



## **BISC 372 Cell Biology**

**Units: 4**

**Lectures: Mondays and Wednesdays 9:30 – 10:50 am**

**Discussion: Thursdays 1:00 – 1:50 pm**

**Location:** TBD

**Instructor: Xianrui Cheng, Ph.D.**

**Office:** TBD

**Office Hours:** TBD

**Contact Info:** [xianruic@usc.edu](mailto:xianruic@usc.edu)

**Instructor: Rory Spence, Ph.D.**

**Office:** TBD

**Office Hours:** TBD

**Contact Info:** [rspence@usc.edu](mailto:rspence@usc.edu)

**Teaching Assistant:**

**Office:** TBD

**Office Hours:** TBD

**Contact Info:** TBD

### **Course Description**

Few fields in biology are developing more rapidly on more fronts and with more excitement than cell biology. This class serves as an introduction to the experiments, theories and knowledge of modern cell biology. We will pay particular focus on organelles, signaling, cytoskeleton, and the cell cycle. Classes will be lecture format twice a week as well as a once a week discussion section. Grading will consist of 2 exams, a midterm and a final, as well as 8 quizzes and participation in discussion section. Of course, respect and support for your classmates (and your professors) during discussions is expected. We will also read and analyze original research articles. While the book does an excellent job of giving us the basics of cell biology, papers will provide us with cutting edge hypothesis and results.

### **Learning Objectives**

1. Demonstrate the importance the structure and function of cellular components.
2. Demonstrate how cellular components are localized and organized.
3. Connect the regulatory mechanisms related to the diversity of cellular components.
4. Understand landmark experiments within cell biology.
5. Apply relationships between cell biology and society.

**Prerequisite(s):** BISC 220 or BISC 221 and MATH 125 or equivalent

## Technological Proficiency and Hardware/Software Required

### USC Technology Rental Program

We realize that attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program. To apply, please submit an [USC Technology Rental Program Application](#) .

### USC Technology Support Links

[Zoom information for students](#)

[Blackboard help for students](#)

[Software available to USC Campus](#)

## Required Readings and Supplementary Materials

*Bruce Alberts, et al. Molecular Biology of the Cell.* Garland Science, 2015. 6th or 7th (2022) edition. ISBN: 9780815344322 Reading assignments for each class will be posted on Blackboard. The textbook is required. A copy of the book is available in the reference section of the library.

## Description and Assessment of Assignments

There will be 2 exams for the class, one midterm and one final. Each exam will be worth 30% of your grade. The exams will **not** be memorization of facts, instead they will test your ability to think critically and creatively about topics we have covered in class. The exams will be multiple choice. Exam dates are firm. If you ever are unsure of your grade or have any questions, please feel free to reach out to us in person or via email. We are willing to regrade exams. However, you must return the exam within one week of when we return it to you with a written response of what you believe should be regraded. We reserve the right to regrade the entire assignment. 8 quizzes must be completed on blackboard prior to coming to that week's discussion section. Each quiz will be worth 15 points and will be written by the professors. Quizzes will be worth 30% of your total grade. The quizzes will be based on the papers you will read for that weeks discussion as well as topics from that weeks lecture. This way quizzes will allow you to be prepared for discussion as well as help you keep up to date on your studying for exams. Attendance in discussion sections is mandatory and active participation in discussion section is worth 10% of your grade.

Participation: Active participation requires that you attend weekly discussion sections in person. To receive full participation points one must attend discussion and be prepared to participate in fruitful conversations regarding the topic, paper, or activity for that day. This does not mean one has to have the "correct" or "best" answers. This instead means that you are willing to think critically about cell biology and share your ideas with your peers and discussion instructor.

## Grading Breakdown

Assignment	Points	% Of grade
Midterm exam	120	30
Final exam	120	30
Discussion Quizzes	8 @ 15pts/each	30
Discussion Participation	40	10
<b>TOTAL</b>	<b>400</b>	<b>100</b>

### **Grading Scale**

Final grades are based on the total points earned in the course. Course grades will be determined according to the following scale:

A 93-100, A- 90-92

B+87-89 ,B 83-86, B- 80-82

C+ 77-79, C 73-76, C-70-72

D+ 67-69, D63-66, D- 60-62

F59 and below

Instructors reserve the right to adjust the grading scale at the end of semester.

### **Assignment Submission Policy**

Assignment Submission: Late quizzes or make-up exams will not be given. Please refer to the university policy for excused absences.

### **Additional Policies**

Synchronous session recording notice: Classes will be recorded via zoom. You are strongly encourage to come to in person lecture and discussion attendance is required. We expect each student to study 8 hours a week outside of class. 5 hours should be dedicated to reading the textbook and papers for each week. We expect 3 hours a week are dedicated to studying and preparing for the exams and quizzes.

