***­BISC 315L Lecture and Laboratory Syllabus Introduction to Ecology, Fall 2022***

**Instructors:**

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|     Prof. Karla Heidelberg ([website](https://dornsife.usc.edu/cf/labs/heidelberg/heidelberg-faculty-display.cfm))    Office Hours: TU 8:00-10:00; Wed 1:00-2:00    Location: AHF B16    Email: kheidelb@usc.edu | Prof. Laura Melissa Guzman ([website](https://dornsife.usc.edu/meb/profile/?pid=1105544))    Office Hours: TH 9:00-11:00    Location: AHF B17    Email: guzmanur@usc.edu |

**Teaching Assistant**: Daniel Olivares-Zambrano

 Location: AHF

 Email: danielo7@usc.edu

 Office Hours by zoom appointment
[https://usc.zoom.us/j/92534725235?pwd=N1NGYUR1ekJCM0I5UmpLYTVyR082QT09](https://urldefense.com/v3/__https%3A/usc.zoom.us/j/92534725235?pwd=N1NGYUR1ekJCM0I5UmpLYTVyR082QT09__;!!LIr3w8kk_Xxm!q3KwPhu__mmggobcUnlv8Cjj9MEe2O-7am0RyRqW60utQa9w8L87_JK1pSE2Go4oAVCx7LKtvmbYNEf6xg$)
Meeting ID: 925 3472 5235 Passcode: coral4life

Textbook:  Lecture: Peter Stiling, 2014. Ecology: Global Insights and Investigations (2nd Edition)

Laboratory: Materials provided via BB

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

Lecture times:           M/W   2:00 - 3:20pm (ZHS360)

Laboratory time: M        3:30 - 6:30pm (ZHS469)

**Course Overview**

Ecology is the study of the relationships between living organisms, including humans, and their physical environment. This 4-unit course combines lectures with field and lab experiments to provide an introduction to population, community and ecosystem level ecology of plants and animals.

In this class, you will be introduced to the ideas and methods of ecological research that help us answer questions about how ecosystem function and how disturbance (in a variety of forms) can alter ecosystems. Material will build on the skills you have acquired in other biology or sciences classes. You will also be introduced to concepts in ecological theory, modeling, and data management and analysis. We will use quantitative statistics and graphical skills that you may have not previously learned. You will learn graphical analysis skills, writing skills and library literature skills, building on what you have encountered in previous courses.

**Course Objectives:** There are six basic goals for what we expect students to achieve in this course.

1. Know the basic facts of population, community and ecosystem level ecology.

2.  Be able to clearly and concisely speak about and write about the major concepts in ecology.

3.  Recognize the interconnections among the major concepts of ecology.

4.  Understand how empirical evidence (i.e., data) supports or refutes the major concepts.

5.  Be able to design an ecological study that addresses relevant questions, carry out the study using the appropriate equipment, and interpret and present your study to your peers.

6.  Investigate how the ecological concepts you learn in class relate to current environmental problems.

Lectures

Lectures will introduce ecological principles, models, and applications and will help you become conversant with the language that ecologists use, the issues and questions ecologists tackle, and methods ecologists use. You cannot expect to meet the above course objectives by memorizing material.  You must think about the concepts and be able to clearly describe them and their implications orally in class discussions and on exams. We will look for active engagement in classes based on assigned text and web-based reading material and laboratory experiences.

Homeworks and Labs: Lecture material will be supplemented with laboratory activities and HW assignments, as detailed below. Additional preparatory materials and grading rubrics for each activities will be provided on BlackBoard.

Course schedule:

