Oxford College of Emory University, BIOL-OX 120

CONCEPTS IN BIOLOGY

Fall 2017

Lectures: Tuesdays & Thursdays at 11:50-13:30 PM; OSB 101

Labs: Thursdays at 13:40-16:40 PM; OSB 317

Instructor: Dr. Jessica **Lopes da Rosa**

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Office Hours: Mondays 13:30- 14:30; Tuesdays 14:30- 15:30; Or by appointment; OSB 209

Course objectives:

The goal of this course is to introduce students to the concepts that inform our understanding of biology. We will be learning basic biological information and discussing the methods that scientists use to further and apply our knowledge. My goal is that each student leaves this course ready to be and continue to develop into *scientifically conscious and responsible* young adult in the context of biology. By the end of this class, students should be able to:

1. Apply the broad biological concepts we will learn in class to make informed conclusions.
2. Think critically about biology and biological advancements that are disseminated to the public.
3. Know how to find primary, detailed information about biology and research.
4. Discriminate between interpretations of scientific results and data.

I will use a combination of traditional exams, group work, written assignments and class discussions to evaluate your progress in an effort to ensure we all succeed in this Concepts of Biology course. We have the exciting ability to incorporate (mandatory) laboratory sessions that will allow you to put your knowledge and ambition to practice. Both in lectures and the laboratory, your responsibility will be to participate and stay engaged with the subject matter, your classmates and myself during our time together. In addition, you are responsible for the readings and assignments listed below and as they come up during the semester.

Textbook: Campbell's *Essential Biology, 6th Edition*. Simon, Dickey, Hogan, Reece & Campbell (2016)

Disclaimer: Please note that the syllabus, topics covered and assignments are subject to change if deemed necessary, with advance notice.

Lecture	Date	Topic	Assignments due
1	Th. 08/24	Introduction. How do you study biology?	
2	Tue. 08/29	Chemistry and molecules of life	• Chp. 2-3
3	Th. 08/ 31	Cellular Structure and Function pt. 1	• Chp. 4
4	Tue. 09/05	Is it alive? (Class debate) (1-2 page written assignment due 09/12)	• Be prepared for class debate
5	Th. 09/07	Cellular Structure and Function pt. 2	
6	Tue. 09/12	Cellular Structure and Function pt. 3: Transport	• Chp. 5 pg. 83-86 • **"Is it alive?" essay due**
7	Th. 09/14	**Group Quiz 1** up to "Transport"	
8	Tue. 09/19	Central dogma pt. 1: Genomes and Chromatin	• Chp. 10
9	Th. 09/21	"Secret of Life" or "Secret of photo 51" movie (2-page written assignment due 09/28)	
10	Tue. 09/26	Central dogma pt. 2: Gene Expression and Epigenetics	• Chp 11
11	Th. 09/28	Protein Synthesis and Regulation	• **Essay on movie due**
12	Tue. 10/03	Cell Division and inheritance pt. 1: Mitosis and Meiosis	• Chp. 8 pg. 123- 128, pg. 130-142
13	Th. 10/05	**EXAM 1** (up to "Protein synthesis and Regulation")	
No Class	Tue. 10/10	Fall Break	
14	Th. 10/12	Cell Division and inheritance pt. 2: Mendelian genetics	• Chp. 9
15	Tue. 10/17	Cell Division and inheritance pt. 3: Cancer	• Chp. 8 pg. 128-129
16	Th. 10/19	Energy cycling pt. 1: Nutrition and Metabolism	
17	Tue. 10/24	Energy cycling pt. 2: Cellular Respiration	• Chp 6

18	Th. 10/26	Energy cycling pt. 3: Photosynthesis	• Chp 7
19	Tue. 10/31	~~Population Genetics~~ Review session	• Review worksheet (done in groups in class)
20	Th. 11/02	**EXAM 2** (Up to "Energy Cycling pt. 3")	
21	Tue. 11/07	Immunology and diseases pt. 1	Biology for a Changing World with Core Physiology, 2nd ed. Chp 31 (On reserve at library)
22	Th. 11/09	Immunology and diseases pt. 2	Group in-class worksheet **Abracadabra case study (20 pts; due 11/16)**
23	Tue. 11/14	Parasitology I	
24	Th. 11/16	Parasitology II	Read "Hygiene Hypothesis" article (TBD)
25	Tue. 11/21	Male Reproductive Systems	Biology for a Changing World with Core Physiology, 2nd ed. Chp 30 (On reserve at library)
No Class	Th. 11/23	THANKSGIVING BREAK	
26	Tue. 11/28	• Female Reproductive Systems • Discussion of Behre et al. paper	• Read Behre et al. (2016) J Clin Endocrinol Met
27	Th. 11/30	Biology and society: Designer babies!!? CRISPR-Cas	• Read article TBD
28	Tue. 12/05	Exam 3 Review	
EXAM 3 will be on Friday, December 8th at 9:00 – 12:00.			

