

BISC 120Lg 13003 Lecture Syllabus, **SPRING 2022**

General Biology: Organismal Biology and Evolution

~ October 28th, 2021 version ~

Overview:

This 4-unit biology course will present several key topics in evolution, ecology, environment, and the diversity of life. These topics will be covered in two weekly lectures and one weekly laboratory section.

Learning Objectives:

At the end of the course, students will:

- know the concept of the scientific method
- understand how the scientific method is applied to key questions regarding the nature of life on Earth
- know the mechanisms of heredity
- know the theory of evolution
- understand how evolution explains the diversity of life on Earth
- know the defining characteristics of the domains Archaea, Bacteria, and Eukarya, with special attention to plants, fungi, and animals
- understand how the environment and organisms contribute to the evolution of ecological relationships
- understand how the environment has changed and continues to change and how this affects the evolution of life on Earth
- be able to design and conduct scientific investigations
- be able to think critically about how experimental evidence answers a scientific question • be able to perform biological laboratory techniques

Course Instructor: Dr. Raffaella Ghittoni, ZHS 256, 213-740-8352, rghitton@usc.edu

Lab Manager: Brett Spatola, PhD, ZHS 362, 213-740-6078, spatola@usc.edu

Textbooks: Lecture
[Campbell Biology 11th ed.](#) (Mastering Biology™ is optional)
Laboratory
[Spring 2020 BISC 120 Laboratory Manual](#), (PDF posted on Blackboard)
Adams & Crawley (2018). [Van De Graaff's Photographic Atlas for the Biology Laboratory, 8th ed.](#); optional
Pechenik. (2016). [A Short Guide to Writing About Biology. 9th ed.](#); optional

Website: <https://blackboard.usc.edu>
(site for course materials, lecture notes, quizzes, additional readings, grades etc.)

Lecture times: TUE/THU 2:00 - 3:20 PM in **ZHS 159**

Laboratory times: THU at 8:00 AM, THU at 11:00 AM, THU at 5:00 PM, FRI at 8:00 AM, FRI at 11:00 AM and FRI at 2:00 PM in **ZHS 365**

Office Hours: TBA

Lecture Quizzes: There will be 12 multiple choice quizzes (each worth 5 points) to be completed on Blackboard (<https://blackboard.usc.edu>) during the semester. The quizzes will be posted at **6:00 PM** on Thursdays and will remain available until 9:00 AM the following Monday. Answers to quiz questions will be posted on Monday afternoons.

Exams: The lecture portion of this course will include four exams – three midterm exams and a final exam. All exams (midterms and final) may include multiple choice questions, matching, fill in the blank answers, definitions, short answers and quantitative problems. To be assigned a final letter grade at the end of the course, a student must take at least two mid-term lecture examinations and the final examination and have completed at least 80% of the assigned weekly laboratory activities. Any document associated with grading may be photocopied by the instructional staff.

Grading: After each exam, grade point cut-offs will be released. There is not an absolute number of points that predetermines a letter grade of A, A-, B+, B, B-, etc. If the class average is lower than 80% at the end of the semester, the grades for the course will be assigned on a curve, determined by the total number of points as given below.

The point system will total **1000 points**, as follows:

Midterm Exam 1	150
Midterm Exam 2	150
Midterm Exam 3	150
Final Exam (Midterm 4)	150
Lecture Quizzes (12)	60
Laboratory Assignments	340

Laboratory scores will be normalized as explained in the laboratory syllabus in order to correct for possible differences in grading between lab instructors.

Schedule of lecture topics (subject to modification of specific topics and reading assignments*)

