

## BISC 221. Advanced General Biology: Cell Biology and Physiology. Spring 2017

| Lecturers:          | Office  | Phone        | Email  | Office Hours    |
|---------------------|---------|--------------|--|-----------------|
| David McKemy, Ph.D. | HNB 201 | 213-821-5724 | <a href="mailto:mckemy@usc.edu">mckemy@usc.edu</a> | Mon 1:30-3:30pm |
| Andrew Hires, Ph.D. | HNB 228 | 213-821-1068 | <a href="mailto:shires@usc.edu">shires@usc.edu</a> | TBA             |

| Lab Manager:         | Office  | Phone        | Email  | Office Hours     |
|----------------------|---------|--------------|--|------------------|
| Gorjana Bezmalinovic | ZHS 362 | 213-740-6078 | <a href="mailto:bezmalin@usc.edu">bezmalin@usc.edu</a> | Open Door Policy |

| Teaching Assistants: | Jacqueline Lin | TBA | TBA |
|----------------------|----------------|-----|-----|
|----------------------|----------------|-----|-----|

**Textbook:** **Campbell Biology 10<sup>th</sup> ed. or 11<sup>th</sup> ed.** (with Mastering Biology™)

**Websites:** **Blackboard** <https://blackboard.usc.edu/> for detailed class notes, announcements and grades.

**Lecture:** MWF 10 – 10:50 am, ZHS 352.

**Labs:** Tue 8-11, 11-2 and 2-5 pm, Wed 11-2 pm and 2-5 pm or Thu 8-11 am in ZHS 369

### Lecture Exams

Each semester will include 3 mid-term exams. The final exam will emphasize the last quarter of the course and include a comprehensive section. The exams will consist of multiple choice questions, fill in-the-blanks, true/false questions, definitions, diagrams and short answers.

### Grading

Final grades are based on the total points earned in the course. The distribution of points is as follows:

|                       |     |                                  |     |
|-----------------------|-----|----------------------------------|-----|
| <i>Mid-term exams</i> | 45% | <i>Lab reports and Lab exams</i> | 30% |
| <i>Final exam</i>     | 25% |                                  |     |

The final course grade will be based on a total of 1000 points. **300** points will be based on lab performance (lab reports and practical exams). The remaining 700 points will be based on the lecture and reading materials: **450** points from the 3 midterms (150 points each) and **250** points from the final exam. In some cases, the instructors will consider whether to add up to 20 points to increase the grade. These points are awarded based on our **subjective** evaluation of the following: participation in laboratory; effort; achievement relative to abilities, background, or circumstances; record of improvement. Laboratory scores will be standardized to correct for differences in grading between TAs.

### Re-grades of Exam Questions

To request a re-grade, you must submit your exam and Re-grade Form (available on Blackboard) to your TA within 1 week of the time it was returned, along with a written explanation of why you think your answer deserves more credit. The entire answer will be re-graded (not just the part you think deserves more credit); your grade may go up or down as a result of a re-grade.

### Missed Exams

*No make-up exams will be given in this course.* If you miss a midterm exam due to illness you may present a valid medical excuse to the Lab Manager within one week of the missed exam. You should notify the Lab Manager *in writing* that you were seen by a doctor; make sure that you include (a) the doctor's name and phone number and (b), a statement authorizing us to discuss with the doctor whether you were too ill to take the exam. We will contact the doctor and decide whether you have a

valid excuse. If you do, your grade for that exam will be based on the average of your other midterm and final exam scores, called “prorating”. If you do not have a valid excuse, or fail to provide it within the allotted time, you will receive a zero for that exam. Students who wish to miss an examination 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> .

If you miss the final exam and have a valid medical excuse, the following options exist:

1. If the excuse is turned in to the Lab Manager within 48 hours of the missed final, a grade of incomplete (IN) will be recorded on the grade sheet and you will be permitted to take a makeup final during the following semester. Receipt of an IN grade means that you can take the final exam the next time the course is offered and receive your grade for the course. Alternatively, you may request to take an oral exam at the beginning of the following semester. If your request is granted, the oral exam will be administered by the faculty lecturers from the semester you were enrolled in the course and one TA (not necessarily yours).
2. If no excuse is turned in to the Lab Manager within 48 hours of the missed final, a grade will be calculated on the basis of your other scores and a zero for the final. This grade will be submitted on the grade sheet and will remain your final grade UNLESS a valid medical excuse is provided to the Lab Manager within 2 days of the missed exam. In that case, your grade will be changed to an IN, which can be removed the following semester as described above OR you may elect to keep the originally assigned grade by declining a makeup exam in writing.

