

## **BIOL15b - Cells and Organisms**

Summer Session 2 - 2017

Dr. Kene Piasta

Office - SSC 0-16E

Office Hours - TBD and by appointment

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Class Meeting Time - Monday, Tuesday, Wednesday, Thursday, 11:00am - 12:50pm

Class Location - TBD

### **Summary: THIS SYLLABUS MAY CHANGE BEFORE THE START OF CLASS. IT IS FOR YOUR PLANNING PURPOSES ONLY**

This course introduces contemporary biology with an emphasis on cells, organs, and organ systems. Topics include the forms and functions of macromolecules, organelles, and cells, the integration of cells into tissues, and the physiology of fundamental life processes. The course is intended to prepare students to understand the biology of everyday life, and to provide a strong foundation for those who continue to study the life sciences.

### **Learning Objectives:**

After completion of this course students should be able to:

- Explain basic concepts in biology including cellular structure, bio-macromolecule composition, structure, and synthesis
- Explain the concept of central dogma and its role in the cell.
- Describe how and why cells make and use energy.
- Describe the major characteristics of human organ systems and their functionality at the molecular level.
- Gain familiarity with reading primary literature and applying biological concepts to practical applications.

### **Course Format:**

This course is an INTENSIVE summer course. It is NOT a watered down version of BIOL15 course offered during a full semester. Not attending a single day of class means you are going to miss approximately 10% of the total class material. Attendance is therefore of the utmost importance.

The class will meet four days a week for one hour and fifty minutes at a time. A majority of the course will be lecture based, with weekly activities designed to supplement the material being presented. Homework assignments will be assigned and graded to monitor student progress throughout the course.

The readings should be completed PRIOR to coming to class. The material may not be clear at this point, but the important points will be discussed in class. Read for the big picture and do not get bogged down in the minutia. After class, the readings should be

much clearer. Not reading will almost certainly hurt your performance on the exams. DO NOT let your reading lapse; the class moves too quickly for you to easily catch up once behind.

If you are a student who needs academic accommodations because of a documented disability, please contact me and present your letter of accommodation as soon as possible.

Visiting students who have questions about documenting a disability or requesting academic accommodations, should contact Gwenn Smaxwill, Summer School Director (x63424) or [smaxwill@brandeis.edu](mailto:smaxwill@brandeis.edu). Current Brandeis undergraduates should contact Academic Services (x63470) for assistance. Letters of accommodation should be presented at the start of the semester to ensure provision of accommodations. Accommodations cannot be granted retroactively.

### **Academic Integrity:**

Students are expected to work independently on all homework and exams unless otherwise stated. Conduct inconsistent with the policies on academic honesty in "Rights and Responsibilities" will be treated seriously. <http://www.brandeis.edu/studentaffairs/srcs/rr/>

### **Text Book:**

*Biology: How Life Works*. 2013. Morris, Hartl, Knoll and Lue. 2nd ed. Freeman.

### **Grading:**

Your ultimate grade is determined by the following assessments:

- **Bi-Weekly Reflections (10%)** - you will submit **9 electronic reflections** by answering questions about that week's material. It is due by **7 PM on Tuesday and Thursday** as stated in the course calendar. These reflections can help guide the material discussed during recitation. Absolutely no late reflections will be accepted.
- **Problem Sets (10%)** - you will complete **4 problem sets** that are based on the material covered in class. The problem sets are due at the beginning of class as stated on the course calendar. Absolutely no late problem sets will be accepted.
- **Biology Project (20%)** - you will complete a project where you find, research, and write a short paper on a disease that focuses on material we have discussed in class. More details will be discussed in class.
- **Four Exams (60%)** - you will have **4 exams** each of which is comprehensive. These exams will be held during class as listed on the course calendar. Absolutely no make up exams will be administered for any reason. However, your lowest exam grade will be dropped.

**Schedule:**

	<b>Date</b>	<b>Topic</b>	<b>Reading/Assignments</b>
1	Mon, Jul 10	Biology's Building Blocks: DNA, RNA, Protein, Lipid,	
2	Tue, Jul 11	Replication Transcription	<b>Reflection 1</b>
3	Wed, Jul 12	Transcription 2 Translation	
4	Thu, Jul 13	Protein Structure and Function	<b>Problem Set 1 Due</b> <b>Reflection 2</b>
5	Mon, Jul 17	<b>EXAM 1</b> Energy and Thermodynamics	
6	Tue, Jul 18	Enzymes and Reactions Cellular Respiration	<b>Reflection 3</b>
7	Wed, Jul 19	Glycolysis acetyl-CoA Citric Acid Cycle (TCA Cycle) Electron Transport Chain	
8	Thu, Jul 20	Photosynthesis Metabolic Diseases	<b>Problem Set 2 Due</b> <b>Reflection 4</b>
9	Mon, Jul 24	<b>EXAM 2</b> Cell Signaling	
10	Tue, Jul 25	Signal Transduction	<b>Reflection 5</b>
11	Wed, Jul 26	Cytoskeleton Cellular Movement and Adhesion	
12	Thu, Jul 27	Mitosis	<b>Problem Set 3 Due</b> <b>Reflection 6</b>
13	Mon, Jul 31	<b>EXAM 3</b> Meiosis	
14	Tue, Aug 1	Reproduction and Development	<b>Reflection 7</b>
15	Wed, Aug 2	Digestion and Nutrition	
16	Thu, Aug 3	Nervous System	<b>Reflection 8</b>
17	Mon, Aug 7	Nervous System	<b>Problem Set 4 Due</b>
18	Tue, Aug 8	Immune System	<b>Reflection 9</b>
19	Wed, Aug 9	Immune System	
20	Thu, Aug 10	<b>EXAM 4 - 1PM to 4PM</b>	