

**BISC 101Lxg Cellular and Molecular Biology: from  
the cell to human life (Draft April 21 2025)**

**4 Units**

**Fall 20253-13102R**

**Wednesday and Friday— from 8:30am to 9:50am**

**In Person - Room ZHS159**

**Labs:**

**13103R Wednesday 10:00-11:50 am**

**13105R Wednesday 1:00-2:50 pm**

**13117R Friday 10:00-11:50pm**

**In person – Room ZHS 258**

**Instructor: Raffaella Ghittoni, PhD**

**Office:** ZHS 256

**Office Hours:** Wed and Fri 10 am to 11am

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

**Phone number office:** 213-740-8352.

**Instructional Lab Manager: Eric Noakes, M.S.**

**Office:** ZHS 353

**Office Hours:** By Appointment

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

**Phone number office:** 213-740-6079.

**Lab Instructor:** TBD

**Office Hours:** TBD

**Contact Info:**

## Course Description

This course has been approved to satisfy the GE-D, Life Sciences requirement.

It is designed to give undergraduates an introduction to structures and functions of the cell as the smallest form of a living organism. The course describes, at genetic and molecular level, cellular components, cell reproduction and mechanisms of cell regulation. For several of these topics, dysfunctional aspects (e.g. mutations, genetic diseases, cancer etc.) will be mentioned as examples, and basic techniques and methodologies currently used by scientists are introduced.

Although there is no prerequisite, general knowledge of introductory biology and chemistry at the high school level is helpful.

Please note that this course is not designed for those majoring in biology or the related health sciences.

## Learning Objectives

- Students will understand basic concepts of biological molecules and cell physiology.
- Students will acquire knowledge of structure and functions of prokaryotic and eukaryotic cells, as whole entities and in terms of their subcellular processes.
- Students will become familiar with cellular processes in terms of synthesis and functions of nucleic acids and proteins in both prokaryotes and eukaryotes.
- Students will be able to acquire basic knowledge of principles of inheritances and their dysfunctions.
- Students will appreciate the biological mechanisms behind cell division and asexual and sexual reproduction.
- Students will be introduced to experiments using laboratory techniques and methods to apply concepts presented in lectures.
- Students will develop the ability to analyze, present and critically discuss results of their experiments both in individual and teamwork activities

**Prerequisite(s):** No prerequisite

## Course Notes

### Online Course Materials:

Supplemental course materials and announcements will be posted on the Brightspace website. Your USC e-mail username and password will allow you to access the secure site:

<https://brightspace.usc.edu/d2l/home> (if you have trouble with Brightspace, please contact <https://www.brightspacehelp.usc.edu/> )

Students are responsible for checking additional postings and announcements on Brightspace website on a weekly basis.

**Please see separate additional Laboratory Syllabus and Schedule posted on Brightspace.**

Syllabi may slightly change during the semester.

### Email Communication:

To ensure privacy, only student's USC email accounts may be used for email communications. Students are responsible for understanding the content of email messages that the instructor sends to their USC accounts. Therefore, each student must check their USC email regularly and make sure their account is not over quota, so new messages can be received.

## Required Readings and Supplementary Materials

**Lecture textbook:** Biology: Life on Earth by T. Audesirk, G. Audesirk and B. E. Byers. Pearson. 12th edition (or 11<sup>th</sup> edition) (available in different format: E-book copy - Loose-leaf - Paper copy)

E-book copy <http://www.mypearsonstore.com/bookstore/biology-life-on-earth-subscription-0134256247>

Mastering Biology – Pearson interactive website (**optional-not mandatory**)

**Laboratory:** All materials will be accessible on the laboratory Brightspace site

## Description and Assessment of Assignments

Exams. There will be 2 midterm exams during the semester and 1 final exam. Exams will be 60 min long and will consist of multiple choice, short answer, matching or fill-in-the-blank questions. Exams are NOT open book nor open notes. A student is not allowed to start an exam after the first student has left ANY exam room.

## Grading Timeline

Grades for Midterm Exams will be posted within one calendar week following the exam date.