Lab Session	Date	Topic	Assignments Due
1	Th. 08/ 31	Scientific Literature	• Bring laptop (loaners provided in class) • Read a short scientific article from popular press • Worksheet due at end of class
2	Th. 09/ 07	Scientific inquiry and data collection: Termite behavior	• Read handout for lab #2 • Worksheet due at end of class
3	Th. 09/ 14	Cellular biology: Microscopic differences between prokaryote and eukaryotes	• **Termite lab write-up; draft due** (Bring 2 copies. One to be peer-reviewed in class) • Read handout for lab #3 • Worksheet due at end of class
4	Th. 09/ 21	Transport across cell membrane	• Read handout for lab #4 • Worksheet due at end of class • **Termite lab write-up; final due 09/22 by 5PM**
5	Th. 09/ 28	UV sensitive yeast pt. 1 (proposal and literature search)	• Read handout for lab #5 • Worksheet due at end of class
6	Th. 10/ 05	UV sensitive yeast Pt. 2	• Worksheet due at end of class
7	Th. 10/ 12	UV sensitive yeast Pt. 3	• Worksheet due at end of class
8	Th. 10/ 19	Inheritance and bioinformatics (computer lab)	• Read handout for lab #8 • Worksheet due at end of class • **Yeast lab write-up; draft due 10/20 by 5PM**
9	Th. 10/ 26	GMO (DNA extraction)	• Read handout for lab #9 • Worksheet due at beginning of class
10	Th. 11/ 02	GMO (PCR set-up)	• Read handout for lab #10 • Worksheet due at beginning of class • **Yeast lab write-up; final due 11/10 by 11:59PM**
11	Th. 11/ 09	GMO (Electrophoresis and data collection)	• Worksheet due at end of class • Group presentation topic due at end of class • Active writing on Yeast lab proposals
12	Th. 11/ 16	**Photosynthesis**	• Read handout for lab #12 • Pre-lab due at beginning of class • Worksheet due at end of class

13	Th. 11/ 30	**Nobel Prize in Medicine group presentations**	

Additional Course Information / Class Policies:

Honor Code: All examinations and work for credit in this course, including draft assignments, come under the regulations of the Honor Code. Your signature on your examination or paper attests to your upholding the Honor Code in your work. Honesty and ethical behavior are imperatives in any career. Therefore, academic dishonesty will not be tolerated. See http://oxford.emory.edu/audiences/current_students/Academic/academicsuccess/student-honor-code/ for descriptions of what constitutes academic dishonesty. Anyone caught violating this policy will be reported to the Honor Council, as detailed in the honor code. If you have any questions about what constitutes your own work, definitely ask!

ATTENDANCE: There is a maximum of 3 absences from lectures! Please be aware that, if necessary, you should use these days wisely to cover any obligations, commitments and personal reasons you may have that do not coincide with Oxford College holiday list. Talk to me if there are any questions.

Assignments are due even if you miss that class! Talk to me if there are any questions.

Attendance for all laboratory sessions is mandatory! There are no laboratory make-ups. You will get zero points for the missed lab, resulting in a significant drop in your final grade. Talk to me if there are any questions.

Missed exams cannot be made up! However, if you know that you have a conflict ahead of time, please inform me at least 2 weeks before the scheduled exam time. Situations will be evaluated on a case by case basis.

Devices: Cell Phones must be on silent and OUT OF REACH, OUT OF SIGHT. Computers or tablets may only be used for scholarly research at designated times during class. You may **not** take class notes on your device. Talk to me if there are any questions.

Evaluation :
3 x 150 points for exams
20 points for quiz 1
2 x 25 points for essays 1 & 2
40 points for group presentations
20 point for Abracadabra Case Study
12 x 10 points for laboratory worksheets/ work
2 x 50 points lab write-ups

800 points total (*approximate, instructor reserves the right to modify assignments)

Final grade determination: *Your final grade in the course is determined by the percentage of total points that you earn at the end of the course.*
(Plus and minus grades are given on the final grade)
A: 90 - 100%
B: 80 – 89%
C: 70 – 79%
D: 60 – 69%
F <60%