Day	Quiz	Lecture	Readings
T Jan 11		1 Introduction; Biological Variation	Course Syllabus; 1.1, 1.2, 6.2,
TH Jan 13		2 Genetic Material and Expression	12.1, 13.1, 13.2, 16.1, 17.1
T Jan 18		3 Mendelian Inheritance	13.3, 13.4, all 14
TH Jan 20	Quiz 1	4 Molecular Basis of Inheritance	15
T Jan 25		5 Descent with Modification	22
TH Jan 27	Quiz 2	6 Evolutionary Mechanisms	23 and 25.6
T Feb 1		7 Speciation	24
TH Feb 3	Quiz 3	8 Macroevolution	25.5-25.6
T Feb 8		MIDTERM 1	
TH Feb 10	Quiz 4	9 Phylogeny and the Tree of Life	26
T Feb 15		10 The History of Life on Earth	25.1-4
TH Feb 17	Quiz 5	11 Viruses	19
T Feb 22		12 Prokaryotes: Structure/Function/Diversity	27
TH Feb 24	Quiz 6	13 Eukaryotes: Endosymbiosis	28.1
T Mar 1		14 Protists: Origins, Diversity and Ecology	28.2-28.6
TH Mar 3	Quiz 7	15 The Fungi	31
T Mar 8		MIDTERM 2	
TH Mar 10		16 How the Plants Colonized Land	29
T Mar 15		SPRING BREAK – NO CLASS	
TH Mar 17		SPRING BREAK – NO CLASS	
T Mar 22		17 Plant Diversity and Structure	30
TH Mar 24	Quiz 8	18 Plant Transport and Nutrition	36
T Mar 29		19 Animal Diversity, Invertebrates 1	32 & 33
Th Mar 31	Quiz 9	20 Animal Diversity, Invertebrates 2	33
T Apr 5		21 Animal Diversity, Invertebrates 3	33
TH Apr 7	Quiz 10	MIDTERM 3	
T Apr 12		22 Animal Diversity, Vertebrates 1	34
TH Apr 14	Quiz 11	23 Animal Diversity, Vertebrates 2	34
T Apr 19		24 Animal Diversity, Vertebrates 3	34
TH Apr 21	Quiz 12	25 Animal Behavior; Introduction to Ecology	51, 52
T Apr 26		26 Ecology & Biosphere 1	53, 54, 55.3-55.5
TH Apr 28		27 Ecology & Biosphere 2	56
TH May 5		FINAL EXAM 2:00-3:00 PM	

*Additional readings for specific lectures will be posted on Blackboard during the semester.

Course Policies

Policy on Re-grading Exams

If you feel that an error was made in the grading of an exam, you need to do the following: 1) Check the answer key with your TA, 2) Prepare a **printed statement** explaining why you feel your grade was incorrect, and 3) Submit your printed statement, Re-grade Request Form (downloaded from Blackboard) and your original exam to your TA **within one week** of the time the exam was returned to you. The TA will either handle the re-grade or consult with the professors. The entire exam will be regraded and, as a result, your grade may increase or decrease from a requested re-grade. No frivolous reasons will be accepted for requesting grade changes; stated reasons for a grade change must be legitimate (e.g., error in totaling the score).

Policy on Missed Lecture Exams

No make-up lecture exams will be given in this course. You may be excused from an 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 a request that you be excused. In the case of illness, this request should include either an official letter from your doctor stating that you were too sick to take the exam, or your doctor's name and contact information with permission for us to contact the doctor for a limited discussion of your condition. Note that neither you nor the doctor need tell us the nature of your illness. 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 we judge your excuse to be valid, we will give you a grade for the missed exam equal to the average of your grades for the equivalent exams that you did take. Except in extraordinary circumstances, we will make accommodations for only one missed lecture exam. 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 medical excuse to the Lab Manager 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 during the following semester.

Policy on Missed Lecture Quizzes

No make-up lecture quizzes will be given in this course. You may be excused from a lecture quiz only in the event of a documented illness.

Extra Credit

No extra credit will be given for special projects, *etc.*

Impairments Affecting Your Performance

Students occasionally encounter difficulties that affect their academic performance, such as illness, accidents, bereavement, depression, anxiety, learning disabilities, and other problems. If you encounter such difficulties, please bring them to the attention of one of the instructors. We can refer you to sources of help and may be able to offer accommodations. All such discussions will be confidential. Please seek help as soon as you feel your performance is being affected.

Students with Disabilities

Students requesting academic accommodations based on a disability are 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. Be sure that the letter is delivered to the Lab Manager as early in the semester as possible, [preferably by January 31, 2022](#). OSAS office is located in GFS 120 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 120 will provide the accommodation. For any other accommodation, such as a private room, reader or a scribe, students must make prior arrangements with the OSAS 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.

Statement on Academic Integrity

The instructors in this course strongly support the ethics of academic integrity. 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: <http://web-app.usc.edu/scampus/1100behavior-violating-university-standards-and-appropriate-sanctions/>, while the recommended sanctions are located in Appendix A. 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/>.

Course Website

Students are responsible for logging onto Blackboard (<https://blackboard.usc.edu>) and checking the course website on a regular basis. Postings on Blackboard will be an official source for announcements, course materials, lecture notes, score postings and general discussions. Lecture quizzes will also be completed on Blackboard. Lecture exam scores and lecture quiz scores will be posted under your **LECTURE SECTION**. It is the student's responsibility to immediately notify the Lab Manager in the event of any mistakes, so please check your scores on Blackboard weekly.

