

BISC 103xg: General Biology for the Environment and Life

Instructors

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Laboratory Manager

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E-mail: Students are welcome and encouraged to e-mail the instructional team. When you do, the subject line should state: "BISC 103".

Lectures (VPD 105): T/TH 9:30 - 10:50 am

Labs (ZHS 460): Wed 9:00 -11:50 am or
Wed 1:00 - 3:50 pm or
TH 11:00 am – 1:50 pm

Textbook

- *Biology: Concepts & Connections*, by Campbell, 8th edition. Benjamin Cummings
- *General Biology for the Environment and Life Laboratory Manual*, Fall 2016 edition. USC Custom Publishing

Website: <https://blackboard.usc.edu/>

- All course materials, information, recordings, and grades will be posted on Blackboard until Winter Recess. We will also make extensive use of Blackboard discussion forums. Blackboard is to be used only for appropriate, course-related activities. Use for other purposes will result in disciplinary action.

General Course Description

Welcome to BISC 103L. This is a one-semester introductory biology lecture and laboratory course that covers important aspects of general biology. This fast-paced biology overview will provide a background in cell, organismal and plant biology. You will learn about how biology and evolution are affected by environmental conditions and how populations interact with each other.

While the text and outline are similar to introductory courses taught at other universities, this course is tailored more specifically to Environmental Studies and other life science studies at USC. In order to provide a rigorous one-semester survey, BISC 103L will not address all specialized concepts in many areas traditionally covered in biology classes. This course is not appropriate for medical school preparation and will not serve as a prerequisite for many upper division courses in biology. Students majoring in biology, chemistry, other natural sciences, or engineering will normally register in the BISC 120L sequence. Consult your advisor and the instructor immediately if you have questions about BISC103L vs. BISC 120L. Students majoring in neuroscience should take BISC 220, for which this course is not a substitute.

Fundamental concepts in chemistry are required for an understanding of biology. The student should have a working knowledge of high school chemistry, and is urged to take the companion chemistry course, CHEM 103L: *General Chemistry for the Environment and Life*. The chemical concepts that we shall use regularly throughout the course will reinforce those of CHEM 103L.

Course Objectives:

Students will be able to:

1. understand basic biological concepts necessary for biological literacy
2. explain the specific principles of biological evolution and natural selection
3. explore the process of scientific discovery and the scientific method
4. demonstrate understanding of the intricate nature of relationships among organisms that compromise functioning ecosystems
5. understand the sources of energy to biological systems
6. explain basic nutrient cycles and how nutrients affect biology and ecology
7. link biological issues of public concern for life-long learning on scientific issues
8. think critically and creatively when describing how biology and the environment interact

Lecture Schedule:

| Wk | Date | Day | Topic | Campbell – Concepts & Connections 8 th Ed. |
|----|------------------|---------|--|---|
| 1 | Aug 23 Aug 25 | T Th | 01 Introduction to Biology: Exploring Life 02 The Cell | Ch 1, 2 & 3 Ch 4 & 5 |
| 2 | Aug 30 Sep 1 | T Th | 03 Cellular Energy 04 Photosynthesis | Ch 6 Ch 7 |
| 3 | Sep 6 Sep 8 | T Th | 05 Reproduction and Inheritance 06 Molecular Biology of the Gene | Ch 8 & 9 Ch 10 |
| 4 | Sep 13 Sep 15 | T Th | 07 Genetic Control and Genomics <i>EXAM 1</i> | Ch 11 & 12 |
| 5 | Sep 20 Sep 22 | T Th | 08 Genetic Control and Genomics 09 Genetic Control and Genomics | Ch 11 & 12 Ch 11 & 12 |
| 6 | Sep 27 Sep 29 | T Th | 10 Population Evolution and Speciation 11 Speciation and Evolutionary History | Ch 13 & 14 Ch 14 & 15 |
| 7 | Oct 4 Oct 6 | T Th | 12 Microbial Life - Prokaryotes 13 Microbial Life - Protists | Ch 16 Ch 16 |
| 8 | Oct 11 Oct 13 | T Th | <i>EXAM 2</i> 14 Fungi and Plant Nutrition | Ch 17 |
| 9 | Oct 18 Oct 20 | T Th | 15 The Evolution of Invertebrate Diversity 16 The Evolution of Vertebrate Diversity | Ch 18 Ch 19 |
| 10 | Oct 25 Oct 27 | T Th | 17 Unifying Concepts of Animal Structure and Function 18 Plants Form and Function | Ch 20 Ch 31-33 |
| 11 | Nov 1 Nov 3 | T Th | 19 The Biosphere: Earth's Diverse Environments 20 Behavioral Adaptations to the Environment | Ch 34 Ch 35 |
| 12 | Nov 8 Nov 10 | T Th | <i>EXAM 3</i> 21 Population Ecology | Ch 36 |
| 13 | Nov 15 Nov 17 | T Th | 22 Communities and Ecosystems 23 Conservation Biology | Ch 37 Ch 38 |
| 14 | Nov 22 Nov 24 | T Th | 24 Invasive Species <i>Thanksgiving Holiday</i> | Posted on Blackboard ----- |
| 15 | Nov 29 Dec 1 | T Th | 25 Ecosystems/ Conservation Biology 26 Climate Change | Ch 37-38 Posted on Blackboard |
| | Dec 8 | Th | <i>EXAM 4 – 11:00 a.m. – 1:00 p.m.</i> | |

Grading:

The numbers of points for the various parts of the course are:

Midterm x 4 (100 pts each) 400 points

| | |
|---------------------------------------|------------|
| Outline and research for presentation | 50 points |
| Oral presentation | 50 points |
| Laboratory | 275 points |
| ----- | |
| Course Total | 775 points |

Attendance to both lectures and labs is important. Chronic missed classes will adversely affect your performance. More than two unexcused absences in the lab can result in a failing grade for the lab portion of the course.

Examinations

Four 80-minute examinations will be given. Each will cover the material of the preceding section of the course. A student is not allowed to start an exam after the first student has left any exam room. Lecture examinations can and will cover anything that is discussed in class, even if the material is not explicitly covered in the text. This allows professors to provide updated information or interesting examples that illustrate concepts in the text. For this reason, it is very important that you attend class. Those who do not attend will surely do more poorly on examinations.

Re-grading of Exams

If you wish to have exam questions re-graded, you must submit your exam along with the Exam Regrade Request Form (pdf on Blackboard) to Dr. Chong-Cerrillo within one week of the time exams were returned to the entire class/lab. Your request must be typewritten and thoroughly explained in writing; oral requests will not be considered. The entire examination may be re-graded, not just the part you think deserves more credit. Your score may go up or down as a result of a re-grade. Regrade requests will not be honored if the exam was taken in pencil or if white-out was used.

Policy on Missed Exams

No make-up exams will be given. If you miss an exam or quiz due to an emergency, and wish us to make an accommodation, you should proceed as follows. Present a written request to the Lab Manager within 3 days of the missed exam. This request needs to include documentation that you feel is appropriate to demonstrate a legitimate reason for missing said exam. If we judge your excuse to be valid, we will, at our discretion, give you a grade for the missed exam equal to the average of your grades for the equivalent exams that you did take. With respect to student privacy we will not dictate what sort of documentation needs to be provided, however, our decision is ultimately based on what documentation we do receive and USC policy. Please note that your physician has to be licensed to practice medicine by the State of California (www.mdbd.ca.gov). Also note that it is considered unethical and unwise for a physician to provide medical care for a family member. The recommended sanction for falsification of medical documentation is an F in the course and suspension or expulsion from the university. Therefore submit the appropriate documentation accordingly. 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 examination and have provided a valid medical excuse to the Lab Manager within 72 hours of the examination time, a final course grade of incomplete (IN) will be recorded and you will be permitted to take a make-up final examination during the following semester.

Students who wish to miss an examination 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 to the Lab Manager and the instructors at least 2 weeks in advance of the absence. If the absence is approved, a reasonable accommodation will be provided.