**N.B.** -It is the policy of the student health center to not provide routine medical excuses (i.e., they will not issue a slip stating that you were seen at the health center). Simply going to the health center is not a valid reason for missing an exam. If you are seriously ill and are seen by a doctor (at the health center or elsewhere), you must turn in a written notification to the Lab Manager as described above within one week of the missed exam.

### **Statement for Students with Disabilities**

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the Lab Manager as early in the semester as possible. DSP is located in STU301 and is open 8:30a.m.–5:00p.m., Monday through Friday. The phone number for DSP is (213)740-0776. For more information please visit the following website: [http://sait.usc.edu/academicsupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html).

### **Statement on Academic Integrity**

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://web-app.usc.edu/scampus/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/> .

| Month      | Date         | Day           | Lectures | Themes                     | Topic  | Lecturer | Reading |
|------------|--------------|---------------|----------|----------------------------|--|----------|---------|
| January    | 9            | Monday        | 1        | Biochemistry               | Introduction   | McKemy   | 1-4     |
|            | 11           | Wednesday     | 2        |                            | Biochem 1 - Carbon, macromolecules. Carbs., Lipids       | McKemy   | 5       |
|            | 13           | Friday        | 3        |                            | Biochem 2 - Lipids, Proteins, Nuc. Acids                 | McKemy   | 5       |
|            | <b>16</b>    | <b>Monday</b> |          |                            | <b>MLK Day</b>   |          |         |
|            | 18           | Wednesday     | 4        | The Cell and its Functions | The cell 1   | McKemy   | 6       |
|            | 20           | Friday        | 5        |                            | The cell 2   | McKemy   | 6       |
|            | 23           | Monday        | 6        |                            | The cell 3   | McKemy   | 6       |
|            | 25           | Wednesday     | 7        |                            | Cell membranes 1   | McKemy   | 7       |
|            | 27           | Friday        | 8        |                            | Cell membranes 2   | McKemy   | 7       |
| January    | 30           | Monday        | 9        |                            | Cell communication 1                                     | McKemy   | 11      |
| February   | 1            | Wednesday     | 10       |                            | Cell communication 2                                     | McKemy   | 11      |
|            | 3            | Friday        | 11       | Energy & Cell Metabolism   | Energy & cell metabolism 1 (on Midterm 2)                | McKemy   | 8       |
|            | <b>6</b>     | <b>Monday</b> |          |                            | <b>MIDTERM 1</b>   |          |         |
|            | 8            | Wednesday     | 12       | Energy & Cell Metabolism   | Energy & cell metabolism 2                               | McKemy   | 8,9     |
|            | 10           | Friday        | 13       |                            | Energy & cell metabolism 3                               | McKemy   | 9       |
|            | <b>13</b>    | <b>Monday</b> |          |                            | <b>Presidents Day</b>                                    |          |         |
|            | 15           | Wednesday     | 14       |                            | Energy & cell metabolism 4                               | McKemy   | 9       |
|            | 17           | Friday        | 15       |                            | Energy & cell metabolism 5                               | McKemy   | 10      |
|            | 20           | Monday        | 16       | The Cell Cycle & Genetics  | The cell cycle 1 - Mitosis 1                             | McKemy   | 12      |
|            | 22           | Wednesday     | 17       |                            | The cell cycle 2 - Mitosis 2/Meiosis 1                   | McKemy   | 13      |
|            | 24           | Friday        | 18       |                            | The cell cycle 3 - Meiosis 2                             | McKemy   | 13      |
|            | 27           | Monday        | 19       |                            | Mendel & the Gene Idea, Chromosomal Basis of Inheritance | McKemy   | 14,15   |
| March      | 1            | Wednesday     | 20       |                            | Molecular Basis of Inheritance                           | McKemy   | 16      |
|            | 3            | Friday        | 21       | Organ systems introduction | General principles (on midterm 3)                        | Hires    | 40      |
|            | <b>6</b>     | <b>Monday</b> |          |                            | <b>MIDTERM 2</b>   |          |         |
|            | 8            | Wednesday     | 22       | Nutrition & Circulation    | Nutrition  | Hires    | 41      |
|            | 10           | Friday        | 23       |                            | Circulation  | Hires    | 42      |
|            | <b>13-17</b> |               |          |                            | <b>SPRING BREAK</b>                                      |          |         |
|            | 20           | Monday        | 24       | Gas Exchange Immunity      | Gas exchange   | Hires    | 42      |
|            | 22           | Wednesday     | 25       |                            | Innate immunity  | Hires    | 43      |
|            | 24           | Friday        | 26       |                            | Acquired immunity  | Hires    | 43      |
|            | 27           | Monday        | 27       | Excretion                  | Water balance  | Hires    | 44      |
|            | 29           | Wednesday     | 28       |                            | Kidney   | Hires    | 44      |
|            | 31           | Friday        | 29       | Endocrine                  | Chemical signals   | Hires    | 45      |
| April      | 3            | Monday        | 30       |                            | Pituitary  | Hires    | 45      |
|            | 5            | Wednesday     | 31       |                            | Endocrine  | Hires    | 45      |
|            | <b>7</b>     | <b>Friday</b> |          |                            | <b>MIDTERM 3</b>   |          |         |
|            | 10           | Monday        | 32       | Nervous system             | Nervous system intro                                     | Hires    | 48      |
|            | 12           | Wednesday     | 33       |                            | Membrane & action potentials                             | Hires    | 48      |
|            | 14           | Friday        | 34       |                            | Synapses   | Hires    | 48      |
|            | 17           | Monday        | 35       | Behavior                   | Nervous system architecture                              | Hires    | 49      |
|            | 19           | Wednesday     | 36       |                            | Sensory systems  | Hires    | 49      |
|            | 21           | Friday        | 37       |                            | Muscles & movement                                       | Hires    | 49      |
|            | 24           | Monday        | 38       | Reproduction               | Reproduction   | Hires    | 46      |
|            | 26           | Wednesday     | 39       |                            | Human fertilization                                      | Hires    | 46      |
|            | 28           | Friday        | 40       |                            | Birth  | Hires    | 46      |
| <b>May</b> | <b>8</b>     | <b>Monday</b> |          | <b>8:00 – 10:00 am</b>     | <b>MIDTERM 4 AND FINAL EXAM</b>                          |          |         |

