

## BISC 220 (General Biology: Cell Biology and Physiology), Summer 2016

### A. General Course Description and Policies

#### Catalog Description

Biological Sciences 220L – General Biology: Cell Biology and Physiology

In-depth survey of key topics related to advances in our knowledge of cellular biology and physiology; cell composition/metabolism; gene action; organism structure and function.

(Duplicates credit in BISC 110L, BISC 111L, and BISC 221L.) *Recommended preparation:* high school chemistry; BISC 120L or BISC 121L.

#### Instructor

Bruce Yazejian      HNB B20      Phone 213-740-2220      [yazejian@usc.edu](mailto:yazejian@usc.edu)

Office hours: by appointment

#### Laboratory Manager

Gorjana Bezmalinovic, ZHS 362, [bezmalin@usc.edu](mailto:bezmalin@usc.edu), Phone/Fax 213-740-6078

Office hours: Open door policy

#### Textbooks

*Campbell Biology*, by Reece et al., 10<sup>th</sup> edition, 2014.

N.B. – Although the 10<sup>th</sup> edition is the official textbook for the class, it is not substantially different from the 9<sup>th</sup> edition. Students interested in saving money may opt for the older version. However, such students should consult the newer version to transpose the reading assignments and check for differences. A few copies of the 10<sup>th</sup> edition will be placed in Bio-space (ZHS 360A).

*General Biology Laboratory Manual Spring 2016, BISC 220 & BISC 221 Courses*, USC, Pearson Custom Publishing.

Optional: *Van de Graaff's Photographic Atlas for the Biology Laboratory*, by Adams and Crawley, 7th Edition, Morton Publishing Company.

Optional: *A Short Guide to Writing About Biology*, by Pechenik, 8<sup>th</sup> edition, Pearson. (e-copy included with the USC custom textbook).

**Website** <https://blackboard.usc.edu/>

All course materials, information, recordings, announcements, and grades will be posted on Blackboard until Commencement Day. Blackboard is to be used only for appropriate, course-related activities. Use for other purposes will result in disciplinary action.

#### Lectures

MTWTh 10:00-12:05

All lectures will be given in HNB 100.

### Laboratory (See Part B below for the complete laboratory syllabus)

The lab portion of the course is held on Tuesdays/Thursdays from 1:00 – 3:50 pm in ZHS 361 or ZHS 363.

The laboratory is an integral and essential component of the course, intended to give you hands-on experience with the processes, tissues, and concepts discussed in the lecture part of the class, and to deepen your understanding of the scientific literature and science as a process.

The purposes, policies, and procedures of the laboratory are fully explained in Part B of this syllabus.

Performance in the laboratory will account for one-third of each student's grade. The laboratory grade will be based on lab practical exams, lab reports, lab quizzes, lab participation, completeness of the lab manual, a group presentation on a classic scientific paper, and discussion of other students' presentations. See the Grading Table below for point values of each of these components.

### Lecture Exams

Lecture exam questions may include multiple choice, matching, fill-in-the-blank, true/false, short answers, short essays, definitions, and quantitative problems.

### Online Quizzes

Five lecture quizzes (each worth 8 points) will be administered online via Blackboard. The quizzes will be posted by 2:00 pm on Fridays and must be completed by 9:00 am the following Monday. The first quiz will be posted on May 27 (because of the Memorial Day Holiday, the first quiz will be due on Tuesday, May 31). Questions will cover the previous week's material. Answers to quiz questions will be posted at the end of each quiz period.

### Grading

	Item	Pts Each	Number	Total	Portion Totals
<b>Lecture</b>	Lecture Exams	150	4	600	Lecture = 640
	Online quizzes	8	5	40	
<b>Lab</b>	Lab Practical Exam 1 (labs 1-4)	64	1	64	Lab = 360
	Lab Practical Exam 2 (labs 5-8)	64	1	64	
	Lab Reports	45	2	90	
	Lab Quizzes	7	8	56	
	Lab Participation	2	8	16	
	Lab Manual	2	8	16	
	Classic Literature Presentation	50	1	50	
	Discussion of Other Presentations	4	1	4	
					Course total =1000

After each lecture exam, an advisory curve will be posted to help students gauge their standing in the class. Final grades will be determined according to a curve. Points will only be given for the items listed above. No extra credit will be given.