### Course Schedule: A Weekly Breakdown

Lecture or Discussion	Week	Pre-Reading Due Before Class	Topic	Instructor
Lecture 1	1	Ch. 1 7 <sup>th</sup> Edition	Introduction to Cell Biology, Experimental Approaches	Dr. Spence
Lecture 2	1	Ch. 8/9 7 <sup>th</sup> Edition	Experimental Approaches	Dr. Spence
Discussion 1	1	Paper: TBD	Paper: TBD	TBD
Lecture 3	2	Ch. 4 7 <sup>th</sup> Edition	Nucleus: Structure and Function	Dr. Spence
Discussion 2	2	Paper: TBD <b>Quiz 1</b>		Paper: TBD
Lecture 4	2	Ch. 4	Nucleus: Chromatin, Organization	Dr. Spence
Lecture 5	3	Ch. 4	Nucleus: Transport	Dr. Spence
Discussion 3	3	Paper: TBD <b>Quiz 2</b>		Paper: TBD
Lecture 6	4	Ch. 13	Endomembrane System: Co- translational Translocation	Dr. Spence
Lecture 7	4	Ch. 13	Endomembrane System: Endoplasmic Reticulum	Dr. Spence
Discussion 4	4	Paper: TBD	Paper: TBD	TBD
Lecture 8	5	Ch. 13	Endomembrane System: Vesicle Transport, Golgi, Lysosomes	Dr. Spence
Lecture 9	5	Ch. 13	Endomembrane System: Endocytosis, Disease	Dr. Spence

Discussion 5	5	Paper: TBD <b>Quiz 3</b>	Paper: TBD	TBD
Lecture 10	6	Ch. 15	Signaling: GPCR	Dr. Spence
Lecture 11	6	Ch. 15	Signaling: RTK, MAPK	Dr. Spence
Discussion 6	6	Paper: TBD <b>Quiz 4</b>	Paper: TBD	TBD
Lecture 12	7	Ch. 20	Cancer	Dr. Spence
Discussion 7	7	Paper: TBD	Paper: TBD	TBD
Lecture 13	7	Ch. 20	Cancer	Dr. Spence
Lecture 14	8	Ch. 23	Pathogens	Dr. Spence
Discussion 8	8	Exam Review	Exam Review	TBD
<b>Exam</b>	<b>8</b>		<b>Lectures 1-14 Discussions 1-8</b>	
Lecture 15	9	Ch. 16	Cytoskeleton: Introduction	Dr. Cheng
Discussion 9	9	Paper:TBD	Return Exams	TBD
Lecture 16	10	Ch. 16	Cytoskeleton: Filament Dynamics	Dr. Cheng
Lecture 17	10	Ch. 16	Cytoskeleton: Regulation	Dr. Cheng
Discussion 10	10	Paper: TBD <b>Quiz 5</b>	Paper: TBD	TBD
Lecture 18	11	Ch. 16	Cytoskeleton: Motors	Dr. Cheng
Lecture 19	11	Ch. 16	Cytoskeleton: Motility	Dr. Cheng
Discussion 11	11	Paper: TBD <b>Quiz 6</b>	Paper: TBD	TBD
Lecture 20	12	Ch. 17	Cell Cycle : Mitosis	Dr. Cheng

Lecture 21	12	Ch. 17	Cell Cycle : Cell Cycle Control	Dr. Cheng
Discussion 12	12	Paper: TBD <b>Quiz 7</b>	Paper: TBD	TBD
Lecture 22	13	Ch. 17	Cell Cycle: G11/S	Dr. Cheng
Lecture 23	3	Ch. 17	Cell Cycle: Checkpoints	Dr. Cheng
Discussion 13	13	<a href="#">Cell Cycle</a> <b>Quiz 8</b>	<a href="#">Cell Cycle</a>	TBD
Lecture 24	14	Ch. 17	Cell Cycle: Meiosis	Dr. Cheng
Lecture 25	14	Ch. 18	Signaling: Cell Death, Apoptosis	Dr. Cheng
Discussion 14	14	<a href="#">Apoptosis</a>	<a href="#">Apoptosis</a>	TBD
Lecture 26	15	Ch. 12	Self Organization	Dr. Cheng
Lecture 27	15	Ch. 21	Self Organization	Dr. Cheng
Discussion 15	15	Exam Review	Exam Review	
<b>FINAL</b>	<b>TBD</b>		<b>Lectures 15-27</b> <b>Discussions 9-15</b>	

## *Statement on Academic Conduct and Support Systems*

### **Academic Integrity:**

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or “recycle” work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

### **Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](http://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### **Support Systems:**

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress

24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.