

Biology 13 Cells and Organisms Syllabus fall 2009

Class Meetings in Cohen Auditorium Mon. 9:30-10:20am, Tues. 10:30-11:20am, Thurs. 10:30-11:20am	Recitation (optional) Barnum 008 Monday 4:30 – 5:20pm
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Course Professors:

Dr. Kelly McLaughlin (course coordinator 2009)

email kelly.mclaughlin@tufts.edu

Dr. Mitch McVey

email mitch.mcvey@tufts.edu

Dr. Juliet Fuhrman

email juliet.fuhrman@tufts.edu

Laboratory Coordinator:

Dr. Michelle Gaudette

email michelle.gaudette@tufts.edu

Textbook (author Scott Freeman): Biological Science + Mastering Biology Access Kit, 3E (access to the online system called MasteringBiology is REQUIRED in order to complete graded online problem sets). It is recommended that students read the assigned material prior to coming to lecture.

Course goals and objectives: Students will be examined on their knowledge of material covered in lectures and laboratory activities as well as on their ability to solve problems that are relevant to the course content. Upon completion of the course, you should be able to:

- ◆ Understand and explain the basic principles regarding cell structure and function. This background will serve as a firm basis for more detailed Biology courses for which this course is a prerequisite.
- ◆ Work independently and in collaboration with others to compile, analyze, interpret, and communicate scientific data and ideas.
- ◆ Utilize critical thinking skills developed throughout the semester in both lecture and laboratory. In summative assessments, much of the credit will come from questions requiring that students apply information to new situations in order to reach a conclusion.

Laboratory sessions begin the week of September 14th, 2009. If you know you will need to miss a lab (to observe a religious holiday), you **MUST** get permission to switch into a different lab from the lab coordinator at least one week (and preferably two weeks) prior to the scheduled lab date. **YOU MUST PASS THE LAB IN ORDER TO PASS THIS CLASS.** The laboratory is designed to stress higher-level thinking, particularly in requiring the students to design experiments and evaluate their results. For written assignments the internet-based originality verification system, *Turnitin*, will be required.

Please note: we will do our best to follow the course syllabus – however, we reserve the right to make modifications as needed during the semester.

LECTURE TOPICS FALL 2009

DATE	DAY	TOPIC	PROF	CHAPTER
9/8	Tues	Introduction and logistics	KM	
9/10	Thurs	Cell Theory and Cellular Organization	JF	Ch. 1, Sect. 1.1, 1.2, 1.3; Ch. 7, Sect. 7.1
9/14	Mon	Chemical Bonds, water, carbon chemistry	JF	Ch. 2, Sect. 2.1, 2.2, 2.3
9/15	Tues	Functional Groups, Amino Acids, Peptide Bonds	JF	Ch. 2, Sect. 2.4; Ch. 3, Sect. 3.1, 3.2, 3.3
9/17	Thurs	Protein Structure	JF	Ch. 3, Sect. 3.4
9/21	Mon	Free energy and Chemical Reactions; Enzymes	JF	Ch. 3, Sect. 3.5
9/22	Tues	Lipid Structure and Membrane Properties	JF	Ch. 6
9/24	Thurs	Endomembrane system & the secretory pathway	JF	Ch. 7, Sect. 7.2, 7.3
9/28	Mon	Carbohydrate Structure & Function; Extracellular matrix	JF	Ch. 5, Ch. 8, Sect. 8.1
9/29	Tues	Cytoskeleton; Cell Structure and Plastids	JF	Ch. 7, Sect. 7.4, review pp. 129-134
10/1	Thurs	Metabolism: Redox, Energy, and Glycolysis	JF	Ch. 9, Sect. 9.1, 9.2, 9.3
10/5	Mon	Metabolism: TCA cycle and Respiration	JF	Ch. 9, Sect. 9.4, 9.5
10/6	Tues	ATP synthesis and regulation	JF	Ch. 9, Sect. 9.6, 9.7, 9.8
10/8	Thurs	EXAM 1 (through 10/5) Check BB for location of exam/details	-	
10/12	Mon	No class – Columbus Day	-	-
10/13	Tues	MONDAY'S SCHEDULE (9:30-10:20am) Nucleic acids and DNA packaging	MM	Ch.4 & Ch.14.1
10/15	Thurs	The cell cycle, mitosis, and checkpoints	MM	Ch.11
10/19	Mon	DNA synthesis	MM	Ch.14.2, 14.3
10/20	Tues	DNA replication and repair	MM	Ch.14.4, 14.5
10/22	Thurs	Applications of DNA synthesis in molecular biology	MM	Ch.19.2, 19.3
10/26	Mon	Meiosis	MM	Ch.12.1-12.3
10/27	Tues	Sex determination and mistakes in meiosis	MM	Ch.12.4
10/29	Thurs	Mendelian genetics	MM	Ch.13.1-13.3
11/2	Mon	Sex linkage and pedigrees	MM	Ch. 13.4 through X-linked inheritance, 13.6
11/3	Tues	Genetic linkage	MM	Ch.13.4 (section on linkage)
11/5	Thurs	Special topics in genetics	MM	Ch.13.5
11/9	Mon	Genomics and how it is changing medicine	MM	Ch.19.4, other reading TBA
11/10	Tue	EXAM 2 (through 11/5) Check BB for location of exam/details	-	
11/12	Thurs	How Genes Work – Central Dogma	KM	Chapter 15
11/16	Mon	Overview Transcription and Translation	KM	Chapter 16
11/17	Tues	Transcription & Translation (cont.)	KM	Chapter 16
11/19	Thurs	Regulation of Gene Expression in Prokaryotes	KM	Ch. 17
11/23	Mon	Regulation of Gene Expression in Eukaryotes	KM	Ch. 18
11/24	Tues	Gene regulation → different cell types (Dev.)	KM	TBA
11/22	Thurs	No class - Thanksgiving	-	-
11/30	Mon	Gene Regulation → different cell types (stem cells)	KM	Ch. 21.1 other reading TBA
12/1	Tues	Biotechnology: DNA	KM	Chapter 20
12/3	Thurs	Biotechnology: RNA	KM	Ch. 21
12/7	Mon	Biotechnology: Protein	KM	Ch. 22
12/8	Tues	Science and the media: the fact behind the fiction	KM	TBA
12/10	Thurs	EXAM 3 (through 12/7) Check BB for location of exam/details	-	
Final exam: Tuesday, December 15, 2009; NOON-2pm Please plan accordingly when making travel plans.				

