Instructor:
Prof. Julie Hopper
Office Hours: Tu: 12:30 & Wed: 3:30
Location: AHF 221
Email: juliehop@usc.edu

Teaching Assistant:
Jennifer Beatty
Office Hours: Thurs. 11:20-12:20
Location: ZHS 469
Email: jlbeatty@usc.edu

Textbooks: Peter Stiling, 2015, ECOLOGY, Global Insights and Investigations (2nd Ed)
Plus additional Reading Materials provided on Blackboard

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

Lecture times: M/W 2:00 - 3:20pm (VKC 208)
Laboratory time: M 3:30 - 6:20pm (ZHS 469)

Course Overview
Ecology is the study of the relationships among living organisms, including humans, and their physical environment. This course will introduce you to a broad spectrum of ecological research across terrestrial, freshwater and marine biomes, and the diverse organisms that inhabit these biomes. Focal components of the course will be discussed in context to current day global change and include: 1) physiological ecology, 2) evolutionary ecology, 3) population and community ecology, and 4) ecosystem ecology.

In this class, you will be introduced to the ideas and methods of ecological research that help us answer questions about how ecological communities and ecosystems function and how disturbance (in a variety of forms) can alter ecological communities and 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. I will continue to emphasize graphical analysis skills, writing skills and library literature skills, building on what you have encountered in previous courses.

Course Objectives are to:
- Become familiar with ecological processes, theories, and current questions
- Become comfortable with reading, interpreting and summarizing scientific literature
- Pose ecological questions and design ecological experiments
- Summarize and analyze data using statistics to aid in answering ecological questions
- Gain practice with scientific writing and oral presentation

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. **Chapter Readings are occasionally ahead of lecture schedule to keep you on track in a timely manner.**

SCHEDULE (subject to modification) All assignments detailed online on BlackBoard

Day	Activity	Readings /Assignments
M Aug 26	Lec 1 Introduction to Ecology and Relevance of BISC315 (*No lab first week of classes*)	Chapter 1
W Aug 28	Lec 2 Evolution and Genetics	Chapter 2
M Sept 2	**NO CLASS OR LAB: LABOR DAY**	**Reading # 1 on Blackboard** (Durant et al. PNAS 2017)
W Sept 4	Lec 3 Natural Selection, Speciation and Extinction	Chapters 3

Day	Activity	Readings /Assignments
M Sep 9	Lec 4 Behavioral Ecology: Altruism, Cooperation and Foraging **Lab #1: Introduction to Scientific Inquiry and Methods and Duckweed Lab:** *How to design experiments, and collect and summarize the data. Duckweed exp. set up and initial data collection.*	Chapter 4 Pre-Lab Quiz
W Sep 11	Lec 5 Behavioral Ecology: Mating Systems and Sexual Selection	Chapter 5 HW#1 due @ 11:59 PM Lab Safety Training Proof
M Sep 16	Lec 6a Physiological Ecology- Part 1: Temp, Water, pH **Lab #2 Cricket Behavior lab**, continuation of Duckweed lab (data point 2) and guidance on iNaturalist Extra Credit. **Plotting data: mean comparisons; the value of variance (Excel and R)**	Chapter 6 Cricket Behavior Pre-Lab wksht due at 2pm, Post-lab wksht due 6:30pm
W Sep 18	**Lec. 7 In Class R Tutorial: Data Wrangling and Analysis**	**Files on Blackboard**
M Sep 23	Lec 6b Physiological Ecology- Part 2: Nutrients **Lab #3: Insect Diversity and Evolution Lab +wksheet** Plus- Duckweed lab data collection (data point 3)	Chapter 7 Insect wksht due before Lab
W Sep 25	Lec 8 Population Dynamics, Life Tables and Demography Turn in pitfall traps to Julie on 9/24 in ZHS 469 from 12:30-1:30	Chapters 8 & 9 HW #2: due @ 11:59 PM
M Sep 30	Lec 9**:** Population Growth **Lab #4: Insect Diversity: Methods and Analysis Lab +wksheet** Plus- Duckweed lab data collection –**data point 4**	Chapter 10 Lab Notebook Check 1, **Cricket wksht due,** Insect wksht **4a** due (Indiv)
W Oct 2	**MIDTERM 1 (Lectures 1-6, 8,** Book Chapters 1-9 + readings**)**	**MIDTERM**
M Oct 7	Lec 10: Competition & Coexistence **Lab #5** a) **Duckweed exp. final data collection**, and data sharing b) **Overview on how to write up a lab report and expectations.**	Chapters 11 Insect 4b wksht due (Group), Duckweed Lab Preliminary Results due
W Oct 9	Lec 11: Facilitation & Symbioses: Mutualism & Commensalism	Chapters 12
M Oct 14	Lec 12: Symbioses: Parasitism **Lab #6**: a) **Intermediate Disturbance Hypothesis Lab** -SimBioLab b) Overview of Ballona Wetlands Preserve Field Trip	Chapters 15
W Oct 16	Lec 13: Predation and Herbivory	Chaper 13 & 14 Lab#6 SimBioLab due 1 PM
M Oct 21	**(Full Day Lab) #7: 2:00-6:30 Ballona Wetlands Preserve Field Trip** Bus leaves from UPC at 2pm, returns between 6:30-7:30 pm	Chapters 16 HW#3 Meetings (thru Nov.6) Duckweed Report due 1 PM
W Oct 23	Lec 14: Population Regulation and Biological Control	Chapters 17 Lab#7. Ballona Field Trip Wksht Due @ 1 PM
M Oct 28	Lec 15: Agroecology, Food Security and Innovation Guest Lecture: Dr. Virginia Emery (CEO of BetaHatch) **Lab #8** (JH): Parasite Abundance and Richness Lab: Dissections of snails from Ballona Wetlands, and Using Taxonomic Keys. **Post-Lab Worksheet due at End of Lab**	**Reading # 2 on Blackboard** Lab # 8 pre-lab questions due 3:30pm, wksht due 6:30 pm
W Oct 30	**MIDTERM 2 (Lectures 9-15, Chapters 10-17 + readings)**	**MIDTERM**
M Nov 4	Lec 16: Species Diversity, Richness, and Community Service **Lab # 9: Ballona Wetlands:** a) Counting the diverse world of plankton; b) Compilation and Analysis of wetland data	Chapters 18 & 19
W Nov 6	Lec 17: Marine Biomes *(Lecture by Jennifer Beatty)*	Chapter 23 Extra Credit Due @ 11:59PM
M Nov 11	**(Full Day Lab) # 10: 2:00-6:30 Field to trip to La Brea Tar Pits** Bus leaves from UPC at 2pm, returns ~ 6:30pm	Lab#10 wksht due 6:30pm