### **Impairments Affecting Your Performance**

Students occasionally encounter difficulties that affect their academic performance, such as illness, accidents, bereavement, depression, anxiety, learning disabilities, and other problems. If you encounter such difficulties, please bring them to the attention of one of the instructors. We can refer you to sources of help and may be able to offer accommodations. All such discussions will be confidential. Please seek help as soon as you feel your performance is being affected. Specific policies regarding exams are explained in the next section.

### **Exam Policies**

If you feel an error was made in the grading of an exam question, you may submit the question for a re-grade according to the following procedure. First, prepare a written statement explaining why your answer deserves more credit, using the Regrade Request Form available on Blackboard. Second, submit this statement and your entire original exam to your Teaching Assistant within one week of when the exam was returned to you. *The entire answer will be re-graded, not just the part you think deserves more credit. In addition, the instructors will review the grading of the entire exam to check for errors in grading. Your grade may go up or down as a result of this re-examination.* Be aware that we usually make copies of corrected exams before we return them, to ensure that students do not alter their answers before submitting them for a re-grade. Altering an answer is considered a serious violation of academic integrity. Please see the section on Academic Integrity (below) for additional information.

No make-up exams will be given.

You may be excused from an exam in the event of a documented illness, emergency, or other serious problem beyond your control. *No other excuses for missing exams will be accepted.* If you miss an exam or quiz for a legitimate reason, and wish to ask for an accommodation, you should proceed as follows. Within 48 hours of the start of the missed exam, email to the Lab Manager a request that you be excused. In the case of illness, this request must include either an official letter from your doctor stating that you were too sick to take the exam, or your doctor's name and contact information with permission for us to contact the doctor for a limited discussion of your condition. If you see a doctor at the *USC Engemann Student Health Center*, you will need to download, sign, and submit an "Authorization for Disclosure of Medical Information" to give us permission to speak to your doctor. This form can be found at: <https://engemannshc.usc.edu/files/2012/11/Authorization-for-Disclosure-of-Medical-Information-Professors-Limited-Discussion.pdf>. Note that neither you nor the doctor need tell us the nature of your illness. If you miss an exam for non-illness related reasons, you must provide similarly convincing documentation of the emergency to the Lab Manager

within a week. If we judge your excuse to be valid, we will give you a grade for the missed exam equal to the average of your grades for the equivalent exams that you did take. Except in extraordinary circumstances, we will make accommodations for only one missed lecture exam. If your excuse is judged not to be valid, or you do not provide it within the allotted time, you will receive a score of zero for the missed exam.

## Academic Integrity

Our university depends on honesty, integrity, and ethical behavior among its members. Among other things, students' ethical behavior includes respecting the intellectual property of others, submitting individual work unless otherwise directed by the instructor, protecting one's own academic work from misuse by others, and avoiding the use of another's work as one's own.

We have reliable, time-tested methods for detecting cheating, plagiarism, and other violations of academic integrity. *Please note that sanctions for violations are severe.* This is necessary to protect the integrity of grades and the academic process. The minimum sanction is usually an F for the course. Suspension or expulsion from the university is also possible in egregious cases or for repeat offenses.

Resources on academic integrity standards, policies, and expectations:

1. Trojan Integrity Guide: <http://www.usc.edu/student-affairs/SJACS/forms/tio.pdf>
2. Guide for Avoiding Plagiarism: <http://www.usc.edu/student-affairs/SJACS/forms/tig.pdf>
3. Overview of Academic Integrity: <http://www.usc.edu/student-affairs/SJACS/forms/AcademicIntegrityOverview.pdf>
4. Tutorial on Academic Integrity: [http://www.usc.edu/libraries/about/reference/tutorials/academic\\_integrity/index.php](http://www.usc.edu/libraries/about/reference/tutorials/academic_integrity/index.php)
5. SCampus (University Governance, paragraph 11): <http://web-app.usc.edu/scampus/1100-behavior-violating-university-standards-and-appropriate-sanctions/>
6. Scientific Misconduct: <http://policy.usc.edu/scientific-misconduct/>

## Other Conduct Issues

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* (<http://equity.usc.edu/>) or to the *Department of Public Safety* (<http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>). Call DPS at 213-740-4321 if you need immediate assistance or to report a crime. Reporting such incidents is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The *Center for Women and Men* (<http://www.usc.edu/student-affairs/cwm/>) provides 24/7 confidential

support, and the Sexual Assault Resource Center webpage (<http://sarc.usc.edu>) describes reporting options and other resources.

### Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with the *Office of Disability Services and Programs* (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP and should be delivered to the Lab Manager early in the semester, preferably by May 20, 2016. If a student's approved accommodation is limited to extra time on examinations, the teaching staff of BISC 220 will provide the accommodation. For any other accommodation, such as a private room, reader, scribe, etc., students must make arrangements with the DSP office at least 2 weeks before the exam date. For more information, you can visit the DSP office in GFS 120 (8:30-5:00, M-F), call at 213-740-0776, email at [ability@usc.edu](mailto:ability@usc.edu), or go to their website: [http://sait.usc.edu/academicsupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html).

### Lecture schedule:

Day	Lecture	Chapter Readings
Wed May 18	1 Introduction, Biomolecules, Water	1-5
Thu May 19	2 The Cell	6
Mon May 23	3 Cell Membranes	7
Tue May 24	4 Cell Communication	11
Wed May 25	5 Metabolism part 1 of 2	8
<b>Thu May 26</b>	<b>EXAM 1</b>	
Mon May 30	Memorial Day Holiday...no class	
Tue May 31	6 Metabolism part 2 of 2	8,9
Wed June 1	7 Photosynthesis	10
Thu June 2	8 Cell Cycle	12
Mon June 6	9 Mitosis	12
Tue June 7	10 Meiosis	13
<b>Wed June 8</b>	<b>EXAM 2</b>	
Thu June 9	11 Cardiovascular system	42.1-42.4
Mon June 13	12 Respiration	42.5-42.7
Tue June 14	13 Immune system	43
Wed June 15	14 Fluid and electrolyte balance	44
<b>Thu June 16</b>	<b>EXAM 3</b>	
Mon June 20	15 Endocrine system	45
Tue June 21	16 Reproduction	46
Wed June 22	17 Nervous system	48
Thu June 23	18 Nervous system	49
Mon June 27	19 Motor system	50.5
<b>Tue June 28</b>	<b>EXAM 4</b>	

## B. Laboratory Syllabus

**Lab Manager:** Gorjana Bezmalinovic                      ZHS 362                      Tel/Fax: 213-740-6078  
E-mail: [bezmalin@usc.edu](mailto:bezmalin@usc.edu)  
Office hours: Open door policy

### Laboratory Schedule:

LAB	DAY	TOPIC	CHAPTER
1	May 19	Intro to BISC 220 Labs & Macromolecules	1
2	May 24	Enzymes*	2
3	May 26	Cell Physiology	3
4	May 31	Photosynthesis (Lab Report 1 due)	4
	June 02	<b>LAB PRACTICAL EXAM 1</b>	(1 - 4)
5	June 07	Cellular Respiration and Fermentation*	5
6	June 09	DNA Technology and Genetic Engineering	6
7	June 14	The Cardiovascular System (Lab Report 2 due)	7
8	June 16	The Human Nervous system	9
	June 21	<b>LAB PRACTICAL EXAM 2</b>	(5, 6, 7 & 9)
	June 23	Classic Literature Presentations	
	June 28	Graded assignments returned	

\*Exercise for which 5-7 pages, type-written lab report is required.

The Lab Manager reserves the right to make some adjustments to the lab syllabus during the semester.

## Laboratory Performance Guidelines

- You are required to attend all lab sessions. Any unexcused absences will seriously affect your evaluation and lab participation points. Come to lab on time. You are expected to remain for the entire lab session or until excused by your instructor. Do not make other appointments for the time you are scheduled to be in lab.
- You are required to wear *closed toe shoes, long pants, and a lab coat*. Goggles will be provided in lab.
- Before you begin the lab exercise, make sure that you remove all unnecessary materials from your work area. At the end of the lab session, clean and return all supplies to their proper place, clean your work area, and slide your chair under the table. Check with your Lab Instructor before leaving.
- *No eating or drinking is allowed in the laboratory under any circumstances.*

## Lab Quizzes

- In the first 5 minutes of each of the 8 lab meetings when lab exercises are planned, a 7-point quiz will be given. Four of the 7 points will be based on that day's lab exercise, *i.e.*, the one you are about to perform. The remaining 3 points will be based on the previous exercise.
- Students who come late to lab without a legitimate and verifiable excuse will not be allowed to make up the quiz.