GRADING

Hour Exam #1 (Thurs., October 8)	100pts
Hour Exam #2 (Tues., November 10)	100pts
Hour Exam #3 (Thurs., December 10)	100pts
Mastering Biology Problem sets (online)	100pts
Final Exam (Tuesday, December 15, NOON - 2:00pm) Do NOT schedule any travel plans that will conflict	100pts
Laboratory Note: you MUST pass the lab component in order to pass BIO13L	150pts
TOTAL POINTS* (*to remain fair to all students, no extra credit assignments are allowed for this course)	650pts

- ◆ All students at Tufts University are expected to live up to the highest standards of academic honesty.
- ◆ Due to the size of the class – not everyone will take their hourly exams in Cohen. Exam locations will be posted on the course blackboard site prior to each exam.

NEED ASSISTANCE?

General questions about BIO13?

Dr. Kelly McLaughlin (**course coordinator**)

office: Dana 017A fall 2009 office hours: Tuesday 12-1pm; Friday 2-3pm, or by apt.

email: kelly.mclaughlin@tufts.edu

General questions about BIO13 laboratory?

Dr. Michelle Gaudette (**laboratory coordinator**)

office: Barnum 211 fall 2009 office hours: Tues. 3-4pm, Wed. 1:30-2:30pm, Fri. 2:30-3:30pm

email: michelle.gaudette@tufts.edu

Specific questions about course material?

Please contact the faculty member that taught the material you have questions about.

Professor/section taught	Office location	Email address	Office hours fall 2009
Dr. Juliet Fuhrman (section 1)	Dana 223	juliet.fuhrman@tufts.edu	Tuesday 5-6:30pm
Dr. Mitch McVey (section 2)	Dana 024A	mitch.mcvey@tufts.edu	Monday 3:30-4:30pm; Thursday 12-1pm
Dr. Kelly McLaughlin (section 3)	Dana 017A	kelly.mclaughlin@tufts.edu	Tuesday 12-1pm; Friday 2-3pm, or by apt.

Other important resources for BIO13 students:

- 1) **Blackboard website** (<http://blackboard.tufts.edu>). Course announcements, lecture slides, practice problems, old exams...and more. This website is designed to provide BIO13 students with additional information. Therefore, it is advised that students check the BIO13 site frequently for announcements and helpful suggestions.
- 2) **Podcast lecture files** (since technology doesn't always work – having each lecture available on podcast is NOT guaranteed). It is HIGHLY recommended that students attend the lectures and only use the podcasts as a backup. <https://spark.uit.tufts.edu/>
- 3) **Weekly office hours** (both faculty and TAs hold office hours – times are posted on the BIO13 BB site). If you have questions – meeting with faculty and staff can often help clarify any questions...
- 4) **Weekly faculty-review sessions** (starting 9/14/09) – The course recitation (Barnum 008, Monday 4:30-5:20pm) is another great opportunity for students to ask faculty questions about the lecture material.
- 5) **ARC Peer Tutors** (Academic Resource Center <http://ase.tufts.edu/arc/>). If you feel more comfortable working with other students – the ARC Peer Tutors are an excellent option (both scheduled appointments and drop-in hours). The ARC also holds review sessions before exams – times/locations will be posted on the BIO13 BB site