Gift Policy

No gifts or presents of any kind are permissible to give to any of the instructional staff.

Final Comments

No exceptions will be made to these policies under most circumstances. If you think that the instructor or TA has granted you **any deviation** from the policies in this document, you must obtain their **written agreement** to support that claim.

Lab Schedule*			
Lab #	Date	Topic	Assignments
1	Jan 20 & 21	Introduction	
2	Jan 27 & 28	The Microscope	
3	Feb 3 & 4	Scientific Investigation I	scientific reading and questions assigned
4	Feb 10 & 11	Scientific Investigation II	scientific reading and questions due; figure homework assigned
5	Feb 17 & 18	Evolution	figure homework due; evolution homework assigned
6	Feb 24 & 25	Animal Behavior	evolution homework due; peer review assigned
7	Mar 3 & 4	Bacteria I	peer review due
8	Mar 10 & 11	Bacteria II	lab report assigned
	Mar 17 & 18	SPRING BREAK – NO LAB THIS WEEK	
9	Mar 24 & 25	Plants	
10	Mar 31 & April 1	Beetle experiment conclusion	lab report due
11	April 7 & 8	Ecology	presentation topic due
12	April 14 & 15	Biodiversity Conservation Presentations I	
13	April 21 & 22	Biodiversity Conservation Presentations II	
14	April 28 & 29	Lab exam	

*the lab manager reserves the right to make some adjustments to the lab syllabus during the semester.

Required Textbook:

SPRING 2022 BISC 120 Laboratory Manual. PDF will be **posted on Blackboard** and printouts of chapters must be brought to lab each week.

Optional Textbooks:

Adams & Crawley (2018). [Van De Graaff's Photographic Atlas for the Biology Laboratory](#), 8th ed. Pechenik (2016). [A Short Guide to Writing About Biology](#). 9th ed.

LABORATORY POINT DISTRIBUTION

The laboratory portion (**340 points**) will count for **34%** of your final course grade, distributed as follows:

Lab Quizzes (10 – 4 points each)	40 pts
Homework (2 – 10 points each)	20 pts
Scientific Reading	12 pts
Lab Report	40 pts
Lab Report Peer Review	10 pts
Lab Exam	100 pts
Biodiversity Conservation Presentation	38 pts
Lab Manual (4 points per chapter)	44 pts
Lab Participation (4 points per lab)	44 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, safety glasses/goggles, long pants and a knee-length lab coat.

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.

PRE-LAB QUIZZES

Each student will take a Blackboard pre-lab quiz prior to coming to lab each week. Quizzes will consist of multiple choice questions. Questions will test your knowledge of the material you will be covering that week in lab. There will be no pre-lab quiz before your first lab (Lab Safety chapter).

LAB MANUAL

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.

HOMEWORK/PRE-LAB ASSIGNMENTS

During the semester you will have one pre-lab assignment (Scientific Reading) and three homework assignments, based on your lab experiments. Assignments are explained in the lab manual and more information can be found on Bb.

LAB REPORT

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 REPORT PEER REVIEW

Each student will review a sample lab report. Instructions will be posted on Blackboard once the semester starts.

LAB EXAM

The cumulative lab exam will test your understanding of the topics, concepts and exercises covered during the semester.

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 Brett Spatola (spatola@usc.edu) **within 48 hours** of the missed exam. A valid excuse is considered to be an official note from your doctor or the summary of your visit from the USC Engemann Student Health Center. 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.

MISSED LABS

If you miss a scheduled lab exercise **due to illness or emergency**, please contact Brett Spatola (spatola@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 Friday afternoon of the week in question. Therefore, students with labs scheduled on Fridays will have little or no alternative should they miss lab unexpectedly. Only a few requests for alternative labs can be accommodated, because few sections have available space. Therefore, it is very important for you to attend your scheduled lab section.

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/life/calendar/absences/>. Requests for such absences should be made by email addressed to the Lab Manager (bezmalin@usc.edu) 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/email 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 a holiday, spring break, and for school-unrelated activities.

BIODIVERSITY CONSERVATION PRESENTATION

Detailed instructions for preparing your presentation, including how points will be assigned, will be provided on Blackboard (<https://blackboard.usc.edu/>).

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 Blackboard scores 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. 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.