## BISC 221 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:

| <u>Lab #</u> | <u>Dates</u>     | <u>Laboratory</u>                          |
|--------------|------------------|--|
|              | Jan 10 – 12      | No Lab This Week                           |
|              | Jan 17 – 19      | Intro to BISC 221 Labs and Lab Safety      |
| 1            | Jan 24 – 26      | Macromolecules                             |
| 2            | Jan 31 – Feb 2   | Enzymes*                                   |
| 3            | Feb 7 – 9        | Cell Physiology                            |
|              |                  | Journal Club with Dr. McKemy               |
| 4            | Feb 14 – 16      | Photosynthesis                             |
|              |                  | Lab Report 1 due this week in lab          |
| 5            | Feb 21 – Feb 23  | Cellular Respiration and Fermentation*     |
|              | Feb 28 – March 2 | <b>LAB EXAM 1</b>                          |
| 6            | March 7 – 9      | DNA Technology and Genetic Engineering     |
|              |                  | Lab Report 2 due on March 10 <sup>th</sup> |
|              | March 14 – 16    | SPRING BREAK – No Lab This Week            |
| 7            | March 21 – 23    | The Cardiovascular System                  |
| 8            | March 28 – 30    | Kidney Structure and Function              |
| 9            | April 4 – 6      | The Human Nervous system                   |
| 10           | April 11 – 13    | Vision                                     |
|              |                  | Journal Club with Dr. Hires                |
|              | April 18 – 20    | <b>LAB EXAM 2</b>                          |
|              | April 25 – 27    | Presentations                              |

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

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

**Required** Textbooks available at the USC bookstore:

[SPRING 2017 BISC 220/BISC 221 Laboratory Manual](#). Available only at the USC bookstore.

**Recommended textbooks:**

Adams & Crawley (2013). [Van De Graaff's Photographic Atlas for the Biology Laboratory](#), 7<sup>th</sup> ed.

Pechenik. [A Short Guide to Writing About Biology](#). 8<sup>th</sup> ed. (e-copy included with the USC custom textbook).

## LABORATORY POINT DISTRIBUTION

The laboratory portion (**300 points**) will count for 30% of your final course grade, distributed as follows:

|   |         |
|---|---------|
| Lab Quizzes (10 – 5 points each)                    | 50 pts  |
| Lab Manual/Participation (2 points per chapter/lab) | 20 pts  |
| Lab Reports (2 – 40 points each)                    | 80 pts  |
| Journal Club (2 – 10 points each)                   | 20 pts  |
| Molecular & Cellular Basis of Disease Presentation  | 30 pts  |
| Lab Practical Exams (2 – 50 points each)            | 100 pts |

## 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 also to remain for the entire lab session or until excused by your instructor. **DO NOT** make any 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 instructor before leaving.