## Lab Reports

- Appreciation of the scientific method and development of scientific literacy are among the main goals of the laboratory portion of the class. Accordingly, formal lab reports will be strongly emphasized. Instructions on writing lab reports are given in the document entitled "*Format and Guidelines for BISC 220 Lab Reports.*" These instructions are summarized in the document "*Summary Guidelines for BISC 220 Lab Reports.*" Both documents will be posted on Blackboard.
- Lab reports must be submitted electronically via Turnitin, using the link provided on the Blackboard site for the lab section. Specific instructions on how to upload lab reports will be emailed to each student. It is each student's responsibility to confirm that their lab reports were successfully uploaded.

## Lab Practical Exams

- Two lab practical exams will be given to test your understanding of the topics and exercises covered in the laboratory sessions. The first lab practical exam will cover material from labs 1 - 4. The second lab practical exam will cover material from labs 5 - 8.
- *It is your responsibility to be present on the days of the lab practical exams.* If you miss a lab practical exam due to a serious illness, you must present a valid excuse to the Laboratory Manager, Gorjana Bezmalinovic ([bezmalin@usc.edu](mailto:bezmalin@usc.edu)) within 48 hours of the missed exam. A valid excuse is considered to be a statement that you were seen by a doctor, the doctor's name and phone number, and authorization for us to discuss with the doctor whether you were too ill to take the exam, which we will do. Note that neither you nor the doctor need tell us the nature of your illness. If you have a valid excuse, you will be allowed to take the exam in another lab section that week. If you do not have a valid excuse or fail to provide it within the allotted time, you will receive zero points for the missed lab practical exam.

### **Classic Literature Presentation and Participation**

- The last lab meeting of the semester is reserved for PowerPoint presentations on classic papers from the cell biology/physiology literature and their relation to modern papers. The goals of this assignment are to give you a greater appreciation of the scientific literature and science as a process, as well as to work and communicate collaboratively with fellow students.
- Briefly, groups of 3 students will pick one classic paper from a list of several dozen papers that will be provided. All these papers are widely recognized as having had a major impact on the evolution of our understanding of cell biology or physiology. Each group must then find a recent paper (published within the past 5 years) that directly follows from the classic paper. In the PowerPoint presentation, groups must explain the findings in the classic and modern paper, explain the connection between the two papers, discuss the significance of both studies, and suggest some follow-up experiments that should be done.
- Complete and detailed instructions for this assignment will be presented during the first lab meeting and in the document “*Classic Literature Presentation and Participation*” posted on Blackboard.
- Credit will be assigned to each group based on the clarity of their presentation, understanding of the material, fulfillment of all aspects of the assignment, and their abilities to lead a discussion on the topic and to answer questions. Credit will also be given to non-presenting students based on their participation in discussing the presentations of others.

### **Lab Participation and Lab Manual**

- A total of 32 points will be awarded on the basis of lab participation (16 pts) and completeness of your lab manual (16 pts). We expect you to come to lab well-prepared and ready to contribute positively to the academic atmosphere. We also expect you to complete all aspects of the lab exercises, and to record data, observations, and answers to post-lab questions in your lab manual every week. Each student is required to show his/her Lab Instructor the lab manual before leaving the lab and obtain their signature. Lab manuals will be checked periodically throughout the semester. See the section above entitled “Laboratory Performance Guidelines” for more information on how lab participation points will be assigned.

### **Missed Lab Meetings**

- If you miss a scheduled lab exercise due to illness or emergency, please contact the Laboratory Manager, Gorjana Bezmalinovic ([bezmalin@usc.edu](mailto:bezmalin@usc.edu)) to see whether it will be possible to make up the exercise. Please note that no lab make-ups will be allowed during the week prior to a holiday.
- Students who wish to miss a lab for observance of a religious holy day should be aware of the University’s policy on such absences, published at: <http://orl.usc.edu/religiouslife/holydays/absences.html>. Requests for such absences should be made by email addressed to the Laboratory Manager at least 2 weeks in advance of the absence. If the absence is approved, the instructors will determine a reasonable accommodation for the student.

- Student-athletes who must miss occasional labs for legitimate reasons should bring the SAAS excuse letter to the Laboratory Manager, Gorjana Bezmalinovic ([bezmalin@usc.edu](mailto:bezmalin@usc.edu)), at least 2 weeks in advance so alternatives can be arranged. See details on p. 9 of this syllabus.

### **Laboratory Score Normalization**

- The lab scores will be normalized at the end of the semester by the Lab Manager in conjunction with the Lab Instructors to correct for differences in grading between Lab Instructors\*. In this procedure, the mean total score of all students in each Lab Instructor's labs is compared to the mean total score of the entire class and each student's score is adjusted.

\* If there are two or more lab instructors (TAs).