jan 28	Student group learning	Levine et. al., 2005 (continued)
4	Lec 4	Jan 30	Protein import into the early secretory pathway: co-translational	Levine et. al., 2005 (continued)
			Introduction to Lec 5	Protein quality control (ERAD) & proteasomal degradation
5	Tut 5		Student group learning	Mangeat et. al., 2009
5	Lec 5	Feb 6	Understanding the components of the ubiquitin-proteasome system	Mangeat et. al., 2009
			Introduction to Lec 6	The ER membrane
6	Tut 6		Student group learning	Inoue et. al., 2011
6	Lec 6	Feb 13	Modes of entry into the ER	Inoue et. al., 2011
			Presentation logistics	Q & A
<b>Reading Week</b>				
7	Tut 7	Feb 25	Student presentations 1 & 2	
7	Lec 7	Feb 27	Student presentations 3-6	
8	Tut 8	Mar 4	Student presentations 6 & 7	
8	Lec 8	Mar 6	Student presentations 8-10	
			Introduction to Lec 9	ER stress & UPR
9	Tut 9	Mar 11	Student group learning	Lin et. al., 2007
9	Lec 9	Mar 13	UPR & cell fate decisions	Lin et. al., 2007

			Introduction to Lec 10	Rabs, myosins & vesicle distribution
10	Tut 10	Mar 18	Student group learning	Hume et. al., 2001 & Bahadoran et. al., 2001
10	Lec 10	Mar 20	Vesicular trafficking in melanocytes	Hume et. al., 2001 & Bahadoran et. al., 2001
			Introduction to Lec 11	Clathrin-adaptor complexes at the Golgi; Phosphoinositides
11	Tut 11	Mar 25	Student group learning	Wang et. al., 2003
11	Lec 11	Mar 27	Organelle Identity -the role of phosphoinositides	Wang et. al., 2003
			Introduction to Lec 12	Stem cells; Exosomes
12	Tut 12	Apr 1	Student group learning	Lai et. al., 2011
12	Lec 12	Apr 3	Exosomes and therapy	Lai et. al., 2011
			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.**