

**CELLULAR AND MOLECULAR BIOLOGY:
FROM THE CELL TO HUMAN LIFE
BISC 101Lxg - 13102R- Fall 2017
Lecture Syllabus,
Raffaella Ghittoni, Ph.D.**

Brief 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 conduct 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

Lecturer:

Raffaella Ghittoni, Ph.D. Room ZHS 256 - Phone 213-740-8352 rghitton@usc.edu
Office Hrs: TBD

Lecture hours: Wednesday/ Friday from 3:30 pm to 4:50 pm Room LVL 17

Instructional Laboratory Manager:

Airek R. Mathews, Ph.D. Office: ZHS 353 | Phone: 213-740-6079
airekmat@usc.edu

Teaching Assistants:

TBD

Course Textbooks:

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

Mastering Biology – Pearson interactive website (optional)

Laboratory: Lab Manual “**BISC101Lxg - Cellular and Molecular Biology**”

Online Course Materials:

Supplemental course materials and announcements will be posted on the Blackboard website. Your USC e-mail username and password will allow you to access the secure site: <https://blackboard.usc.edu> (if you have trouble with Blackboard, please contact blackboard@usc.edu)

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

Weekly Review Quizzes: There will be ten multiple choice quizzes to be completed over the weekends on Blackboard (<https://blackboard.usc.edu>) during the semester. The quizzes will be posted at 6:00 PM on Friday and will remain available until 9:00 AM the following Monday. Answers to quiz questions will be posted on Tuesday afternoons.

Please see separate additionally Laboratory Syllabus and Schedule posted on Blackboard.

Syllabi may slightly change during the semester.

Exam dates are firm.

E-mails: Course E-mails will be sent only to your official USC email address

Grading:

Midterm I	25%
Midterm II	25%
Final exam	25%
Laboratory	20%
Weekly Review quiz	5%

The point system will total 400 points, as follows:

Midterm Exam 1	100
Midterm Exam 2	100
Final Exam	100
Laboratory Assignments	80
Weekly Review Quizzes	20

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) 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 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.

7) It may be necessary to make adjustments to the syllabus during the semester. Check the course website or class announcements on Blackboard 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 2017

Weeks	Date	Topics Covered	Reading assignment
Week 1	23-Aug	Course introduction and syllabus description	Ch.1
	25-Aug	Exploring life on earth (Introduction to life on earth)	Ch.1
Week 2 Quiz #1	30-Aug	Sharing is Caring: covalent bonds and beyond (Atoms, molecules, and life I)	Ch.2
	1-Sep	Sharing is Caring: covalent bonds and beyond (Atoms, molecules, and life II)	Ch.2
Week 3 Quiz #2	6-Sep	Organic molecules: the Carbon supremacy (Biological molecules I)	Ch.3
	8-Sep	Fats, Sugars, Proteins and ...a pinch of Nucleic Acids: The recipe for Life (Biological molecules II)	Ch.3
Week 4 Quiz #3	13-Sep	The basic unit of life: The Cell (Cell structure and functions I)	Ch.4
	15-Sep	Inside the cell engine (Cell structure and functions II)	Ch.4
Week 5 Quiz #4	20-Sep	Two levels of complexity: prokaryotes vs eukaryotes (Cell structure and functions III)	Ch.4
	22-Sep	The Fluid Mosaic: a Biological Masterpiece (Cell membrane structure and functions I)	Ch.5
Week 6 Quiz #5	27-Sep	Compartments: A Place for Everything and Everything in its Place (Cell membrane structure and functions II)	Ch.5
	29-Sep	In & Out: How cell communication works (Cell membrane structure and functions III)	Ch.5
Week 7	4-Oct	Midterm 1	Ch. 1-5
	6-Oct	From 1 to 2. Cell division and heredity: Mitosis (Cellular reproduction I)	Ch.9
Week 8 Quiz #6	11-Oct	Cancer: Losing Control (Cell reproduction II)	Ch.9
	13-Oct	Sex and the Cell: Meiosis (Cellular reproduction III)	Ch.10
Week 9 Quiz #7	18-Oct	Shuffling the deck. Cell division and genetic variability (Cell reproduction IV)	Ch.10
	20-Oct	Gregor Mendel and the "magic peas" (Patterns of Inheritance I)	Ch.10
Week 10 Quiz #8	25-Oct	Mendel's laws (Patterns of Inheritance II)	Ch.11
	27-Oct	Inheriting from mom and dad (Patterns of Inheritance III)	Ch.11
Week 11	1-Nov	Midterm 2	Ch.9-11
	3-Nov	DNA: the blueprint of life (DNA molecules I)	Ch.12
Week 12 Quiz #9	8-Nov	DNA structure and replication (DNA molecules II)	Ch.12
	10-Nov	Message in a molecule (Gene expressions I)	Ch.13
Week 13 Quiz #10	15-Nov	The genetic code: Nature's Alphabet (Gene expressions II)	Ch.13
	17-Nov	Cracking the code (Gene expressions III)	Ch.13
Week 14	22-Nov	Thanksgiving recess	
	24-Nov	Thanksgiving recess	
Week 15	29-Nov	It's all about that "base" (Gene expressions IV)	Ch.13
	1-Dec	Biotechnology – Applied Science	Ch.14
FINAL	11-Dec Monday	Final Examination from 02:00 pm to 4:00 pm - room LVL 17	Ch.12-14