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| **Date** | **Topic** | **Readings and Notes** | **Lab** **TA: Daniel Olivares-Zambrano** | **Lecture Instructor** |
| Mon Aug 22 | Lec. 1: Introduction to Ecology and class overview | Chapter 1 | **Lab #1:** Introduction and lab logistics and safety; keeping a lab notebook; Introduction to experimental design and presenting data results. Downloading R. | Heidelberg/Guzman |
| Wed Aug 24 | Lec. 2 Evolution and GeneticsHW#1: Download iNaturalist and introductory activity (due midnight Oct 21st) | Chapter 2HW#1 assigned |  | Heidelberg |
| Mon Aug 29 | Lec. 3 Natural Selection, Speciation and Extinction  | Chapter 3 | **Lab #2:** An introduction to R | Guzeman |
| Wed Aug 31 | Lec. 4 Behavioral Ecology | Chapter 4 |  | Heidelberg |
| Mon Sept 5 | **LABOR DAY HOLIDAY**  |  | **No lab (holiday)**.  |  |
| Wed Sept 7 | Lec. 5 Physiological Ecology - Part 1: Temp, Water, pH  | Chapters 5,6 HW#1 iNaturalist due |  | Heidelberg |
| Mon Sept 12 | Lec. 6 Physiological Ecology- Part 2: Nutrients | Chapter 7  | **Lab #3a**: A) Lemna growth lab set up | Heidelberg |
| Wed Sept 14 | Lec. 7 Describing Populations and Metapopulations | Chapter 8 |  | Heidelberg |
| Mon Sept 19 | Lec. 8 Population Growth | Chapter 10 | **Lab #2b** Lemna Lab time point data Lec 9 Factors controlling Intertidal Species Distribution Lab diversity activity(Prep for Monday Field Trip) | Heidelberg |
| Wed Sept 21 | **Midterm 1 (Lectures 1-9)** |  |  | Heidelberg |
| Mon Sept 26 | **Lab #4** **FIELD TRIP 2:00-6:30 Coastal Intertidal Zone Field Trip**Bus leaves from identified location at 2:10pm – target return 6:00p (traffic dependent).  | Heidelberg |
| Wed Sept 28 | Lec 10: Competition, Coexistence  | Chapter 11 |  | Guzman |
| Mon Oct 3 | Lec. 11: Predation/HerbivoryHW#2 SimBio Predator Prey Modelling lab (Island Royale simulation) | Chapters 13,14 | **Lab #5** Lab #3 Cricket Behavior Lab  | Guzman |
| Wed Oct 5 | Lec. 12: Species Diversity, Richness, and Community Service (NOTE: Oct 7th – Last day to drop with a “W”) | Chapter 15 |  | Guzman |
| Mon Oct 10 | Lec. 13: Guest Lecture Dr. Julie Hooper Parasitism, Mutualism, Commensalism.  | Chapters 17-19 | **Lab #6**: Snail Parasite Lab | Heidelberg/ Hooper |
| Wed Oct 12 | Lec. 14: Biodiversity and Habitat Fragmentation Succession and Facilitation Species | Chapters 17-20 |  | Heidelberg |
| Mon Oct 17 | Lec. 15: Island Biogeography Theory as Applied to Ecology | Chapter 21 | **Lec. 15** A) Guest Lecture: Dr. Miguel Ordeñana - Case study of the results of urban sprawl and habitat fragmentation | Guzman |
| Wed Oct 19 | **Midterm 2 (Lectures 10-15)** |  |  |  |
| Mon Oct 24 | Lec. 17: Special Topics: Metacommunity Ecology  | Readings on BB | **Lab #7A:** Introduction to insect diversity; Sample collection  | Guzman |
| Wed Oct 26 | Lec. 18: Guest Lecture: Dr. Jayme Lewthwaite Insect Diversity and Decline  | Chapter 22 |  HW#3: Research Project outline and citation list due | Guzman |
| Mon Oct 31 | Lec. 19: Food Webs and Energy Flow | Chapter 25 | **Lab #7B**: Insect diversity sample analysis and data sharing | Guzman |
| Wed Nov 2 | Lec. 20: Biomass and Energy Cycles | Chapter 26 |  | Guzman |
| Mon Nov 7 | Lec. 21: Global Change HW#4 Sim Bio Climate Change Activity | Readings on BB | No lab – finalize Project outlines and citation list | Guzman |
| Wed Nov 9 | Lec. 22: Marine Biomes  | Chapter 23 |  | Heidelberg |
| Mon Nov 14 | Lab #8: Field Trip: La Brea Tar Pits, California Sci. Center or Los Angeles Natural History Museum (TBD) Activity and worksheet | Heidelberg/ Guzman |
| Wed Nov 16 | Lec. 23: Terrestrial and Freshwater Biomes  | Chapters 22&24 |  | Guzman |
| Mon Nov 21 | Lec. 24: Special Topics: Organism (and population) Adaptation in Extreme Environments: Antarctica | Readings on BB | Student presentations | Heidelberg |
| Wed Nov 23 | ***THANKSGIVING HOLIDAY*** |  |
| Mon Nov 28 | Lec. 25: Special Topics Light Pollution and Ecology | Readings on BB | Student presentations | Heidelberg |
| Wed Nov 30 | Final Student presentations and course wrap up. |  |  | Heidelberg/ Guzman  |
| F Dec 9 | **FINAL EXAM (Lectures 17-25) 2:00-4:00 pm** |  |