W Nov 13	Lec 18: Estuarine and Freshwater Biomes	Chapter 24
M Nov 18	Lec 19: Terrestrial Biomes **Lab # 11: LAB PRACTICAL**	Chapter 22 Lab Practical & Notebook Check (turn in @ 3:30PM) HW#4 due @ 11:59PM
W Nov 20	Lec 20: Urban Ecology –Guest Lecture: Miguel Ordeñana	Chapter 25
M Nov 25	Lec 21: Succession and Island Biogeography Lab# 12: Independent Research Presentations (Round 1)	Chapters 20 & 21 **Insect Collection due**, R1. slides @ 1PM, Presentations in Lab
W Nov 27	***NO CLASS- THANKSGIVING HOLIDAY***	
M Dec 2	Lec 22 Food Webs, Trophic Cascades & Biogeochemical Cycles Lab# 13: Independent Research Presentations (Round 2)	Chapters 26, 27 R2. Presentations in Lab (Slides due @ 1 PM
W Dec 4	Lec 23: Global Change and Species Range Expansions and Invasions *Reading disc + Exam Overview and Course Evaluations at end of class*	**Reading # 3 on Blackboard** Lab # 7-9 Report Due
F Dec 13	**FINAL EXAM 2:00-4:00 pm (**Lecture location) **(Cumulative, with focus on reading + material from Lecs.16 to 24)**	**Final Exam**

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

Lecture Exams	**pts**	**Labs**	**pts**
Midterm 1	200	**Intro/Duckweed (Labs 1-5)**	
Midterm 2	200	Pre-lab quiz + worksheets (Indiv)	10
		USC Safety Training Proof (Indiv)	5
Final Exam	200	Prelim. Results Summary (Group)	10
		Scientific Report (Group)	40
		Cricket Behavior (Lab 2)	
Ind. Research Homework		Pre-Lab Worksheet (Indiv)	15
HW #1 - Selection of Ind. Research Topic	5	Post-Lab Worksheet (Group)	15
HW #2 – Ind. Research Bibliography	15	**Insect Diversity (Labs 3-4)**	
HW #3 – Ind. Research Meeting & Outline	10	Worksheets 3 & 4_{ab} (Indiv & Group)	40
HW #4 – Ind. Research Revised Outline	10	Insect Collection (Indiv)	10
		Symbio Inter. Disturbance (Lab 6)	
		Online Lab Assignment	20
		Ballona Wetlands (Labs 7-9)	
		Field Trip Worksheet (Indiv)	15
Extra Credit		Pre-and Post-Lab wkshts (Indiv/Group)	10
iNaturalist: Plant-Insect Assoc. Project	5	Scientific Report (Group)	40
		La Brea Tar Pits (Lab 10)	
		Field Trip Worksheet (Indiv)	15
		Lab Notebook	
		Check 1 & 2 (15 each) Indiv.	30
		LAB PRACTICAL (Lab 11, Indiv.)	40
		Ind. Research Presentations (Indiv.)	30
		Ind. Research Slides (Indiv.)	15
Subtotals (w/o extra credit)	**640**		**360**
		COURSE TOTAL	1000