## Additional Policies

**Missed exams. There are no makeup exams in the course.** If a student misses an exam due to a true emergency, official written documentation (what you feel is appropriate to demonstrate a legitimate reason for missing said exam) should be submitted to the course instructor, or the course Lab Manager, **within two (2) days of the missed exam**. Students will only be excused for ONE exam with a valid excuse. No make-up lecture exams will be given in this course. You may be excused from 1 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 for a legitimate reason, and wish to ask for an accommodation, you should proceed as follows. Within 48 hours of the missed exam, send an email to the lab manager and request that you be excused. Explain your valid reason for being absent without providing detailed information that violates FERPA or HIPAA (i.e. providing information that includes Private Health Information or PHI). 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 your excuse would be judged to be valid, we will give you a grade for the missed exam equal to the average of your scores for the exams that you did complete (you must complete at least 2 midterm exams). 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.

If you miss the final exam and have provided a valid excuse to the lab manager and the course instructor within 48 hours of the exam time, a final course grade of Incomplete (IN) will be recorded and you will be permitted to take a make-up final exam within 1 academic year.

**Re-grades of exam questions** If you would like to submit a rebuttal on the grading of one or more questions on your lecture exam, we have a formal regrade process available. You must include all of the following to have your request considered, otherwise it will be automatically rejected. Please e-mail the lab manager the following with the subject "[Your Initials] Exam [1/2/3] Regrade Request". Regrade requests are due within one week (168 hours) of your section's viewing of the exam.

1. Your full name as well as lecture and lab section numbers
2. List of question(s) for consideration in numerical order
3. Photograph(s) of your entire exam (compressed to embed or attach)
4. Photograph(s) of the exam key for the questions you want considered
5. Detailed explanation (with citations) as to why you may deserve more points

**Weekly Review Quizzes:** Part of your total grade will be online quizzes (20 pts). There will be 10 multiple choice quizzes (4 questions each quiz – 0.5 point each question) to be completed over the weekend on Brightspace (<https://Brightspace.usc.edu>) during the semester. The quizzes will be posted at 6:00 pm on Friday and will remain available until 9:00am the following Monday on Brightspace. Answers to quiz questions will be posted on Tuesday afternoons.

### Grading Breakdown

The course grade will be based upon 400 possible points:

Assignment	Points	% of Grade
Midterm I	100	~24
Midterm II	100	~24
Final Exam	100	~24
Laboratory Assignments	100	~24
Weekly Review Quizzes	20	~5
<b>TOTAL</b>	<b>420</b>	<b>100</b>

### Grading Scale

Course final grades will be determined using the following scale

A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

### Additional Policies

#### **Course Policies:**

- 1) Exam dates are firm. There are no makeup exams in the course. Performance on the final may be prorated to substitute for a missing midterm exam, if an excuse considered valid by faculty is presented in a timely fashion. An acceptable written excuse or documentation must be provided to the faculty. The final exam will be administered only on the date and time set by the University.
- 2). Midterm exams and lab tests will be returned to students by the TA during lab section. The final examination will not be returned but will be retained for one semester by the faculty.
- 3) No special assignments for extra credit are permitted.
- 4) The use of technology in the classroom is STRICTLY limited to course activities. Penalties will be applied to students for any infraction.
- 5) Academic integrity policies of the University will be strictly followed. Infractions can result in severe penalties. There may be assigned seating for exams. No student may be admitted to an exam after the first student has left the exam.

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://www.usc.edu/dept/publications/SCAMPUS/gov/>. 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/>.

6) Any student requesting academic accommodations based on a disability is required to register with the [Office of Student Accessibility Services](#) OSAS each semester. A letter of verification for approved accommodations can be obtained from OSAS. Please be sure the letter is delivered to the professor as early in the semester as possible. OSAS is located in 3601 Watt Way -Grace Ford Salvatori (GFS) 120 Los Angeles, CA 90089 [OSASFrontDesk@usc.edu](mailto:OSASFrontDesk@usc.edu) - (213) 740-0776

7) It may be necessary to make adjustments to the syllabus during the semester. Check the course website or class announcements on Brightspace for updates. **Exam dates will not be changed.**

8) Any questions or concerns regarding these policies should be addressed to the faculty.

