

**BISC 101Lxg Cellular and Molecular Biology: from
the cell to human life (June 17 2024)**

4 Units

Fall 20233-13102R

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

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

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 11th 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. If it is a medical excuse, you must also state in writing (a) the doctor's name and phone number and (b), a signed statement authorizing us to discuss with the doctor whether you were too ill to take the exam. (Note that neither you nor the physician need to tell us the nature of your illness.) Your physician has to be licensed to practice medicine by the State of California (www.medbd.ca.gov) and that it's considered unethical and unwise for a physician to provide medical care for a family member. We will contact the doctor and decide whether you have a valid excuse. If you do, the instructors may, at their discretion, permit the use of the student's performance on other exams in determining the missed exam grade. 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.

Please note: the Student Health Center has changed their medical excuse policy. The Student Health Center will no longer provide: 1) class excuse notes for illness, 2) clinical appointments for class excuse, and 3) authentication of outside physician certificates. The Absence of Class - Self Verification Form provided by the Student Health Center is insufficient documentation for our purposes.

Re-grades of exam questions. After they have been graded, you will be able to view your corrected exams on Brightspace. If you feel an error was made in the grading of your exam, you must submit a Regrade Request Form in which you have thoroughly explained (typewritten) why you think your answer deserves more credit, as an e-mail attachment to your TA within 1 week of the time the corrected exams were made available to the entire class. The entire answer will be re-graded, not just the part you think deserves more credit. Your score may increase or decrease as a result of a re-grade.

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	25
Midterm II	100	25
Final Exam	100	25
Laboratory Assignments	80	20
Weekly Review Quizzes	20	5
TOTAL	400	100

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

COVID-19 Protocols:

Students are expected to comply with all aspects of USC's COVID-19 policy. Failure to do so may result in removal from the class and referral to Student Judicial Affairs and Community Standards (SJACS).

Keep in mind that these policies will evolve with the changing conditions of the COVID-19 pandemic and may include social distancing, the use of masks which cover your nose and mouth at all times (regardless of vaccination status), and regular Trojan Check and/or COVID testing, among others.

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 will be returned to students by the professor during lectures. The TA will return lab tests to students during lab section. The final examination will not be returned but will be retained for one semester by the faculty.

3) Regrades: If you think an answer you have provided was graded incorrectly or if there is an arithmetic error, you may seek a regrade. You must provide a written explanation of why you think your answer was graded incorrectly. Regrade requests are to be submitted to your TA. If a regrade is agreed upon, then the

ENTIRE EXAMINATION may be subject to a regrade. Your grade may therefore go up, go down, or remain the same. Regrade requests must be received within one week of when the exam key is posted for midterms, or by the second week of classes the following semester for the final exam.

4) No special assignments for extra credit are permitted.

5) The use of technology in the classroom is STRICTLY limited to course activities. Penalties will be applied to students for any infraction.

6) 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/>.

7) 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 professor as early in the semester as possible. DSP is located in STU 301 and is open 8:30 AM – 5:00 PM, Monday thru Friday, Phone number: 213-740-0776.

8) 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.**

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

Lectures and Exams Schedule BISC101Lxg Fall 2023

Weeks	Date	Topics Covered	Reading assignment
Week 1	28 Aug	Course introduction and syllabus description	Ch.1
	30 Aug	Exploring life on earth (Introduction to life on earth)	Ch.1
Week 2 Quiz #1	4 Sep	Sharing is Caring: covalent bonds and beyond (Atoms, molecules, and life I)	Ch.2
	6 Sep	Sharing is Caring: covalent bonds and beyond (Atoms, molecules, and life II)	Ch.2
Week 3 Quiz #2	11 Sep	Organic molecules: the Carbon supremacy (Biological molecules I)	Ch.3
	13 Sep	Fats, Sugars, Proteins and ...a pinch of Nucleic Acids: The recipe for Life (Biological molecules II)	Ch.3
Week 4 Quiz #3	18 Sep	The basic unit of life: The Cell (Cell structure and functions I)	Ch.4
	20 Sep	Inside the cell engine (Cell structure and functions II)	Ch.4
Week 5 Quiz #4	25 Sep	Two levels of complexity: prokaryotes vs eukaryotes (Cell structure and functions III)	Ch.4
	27 Sep	The Fluid Mosaic: a Biological Masterpiece (Cell membrane structure and functions I)	Ch.5
Week 6	2 Oct	Compartments: A Place for Everything and Everything in its Place (Cell membrane structure and functions II)	Ch.5
	4 Oct	Midterm 1	Ch. 1-5
Week 7 Quiz #5	9 Oct	From 1 to 2. Cell division and heredity: Mitosis (Cellular reproduction I)	Ch. 9
	11 Oct	Fall Recess	
Week 8 Quiz #6	16 Oct	Cancer: Losing Control (Cellular reproduction III)	Ch.9
	18 Oct	Sex and the Cell: Meiosis (Cellular reproduction III)	Ch. 10
Week 9 Quiz #7	23 Oct	Shuffling the deck. Cell division and genetic variability (Cellular reproduction IV)	Ch.10
	25 Oct	Gregor Mendel and the "magic peas" (Patterns of Inheritance I)	Ch.11
Week 10 Quiz #8	30 Oct	Mendel's laws (Patterns of Inheritance II)	Ch.11
	1 Nov	Inheriting from mom and dad (Patterns of Inheritance III)	Ch.11
Week 11	6 Nov	Midterm 2	Ch.9-11
	8 Nov	DNA: the blueprint of life (DNA molecules I)	Ch.12
Week 12 Quiz #9	13 Nov	DNA structure and replication (DNA molecules II)	Ch.12
	15 Nov	DNA structure and replication (DNA molecules III)	Ch.12
Week 13 Quiz #10	20 Nov	Message in a molecule (Gene expressions I)	Ch.13
	22 Nov	The genetic code: Nature's Alphabet (Gene expressions II)	Ch.13
Week 14	27 Nov	Thanksgiving recess	
	29 Nov	Thanksgiving recess	
Week 15	4 Dec	Cracking the code (Gene expressions III)	Ch.13
	6 Dec	It's all about that "base" (Gene expressions IV)	Ch.13
FINAL	11 Dec Wednesday	Final Examination from 9:00 am to 10:00 am - room ZHS 159	Ch.12-13

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, compromises 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. You may contact OSAS at (213) 740-0776 or via email at 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 IX 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

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