COURSE DETAILS AND POLICIES

Course Communication and Blackboard Website: Postings on Blackboard (**https://blackboard.usc.edu**) will be an official source for announcements, course materials, lecture notes, grade postings and general discussions. Please notify your TA if you have any problems accessing Blackboard by the second day of class. Answers to students' FAQs regarding this course can be found on Blackboard under 'Course Information'. We may also use Blackboard for lecture or laboratory quizzes. 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. 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, and should check these accounts frequently.**

Exams: 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, and assignments. The final will focus heavily on the third portion of the semester, but will also have cumulative section. **Make-Up Policy:** If there is a conflict with an exam, you **must** email the instructor *2 weeks in advance* to see if alternative arrangements can be made. Otherwise, **make-up exams will not be given except in extreme emergencies. Make-up exams will also be more difficult**. If you have an emergency on exam day, you must get in touch with us before the exam if possible.

Assignments: Unless specified otherwise, all assignments will be submitted through Blackboard via "turnitin" **by 11:59 pm on the due date (30% will be deducted after 5 minutes for every 24 hour period)**. Note that your TA may request a hard copy as well. Assignment guidelines will be discussed in class or lab and posted on Blackboard.

Regrading Policy: If you feel that an error was made in an exam grade, you need to: 1) Check the posted 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 to your TA within one week of the time the examination was returned to you. Your entire exam may be re-graded 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).

Students with Disabilities: Students requesting academic accommodations based on a disability are required to register with the Office of Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. **Be sure that the letter is delivered to the Instructor or TA early in the semester, by the third lecture of the semester**. DSP is located in STU 301 and is open from 8:30 a.m. to 5:00 p.m., Monday through Friday. The telephone number of DSP is 213-740-0776. If a student's approved accommodation is limited to extra time on examinations, the teaching staff of BISC 315 will provide the accommodation. For any other accommodation, such as a private room, translator, etc., students must make prior arrangements with the DSP 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.

POLICY ON MISSED LECTURE EXAMS, QUIZZES, ON-CAMPUS LABS, OR LAB EXAMS

UNPLANNED ABSENCES: **You may be excused from exams or labs only in the event of a documented illness or emergency as outlined by university policy or approved religious holiday** (SCampus; https://policy.usc.edu/student/scampus/). 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 TA or Instructor within 48h of the missed examination, lab or quiz. The excuse cannot be to attend a dental appointment, a conference, or other similar reasons. The reason for missing an examination or quiz must be of a medical nature or totally unavoidable (e.g., a verified automobile collision on the day and time of the examination). 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.

PLANNED ABSENCES: 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/religiouslife/holydays/absences.html. Requests for such absences should be made by email to the TA and Dr. Hopper at least 2 weeks in advance of the absence.

LABORATORY PERFORMANCE GUIDELINES

Laboratory activities will include outdoor activities both on campus 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. Any document associated with grading may be photocopied by the instructional staff.

There will be several off campus field trips required for this course. Plan to dress appropriately for each proposed activity and bring water and your USC ID.

1. **Attendance and Tardiness:** You are required to attend all lab sessions. Any unexcused absences will seriously affect your evaluation. Come to lab on time. You will lose 5 points for being absent or tardy from your lab assignment grades. You also need to remain for the entire lab session or until excused by your instructor.

2. **Behavior.** No eating or drinking in the Laboratory. Keep a neat working area. At the end of the lab session, return all supplies to their proper place, clean your work area, and slide your chair under the table. Check with your instructor before leaving. Points will be deducted for any violation of safety rules, improper laboratory/field sampling technique, inability to contribute fully to group projects, leaving your lab space messy, poor effort, etc. **Your degree of participation counts towards your lab grade on all assignments.**

3. **Work ethic**: Students are expected to have read through any posted lab materials (on BB) prior to the start of lab. Pre-Lab quizzes may be given, and occasionally worksheets will need to be completed and turned in before the start of lab or at the end of lab. During each lab students need to record their results (drawings, observations, calculations) in their lab notebook or the provided worksheet or computer database. The TA may ask to see the lab notebook at any time during the semester. 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.

4. **Final presentation:** Each student will be required to choose an ecological topic for their final paper and presentation. Each topic must be unique and must be approved by the TA or Professor. Detailed instructions on the presentation, including how points will be assigned, will be provided in class and posted on Blackboard.

Statement on Academic Conduct

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. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct. 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/.

Academic Support Systems:

Research Support: Need to do research but don't know where to start? Not sure how to cite a source in your bibliography? Ask a librarian! http://libguides.usc.edu/

General Academic Support: The **Kortschak Center for Learning and Creativity** provides customized support services to help students transition into college and achieve their academic goals. https://kortschakcenter.usc.edu/

Student Support Systems:

Student Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call
engemannshc.usc.edu/rsvp
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu
Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support
Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu
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
dps.usc.edu, emergency.usc.edu
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) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.