## Lectures and Exams Schedule BISC101Lxg Fall 2025

Weeks	Date	Topics Covered	Reading assignment
Week 1	27 Aug	Course introduction and syllabus description	Ch.1
	29 Aug	Exploring life on earth (Introduction to life on earth)	Ch.1
Week 2 Quiz #1	3 Sep	Sharing is Caring: covalent bonds and beyond (Atoms, molecules, and life I)	Ch.2
	5 Sep	Sharing is Caring: covalent bonds and beyond (Atoms, molecules, and life II)	Ch.2
Week 3 Quiz #2	10 Sep	Organic molecules: the Carbon supremacy (Biological molecules I)	Ch.3
	12 Sep	Fats, Sugars, Proteins and ...a pinch of Nucleic Acids: The recipe for Life (Biological molecules II)	Ch.3
Week 4 Quiz #3	17 Sep	The basic unit of life: The Cell (Cell structure and functions I)	Ch.4
	19 Sep	Inside the cell engine (Cell structure and functions II)	Ch.4
Week 5 Quiz #4	24 Sep	Two levels of complexity: prokaryotes vs eukaryotes (Cell structure and functions III)	Ch.4
	26 Sep	The Fluid Mosaic: a Biological Masterpiece (Cell membrane structure and functions I)	Ch.5
Week 6	1 Oct	Compartments: A Place for Everything and Everything in its Place (Cell membrane structure and functions II)	Ch.5
	3 Oct	<b>Midterm 1</b>	<b>Ch. 1-5</b>
Week 7 Quiz #5	8 Oct	From 1 to 2. Cell division and heredity: Mitosis (Cellular reproduction I)	Ch. 9
	10 Oct	<b>Fall Recess</b>	
Week 8 Quiz #6	15 Oct	Cancer: Losing Control (Cellular reproduction III)	Ch.9
	17 Oct	Sex and the Cell: Meiosis (Cellular reproduction III)	Ch. 10
Week 9 Quiz #7	22 Oct	Shuffling the deck. Cell division and genetic variability (Cellular reproduction IV)	Ch.10
	24 Oct	Gregor Mendel and the “magic peas” (Patterns of Inheritance I)	Ch.11
Week 10 Quiz #8	29 Oct	Mendel’s laws (Patterns of Inheritance II)	Ch.11
	31 Oct	Inheriting from mom and dad (Patterns of Inheritance III)	Ch.11
Week 11	5 Nov	<b>Midterm 2</b>	<b>Ch.9-11</b>
	7 Nov	DNA: the blueprint of life (DNA molecules I)	Ch.12
Week 12 Quiz #9	12 Nov	DNA structure and replication (DNA molecules II)	Ch.12
	14 Nov	DNA structure and replication (DNA molecules III)	Ch.12
Week 13 Quiz #10	19 Nov	Message in a molecule (Gene expressions I)	Ch.13
	21 Nov	The genetic code: Nature’s Alphabet (Gene expressions II)	Ch.13
Week 14	26 Nov	<b>Thanksgiving recess</b>	
	28 Nov	<b>Thanksgiving recess</b>	
Week 15	3 Dec	Cracking the code (Gene expressions III)	Ch.13
	5 Dec	It’s all about that “base” (Gene expressions IV)	Ch.13
<b>FINAL</b>	<b>10 Dec Wednesday</b>	<b>Final Examination from 9:00 am to 10:00 am - room ZHS 159</b>	<b>Ch.12-13</b>

## Statement on University Academic and Support Systems

### 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](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### Student Financial Aid and Satisfactory Academic Progress:

To be eligible for certain kinds of financial aid, students are required to maintain Satisfactory Academic Progress (SAP) toward their degree objectives. Visit the [Financial Aid Office webpage](#) for [undergraduate](#)- and [graduate-level](#) SAP eligibility requirements and the appeals process.

### 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 consists 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) 740-2500

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.