**Course Assessments and Policies**

**Exams**: Understanding of lecture material will be assessed through 2 midterms and a final exam.The lecture portion of this course will include two midterm exams and a final exam. Exams may include multiple choice questions, fill-in answers, definitions, T/F, short answers, and short or long essays. Material will be drawn from lectures, reading, laboratory material, and problem set material. The final will focus heavily on the third portion of the exam but may have integrated essay exam questions. Make-up exams are exceedingly rare and are only considered for a verified University approved reason.

**Grading**

Any document associated with grading may be photocopied by the instructional staff prior to return to the student. Keys for graded material will be posted on BlackBoard for most assignments.  If you feel that an error was made in the grading of an examination or lab, 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 this along with a re-grade Request Form (downloaded from Blackboard) and your original examination or graded activity  to your TA within one week of the time the exam or other graded document  was returned to you. Your entire exam or document may be re-graded and, as a result, your grade may increase or decrease from a requested re-grade.  Stated reasons for a grade change must be legitimate (e.g., error in totaling the score).

**Laboratory portion of the Course:**

Your lab is worth 29% of your final grade for the course. Laboratory activities will include outdoor activities both on and off campus, bench side experiments, and computer-based modeling activities. These activities will emphasize how ecologists test their ideas through quantitative observations, models, and manipulative, controlled, and replicated experiments.

Students will choose one lab to write up into a formal lab report. Approval for which lab to wrote up must be obtained from the TA.

**Policy on Missed Lecture Exams, Quizzes, On-Campus Labs, or Lab Exams**

PLANNED ABSENCES: Students who will miss an examination for observance of a religious holiday should review the [University’s policy](http://orl.usc.edu/religiouslife/holydays/absences.html) on such absences (SCampus; policy.usc.edu/student/scampus/). Requests for such absences should be made by email to the TA and the professors at within two weeks of the start of the semester.  If the absence is approved, a reasonable accommodation will be provided. If you have a professional reason for missing a class or activity, request these dates at the beginning of the semester (verified athletic events, presentations at professional meetings, etc.). As most of you are upperclassmen, we will consider accommodating verified truly professional or career-oriented requests.

UNPLANNED ABSENCES: Lectures will be provided on BB as a references. An attempt will also be made to video record lectures, but classes will be designed to be in person and USC equipment errors may prevent successful recordings of classes. In these cases, students are encouraged to reach out to another student and refer to the posted lecture for missed material. This class follows university policy for missed classes due to medical reasons. If you miss a class or lab exam, quiz or graded activity due to medical illness you must present a valid medical excuse to the instructional team within 48h of the missed examination or quiz. The reason for missing an examination or quiz must be of a medical nature or totally unavoidable. An invalid excuse, or the excuse turned in late, will result in a score of zero for the activity missed. If you miss the final examination and have provided a valid medical excuse 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.