Final grades

Final grades are assigned on a curve, based on the total number of points earned in the course. After each exam a curve will be given by the instructors to indicate roughly what letter grade corresponds to the student's current number of points can we please get rid of this sentence. Id rather say the average is the lowest B-. Please remember that (1) the course mean given on Blackboard is NOT authoritative, and (2) that only the total number of points earned determines your course grade. We will be glad to discuss your performance, and your possible grades, at any time throughout the course.

Academic Integrity

Students must work independently on all individual assignments except that data will sometimes be shared for laboratory experiments. All USC students are responsible for reading and following the USC Student Conduct Code, which prohibits plagiarism. Some examples of behavior that is not allowed are: copying all or part of someone else's work (by hand or by looking at others' files, either secretly or if shown), and submitting it as your own; giving another student in the class a copy of your assignment solution, including lab reports; consulting with another student during an exam; and copying text from published literature without proper attribution. If you have questions about what is allowed, please discuss it with the instructor.

Students who violate University standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the University. Since dishonesty in any form harms the individual, other students, and the University, policies on academic integrity have been and will be strictly enforced.

The Trojan Integrity Guide can be found at <http://sjacs.usc.edu/students/academic-integrity/>

The Undergraduate Guide for Avoiding Plagiarism can be found at <https://sjacs.usc.edu/files/2015/03/tig.pdf>

Oral Presentation

Outline An outline is required for your oral presentation and is due Thursday, **Oct 20, 2016**. Before you can turn in your outline, you must get your **topic approved** BEFORE **Monday Oct. 10th**. You will email your topic and then outline according to detailed instructions provided once the semester begins. This outline should specifically highlight the major points of each slide of your talk (i.e., 5-10 slides) and should include the references that you are basing your talk on. For each day the Outline is handed in late, 20% of the total possible points will be deducted from your grade (e.g., if the outline is past 5 days late, you will receive no points for that assignment).

Presentation The Oral Presentations will be given in lab during the last 3 weeks of class. The schedule will be assigned in lab. The presentation will be 10 minutes in length followed by a discussion period of five minutes, during which other students are urged to ask questions and to consider the material. The use of visual aids is expected in the presentation. Grades will be assigned on the basis of significance of the topic, quality of the material, and the quality of the presentation. Detailed guidelines will be distributed by mid semester.

Subject Matter The choice of subject for the talk is up to the student, but must deal with the material of the course. In general, a subject that deals with any aspect of biology from an environmental aspect will be accepted. Topics that are not suitable will result in reduced credit. Students are urged to discuss the subject of their paper with any of the teaching staff of the course. It is not necessary that every student choose a different topic; many students can, and often do, present the same subject. In this case, of course, all the students must work independently.

Sources of Material There exists a large variety of different reference sources. These include the following popular level scientific magazines and research journals:

| | |
|----------------------------|--|
| <i>Scientific American</i> | <i>Discover</i> |
| <i>Science</i> | <i>New Scientist</i> |
| <i>Science News</i> | <i>Nature (any version)</i> |
| <i>American Scientist</i> | Any Research journal for a particular scientific field |

Any of these sources can serve as a rich supply of ideas and information. You may use references from any of them freely. You will often find excellent articles in *Time*, *Newsweek*, the newspapers (particularly the *New York Times* and the *Los Angeles Times*). Note particularly the excellent section on health in the Monday edition of the *LA Times* and other news periodicals. Most of these are now available on the web. Newspaper articles are quite satisfactory as sources, but must be appropriately referenced. In addition to the popular magazines concerning science, there exist a number of more formal scientific journals used by the professionals in the field. You will usually find these articles too advanced to be read easily, but you may certainly feel free to use them if you wish. The World Wide Web is an excellent source of information and ideas. The Web and associated electronic means of communication are changing our society. While they are very powerful, be careful of information from the Web. This material is almost completely unrefereed, and may (and often does) contain significant errors. You may **not use only the Web** as a source of information. Some web sites of interest are:

www.medlineplus.gov
<http://www.cdc.gov/>
<http://www.fda.gov/>
<http://www.nih.gov/>
<http://www.ncbi.nih.gov/entrez/query.fcgi>
<http://www.usda.gov/>

These are well-curated governmental web sites.