**NO EATING OR DRINKING IS ALLOWED IN THE LABORATORY UNDER ANY CIRCUMSTANCES.**

## LAB QUIZZES

Each student will take a quiz during the first 5 minutes of each lab session. Students who come late to lab without a legitimate and verifiable excuse will not be allowed to make up the quiz. Quizzes will consist of multiple choice questions and/or fill-in-the-blanks. Out of 5 questions, 3 will test you on the knowledge of the material you will be covering that day in lab, and the other 2 will test you on what you have learned in the previous lab.

## LAB MANUAL/PARTICIPATION

Students must come to lab on time, perform all the exercises, actively participate in lab discussions and properly clean up before leaving the lab every week.

During each lab students need to record their results (drawings, observations, calculations) in their lab manual. Tables need to be filled and all post-lab questions answered. Each student is required to show his/her TA the lab manual before leaving the lab and obtain their signature. Lab manuals will be checked periodically throughout the semester.

## LAB REPORTS

Two lab reports will be written during the semester. Lab reports must be posted on Blackboard (*Lab Reports* [turnitin](#) link) and a hard copy turned in at the beginning of the lab session. Lab report guidelines will be posted on Bb (<https://blackboard.usc.edu/>) in the beginning of the semester.

## LAB EXAMS

The two lab practical exams will test your understanding of the topics and exercises covered in the laboratory sessions. The first lab exam will cover material covered in labs 1 – 4, while labs 5 – 10 will be covered on the second exam.

Missed Lab Exam: *It is your responsibility to be present on the days of the lab practical exams.*

If you miss a lab exam due to a serious illness, you must present a valid excuse to the Lab Manager Gorjana Bezmalinovic ([bezmalin@usc.edu](mailto:bezmalin@usc.edu)) **within 48 hours** of the missed exam. A valid excuse is considered to be an official note from your doctor or the "Authorization for Disclosure of Medical Information" form from the USC Engemann Student Health Center (the '*Professor's Limited Discussion*' form). Note that neither you, nor your doctor, need to tell us the nature of your illness; we just want to verify whether you were too ill to take the exam. If you miss an exam for non-illness related reasons, you must provide similarly convincing documentation of the emergency to the Lab Manager. If we judge your excuse to be valid, 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.

## JOURNAL CLUB

Dr. McKemy and Dr. Hires will each lead a journal club discussion of one peer-reviewed scientific paper related to the course lecture material. You are responsible for reading and understanding the scientific papers and you are expected to participate in the discussion of the papers during journal club.

## PRESENTATION

The topic of this presentation is molecular and cellular basis of a disease of your choice. It is an 8-10 minute oral report, illustrated with PowerPoint slides. Detailed information about this assignment will be posted on Blackboard (<https://blackboard.usc.edu/>) under Lab-related Documents when semester starts.

## MISSED LABS

If you miss a scheduled lab exercise **due to illness or emergency**, please contact the Lab Manager Gorjana Bezmalinovic ([bezmalin@usc.edu](mailto:bezmalin@usc.edu)) to see whether it will be possible to make up the exercise by attending an alternative lab section. For logistical reasons, it will not be possible to make up a missed lab exercise after Thursday afternoon of the week in question. Therefore, students from a Thursday morning lab will have little or no alternative should they miss lab unexpectedly.

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 Lab 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 Lab Manager at least 2 weeks in advance so alternatives can be arranged.

Please note that **no lab make-ups will be allowed** during the week prior to Spring Break, and for school-unrelated activities.

## **LAB SCORES**

You can find scores for all of your lab assignments on Blackboard: <https://blackboard.usc.edu>. Your lab scores will be posted under your **LAB SECTION**. Be sure to check for additional postings on a regular basis. It is the student's responsibility to immediately notify his/her Lab Instructor or Lab Manager in the event of any mistakes, so please check your scores on Blackboard weekly.

## **LAB SCORE NORMALIZATION**

The lab scores will be normalized at the end of the semester by the Lab Manager to correct for differences in grading between Lab Instructors (TAs). In this procedure, the mean total score of all students in each lab instructor's lab section is compared to the mean total score of the entire class and each student's score is adjusted.

## **STUDENTS WITH DISABILITIES**

Students requesting academic accommodations based on a disability are 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. Be sure that the letter is delivered to the Laboratory Manager as early in the semester as possible, [preferably by January 27, 2017](#). DSP is located in STU 301 and is open from 8:30 a.m. to 5:00 p.m., Monday through Friday. Their telephone number is 213-740-0776. If a student's approved accommodation is limited to extra time on examinations, the teaching staff of BISC 121 will provide the accommodation. For any other accommodation, such as a private room, reader or a scribe, students must make prior arrangements with the DSP office 2 weeks before the exam date. For more information please visit the following website: [http://sait.usc.edu/academicsupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html).