**Course Grading:**

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| --- | --- | --- | --- | --- |
|   | Points |   |   | Points |
| Exams x 3 @150 pts each | 450 |   | Lab 1: Intro and Overview | 10 |
|   |   |   | Lab 2: Intro to R |   |
| HW Assignments |   |   |  Download assignment | 5 |
|  1) iNaturalist | 25 |   |  Training activity | 15 |
|  2) Sim Bio Island Royal Predator Prey Modelling | 25 |   | Lab 3: Lemna |   |
|  3) Research Project Outline and Citation Plan | 10 |   |  Prelab | 3 |
|  4) Sim Bio Climate Change | 25 |   |  Postlab | 15 |
|   |   |   | Lab 4: Intertidal Field Trip |   |
|   |   |   |  Prelab | 3 |
|   |   |   |  Postlab | 15 |
|   |   |   | Lab 5: Cricket Behavior |   |
|   |   |   |  Prelab | 3 |
|   |   |   |  Postlab | 15 |
|   |   |   | Lab 6: Snail Parasites |   |
|   |   |   |  Prelab | 3 |
|   |   |   |  Postlab | 15 |
|   |   |   | Lab 7: Insect Lab |   |
|   |   |   |  Prelab | 3 |
|   |   |   |  Postlab | 15 |
|   |   |   | Lab 8: Second field Trip | 15 |
|   |   |   |   |   |
|   |   |   | Full Lab report | 50 |
|   |   |   | Student Presentation | 30 |
| **Exam subtotals** | **450** | **60%** |   |   |
| **HW Subtotals** | **85** | **11%** |   |   |
| **Lab Subtotals** | **215** | **29%** |   |   |
|  |  |  |   |   |
| **Course total points** | **750** |  |   |   |

\*schedule or class changes during the semester may alter total class point distributions. All changes will be announced in class and on Blackboard at the time of the change.

**Students with Disabilities:** We honor all formal accommodations for students with disabilities. Students requesting academic accommodations based on a disability are required to register with the [Office of Student Accessibility Services](https://osas.usc.edu/about/our-purpose-and-practice/) each semester.  A letter of verification for approved accommodations will outline approved accommodations.  Be sure that the letter is delivered to the instructional team as early in the semester as possible, then the instructional team will discuss the semester plan with the student. The student will be asked to remind the instructional team before exams of needed accommodations.

**Statement on Academic Integrity:** Ethics of academic integrity is a primary focus in all aspects of the course. 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. Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b/). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](http://policy.usc.edu/scientific-misconduct). Students who violate these policies will be immediately referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty.

**Course Resources**: Postings on Blackboard (<https://blackboard.usc.edu>) will be an official source for announcements, course materials, lecture notes, grade postings and general discussions.  We may also use Blackboard for lecture or laboratory quizzes. Students are responsible for checking the course website on a regular basis. Students are responsible for frequently checking class Blackboard account and their USC email accounts.  Due to the complex nature of planning and executing field tips and laboratory exercises, it may become necessary for the course instructors to make changes to the published schedule.  Students are responsible for any information sent to their USC email accounts or posted on BB by the course instructors.

**Laboratory Performance**

1. You are required to attend all lab sessions and be appropriately dressed according to USC rules for labs or common-sense attire for field work.  Any unexcused absences will seriously affect your evaluation.  Come to lab on time; Lab points will be deducted for being late to lab. You are also to remain for the entire lab session or until excused by your instructor.

2. NO EATING OR DRINKING IS ALLOWED IN THE LABORATORY.

Keep a neat working 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.

3. LAB ASSIGNMENTS: During each lab students need to record their results (drawings, observations, calculations) in their lab notebook or the provided worksheet or computer database.  Each student is required to show his/her TA their lab notebook or upload their data to a shared datafile before leaving the lab. Depending on the lab, lab assignments may be completed entirely during the lab period, may be assigned as homework, or may span multiple lab periods. Your TA will provide details on assignments.

One full lab report will be written during the semester. Other labs will consist of worksheets. Assignments must be submitted on Blackboard via “turnitin”. Lab report guidelines will be discussed in class and posted on Blackboard (<https://blackboard.usc.edu/>).

5.  ECOLOGY PRESENTATION: Each student will be required to sign up for an ecological topic for their final paper and presentation. Each topic must be unique and must be approved by an instructor. Detailed instructions for preparing your presentation, including how points will be assigned, will be provided in class and will be posted on Blackboard (<https://blackboard.usc.edu/>).

7.  POSTING GRADES: You can find your lecture and lab grades on Blackboard: [https://blackboard.usc.edu](https://blackboard.usc.edu/). Be sure to check for additional postings on a regular basis.  It is the student’s responsibility to notify his/her TA or Instructor ASAP in the event of any mistakes, so please check your scores on Blackboard weekly.