Always cite scientific journals as journals whether accessed online or in print. You are responsible for checking your sources to be sure that the information you report is correct. This is a significant part of modern scholarship.

Policy for Missed Presentation Once you have signed up for a date to give your presentation, you will not be able to change it unless you have a valid medical emergency. If you do not have a valid medical excuse, you MAY be able to make up the Presentation, if time allows. You must attend ALL your labs during the presentation weeks. If you do not have a valid excuse for missing lab [with official written documentation presented to the Laboratory Manager, within two (2) days of the missed lab], *2 points will be deducted from your Oral Presentation grade for EACH presentation you miss (i.e., if 5 students present, 10 points will be deducted from YOUR presentation grade)*. If you have a valid excuse for missing your lab, it must be accompanied with official written documentation and presented to the Laboratory Manager, within two (2) days of the missed lab, and you are still responsible for making up the missed presentations. If you fail to do this, points will still be deducted regardless of excuse.

Posting of Grades on Blackboard. Blackboard lists BISC 103 lecture and lab sections as “separate courses”. All grades (lecture and lab) are posted in your LAB section. However, be sure to check for additional postings and announcements both in the lecture section and the lab section on a weekly basis.

Blackboard is convenient system to communicate grades; however, **those grades are not authoritative**. It is the student’s responsibility to notify your TA or Lab Director ASAP in the event of any mistakes in your posted grade.

Please remember that (1) the course mean given on Blackboard is also NOT authoritative, and (2) that only the total number of points earned determines your course grade. We will be glad to discuss your performance, and your possible grades, at any time throughout the course. Help provided in this way should be considered only provisional. Your later performance may change (sometimes dramatically) the best- meant extrapolation.

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with the Office of Disability Services and Programs (DSP, GFS 120, Email: ability@usc.edu, 213-740-0776) each semester. You must deliver an approved DSP letter to one of the instructors at least two weeks before the first exam. Please see SCampus (<http://www.usc.edu/dept/publications/SCAMPUS/>) for additional policies that are not covered here (i.e. academic integrity, proper conduct, etc) but that do still apply!

Laboratory Policies

Mandatory Attendance of Labs. You are required to attend all lab sessions. You are also required to remain for the entire lab session or until excused by your TA. Please come to lab on time* (see below) and do not schedule any appointments during your regular lab period. Also, come to lab prepared (i.e., read and know your lab exercise before you come).

If a student misses a lab due to a true emergency situation, you must provide acceptable written documentation that you were not able to attend school within 2 days to the Laboratory Manager, Dr. Chong-Cerrillo. Then it will be at her discretion to determine whether the lab will be made up. However, if the week of the missed lab has already passed, you will not be able to make up the lab. In addition, if documentation is not received within this time frame, you will not be allowed to make up the missed lab.

Chronic, unexcused absence from the laboratory (more than two unexcused absences) can result in a failing grade for the lab portion of the course.

Switching labs is not allowed. You must attend the lab section you are registered for. If you have a compelling reason for not being able to attend your lab section AND you speak to Dr. Chong-Cerrillo in advance (the sooner the better), exceptions may be allowed. TAs will NOT be able to grant any lab switching. If you attend another lab section but you have not spoken to Dr. Chong-Cerrillo in advance, you will still be marked absent for that lab and will not receive credit for that lab.

Laboratory Reports. You are required to hand in Laboratory Reports located at the end of every chapter. These Lab Reports are due at the end of each lab session or in some cases at the end of the experiment except for the *Evolution and Population Genetics* report which will be handed in one week after the experiment is completed. The Lab Reports for *Understanding Population Growth Models* and *Isle Royal* are electronic and will be automatically submitted and recorded online while you do the exercise. All Lab Reports consist of data collection, data analysis and answering questions pertaining to the lab exercise.

For each day ANY report (or assignment) is handed in late, 20% of the *total possible points* will be deducted (i.e., if the report is past 5 days late, you will receive zero points for that assignment).

Academic Integrity. You are not allowed to use someone else's data or answers to complete any assignment. This constitutes plagiarism per USC's SCampus guidelines. If you feel you need data that you were not able to generate yourself, please let the TA or Lab Manager know.

Lab Quizzes. Lab quizzes are every week *except* for those weeks where there is a Lab Exam. *Lab quizzes will be at the beginning (starting 5 min past the hour) of each lab session. Quizzes will consist of multiple choice questions and/or fill-in-the-blanks and will cover your knowledge of the material you will be covering that day in lab (i.e., the *entire* chapter) and on the results from the previous lab.

It is your responsibility to come to lab on time (if parking, traffic, traveling distance, etc. is an issue for you, *plan ahead!*) Students coming to lab late without a valid excuse will not be allowed to make up the quiz, NO EXCEPTIONS. If a student misses a quiz due to a true emergency (accompanied with an acceptable written documentation), it will be at the discretion of the Laboratory Manager to either schedule a make-up or may permit the use of the average of other quizzes in determining the grade.

Your quizzes will be handed back to you and reviewed in lab. If you feel something should be reviewed for a re-grade, you must hand it back to your TA by the end of the lab session with a thoroughly written explanation for why you think it should be regraded. Anything brought out of the lab will NOT be regraded. If you took the exam in pencil or used white-out, we will not honor a regrade request. Also, the entire quiz will be regraded, which may raise or lower your score.

Lab Exams. Lab exams will test your understanding of the topics and exercises covered in the laboratory sessions. Lab exams will be at the beginning of the lab session. A student is not allowed to start an exam after the first student has left the room.

It is your responsibility to be present on the days of the lab exams. If you miss a lab exam due to a true emergency, you must present a valid excuse to the Lab Manager within two (2) days of the missed exam. A valid medical excuse must 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. If you were seen at the USC Student Health Center, you must sign an "Authorization for Disclosure of Medical Information" form and *list Dr. Chong-Cerrillo's name* on the form. (Note that neither you nor the physician need to tell us the nature of your illness.) Please note that 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 have a valid excuse, the Laboratory Manager may, at her discretion, allow you to take the exam in another lab section that week, schedule a make-up or permit the use of the average of other exams in determining the grade. 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 exam.

Your lab exams will be handed back to you and reviewed in lab. If you feel an error was made in the grading of your exam, you must submit your exam, along with the Exam Regrade Request Form (pdf), to your TA within 2 days of the time it was returned to the entire class/lab. Your form must contain a thoroughly typewritten explanation of why you think your answer deserves more credit; oral and e-mail requests will not be considered. If you took the exam in pencil or used white-out, we will not honor the regrade request. 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.

Oral Presentations. Oral presentations will be given in lab during the last 3 weeks of class. Once you have signed up for a date to give your presentation, you will not be able to change it unless you have a valid medical emergency. If you do not have a valid medical excuse, you MAY be able to make up the Presentation, if time allows. You must attend ALL your labs during

the presentation weeks. If you do not have a valid excuse for missing lab, **2 points will be deducted from your Oral Presentation grade for EACH presentation you miss** (i.e., if 5 students present, 10 points will be deducted from YOUR presentation grade). If you have a valid excuse for missing your lab, it must be accompanied with official written documentation and presented to the Laboratory Manager, within two (2) days of the missed lab. However, you are still responsible for making up the missed presentations by attending another lab section's presentations. If you fail to do this, points will still be deducted regardless of excuse.

Blackboard and Posting of Grades. Blackboard (<https://blackboard.usc.edu/>) is used as a convenient way to communicate scores and grades; however, **those grades are not authoritative**. Blackboard will list BISC 103 lecture and lab sections as "separate courses". All scores (lecture and lab) are posted in your LAB section. However, be sure to check for additional postings and announcements both in the lecture section and the lab section on a daily basis. It is the student's responsibility to notify your TA or Lab Manager ASAP in the event of any mistakes in your posted score.

Please remember that (1) the course mean given on Blackboard is NOT authoritative, and (2) that only the total number of points earned determines your course grade. We will be glad to discuss your performance, and your possible grades, at any time throughout the course. Help provided in this way should be considered only provisional.

Lab Safety Contract. All students must sign and abide by the "Laboratory Safety Rules and Regulations". Failure to do so may result in removal from the lab.

Cell phones must be turned off before coming into lab. Should family or personal circumstances require that you be in constant communication, please keep your ringer off and inform either your TA or Lab Manager of the situation. If you need to speak on the phone during lab, take your conversations out of the room.

Academic Accommodations. Students requesting academic accommodations based on an academic disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to Dr. Gracey or Dr. Heidelberg (and Dr. Chong-Cerrillo if you need accommodations for lab exams) as early in the semester as possible. DSP is open Monday-Friday, 8:30 am - 5:00 pm, [Email: ability@usc.edu; Phone: (213) 740-0776].

BISC 103L Laboratory Schedule, 2016*

| Wk | Dates | Ch | Pts | Laboratory | Lab Events | |
|----|-------------------|--|----------|--|-------------------|--|
| 1 | Aug. 24 - 25 | | | NO LAB | | |
| 2 | Aug. 31 - Sept. 1 | | | | | |
| 3 | Mon, Sept. 5 | Labor Day - University Holiday | | | | |
| | Sept. 7 - 8 | 1 | | Lab Orientation - MANDATORY ATTENDANCE Fundamentals in Laboratory Skills | | |
| | Friday, Sept. 9 | <i>Last day to register and add classes Last day to drop a class without a mark of "W" Last day to change enrollment option to Pass/No Pass or Audit</i> | | | | |
| 4 | Sept. 14 - 15 | 2 | 15 | Cell Physiology | | |
| | Thurs, Sept. 15 | Exam 1 | | | | |
| 5 | Sept. 21 - 22 | 3 | 20 | Human Genetics: Your Genes, Inheritance and Diagnostics | | |
| 6 | Sept. 28 - 29 | 4 5 | 15 30 | Temperature-Dependent Gene Expression Evolution and Population Genetics: Testing Hardy-Weinberg | Lab Exam 1 | |
| 7 | Oct. 5 - 6 | 4 5 | | Temperature-Dependent Gene Expression (cont'd) Evolution and Population Genetics (cont'd): Simulation of Evolutionary Change [§] | | |
| 8 | Tues, Oct. 11 | Exam 2 | | | | |
| | Oct. 12 - 13 | 6 | 20 | The Tree of Life: Understanding and Building Phylogenies | | |
| 9 | Oct. 19 - 20 | 7 8 | 18 20 | Microbes, Microscopy and the Compound Microscope Eukaryotes: Protists and Filamentous Fungi [§] | | |
| | Thurs, Oct. 20 | Oral Presentation Outline Due | | | | |
| 10 | Oct. 26 - 27 | 9 SimUText | 17 10 | Detecting Coliforms in Environmental and Food Samples Understanding Population Growth Models (Prep for Isle Royal) | Lab Exam 2 | |
| 11 | Nov. 2 - 3 | 9 SimUText | 20 | Detecting Coliforms in Environmental and Food Samples (cont'd) Isle Royal - Virtual Population Ecology | | |
| 12 | Tues, Nov. 8 | Exam 3 | | | | |
| | Nov. 9 - 10 | | | Oral Presentations | | |
| | Friday, Nov. 11 | <i>Last day to drop a class with a mark of "W"</i> | | | | |
| 13 | Nov. 16 - 17 | | | Oral Presentations | | |
| 14 | Nov. 23 - 24 | Student Free Day & Thanksgiving - University Holiday | | | | |
| 15 | Nov. 30 - Dec. 1 | | | Oral Presentations | | |
| | Thurs, Dec. 8 | Exam 4 (11 am - 1 pm) | | | | |

[§]Lab Reports that are due 1 week later.

*Periodically check Blackboard for any updates or changes in the lab schedule.