BIO SCI E186 – POPULATION & COMMUNITY ECOLOGY – FALL 2015

Time: Tuesday & Thursday, 11:00-12:20 pm
Room: Social Science Trailer (SSTR Bldg 203) Rm 100
Professor & Office Hours: Cascade Sorte, csorte@uci.edu, Steinhaus 359, 9-10 am Tues & Thurs

Course Content: This course covers processes specific to populations and communities, groups of individuals in a single and multiple species, respectively. Topics include population structure, growth, regulation, dynamics, and persistence, and community interactions, structure, development, diversity, and biogeographic (macroecological) patterns. We will also discuss the application and importance of population prediction and community indices.

Learning Goals: By the end of this course, you will have developed:
1. a foundational understanding of vocabulary, theory, and methodology in population and community ecology,
2. your abilities in interpreting and evaluating the results and presentation of ecological data,
3. skills in field survey methods and data manipulation, analysis, and presentation (in Excel, PowerPoint, and R),
4. increased effectiveness in communicating scientific information, and
5. greater breadth and depth of scientific intuition.

Course Format: This class will be taught in a workshop format, recognizing that the most effective learning strategies differ between students, course content, and learning goals. Students should come to class having done any required reading or preparation. Class periods will typically begin with a short (max. 30 min) lecture. Most of the class period (40+ minutes) will be devoted to an activity such as a paper discussion, group activity, computer-based data analysis lab, or field trip. Classes will end with a 10-min re-cap of main concepts, progress towards learning goals, and remaining unanswered questions.

Readings
Suggested: "Ecology" by Cain, Bowman, and Hacker, any/2nd Ed *(on reserve in library, <$10 on Amazon)*
"A Primer of Ecology" by Gotelli *(on reserve in library)*
Required PDF readings will be posted on the course Canvas site.

Grading (out of 100 pts):	30	Participation
	20	Quizzes (10 pts each)
	10	Leading Paper Discussion
	40	Project

Grading Scale: A+ = 97+, A = 93-96, A- = 90-92, B+ = 87-89, B = 83-86, B- = 80-82, C+ = 77-79, C = 73-76, C- = 70-72, D = 60-69, F <60. *Grades round up, so that 92.5 = A.*

Participation: Class attendance is required and included in your grade as participation. To receive full credit, you will need to come to class on time and well prepared (having done any required reading or assignment), actively participate throughout the discussion/activity, and follow any instructions specific to the activity. Up to 2 absences are allowed without affecting your grade (i.e. the lowest 2 participation grades will be dropped). Plan to bank at least one for sickness as any additional absence will require extensive explanation/documentation/make-up work.

Field trips: Field trip attendance counts towards participation credit. We will go on one away field trip (to the UC marsh reserve on 10/15) and will walk to sites near campus for additional activities. In addition, class has been cancelled on 11/24 in exchange for students participating in 1 self-directed field trip to conduct community surveys. This "on your own" field trip can be done at any time during the term and should represent 1+ hour in the field (run your plan by Prof. Sorte via email). This is impetus to join a lab or grad student field expedition or to plan your own to collect data for your project. To document this field trip, post 1+ photos (including one of yourself in the field) and a 1 paragraph description of the experience on Canvas before 12/8.

Leading Paper Discussion: Pairs of students will sign up to lead paper discussions that complement the day's topic. So that we stay on the "cutting edge", aim for papers published in the last 3 years in general ecology journals such as *Ecology*, *Ecology Letters*, *Oikos*, and *Oecologia*. When it is your week to lead, you are responsible for:
2 weeks before: email pdf paper to – and schedule a meeting with – Prof. Sorte
1 week before: meet with Prof. Sorte to review the paper and your plan for leading discussion
Day of discussion: come prepared to lead and engage the students for a 40 min discussion period. This could include a presentation, discussion questions, assignments, activities, small group work, etc.

Quizzes: Two 40-minute quizzes will be given, one near the end of each (Population and Community) unit. Quizzes are designed to test comprehension of the concepts covered in lecture, workshops, and discussions and will be all free-response (i.e. no multiple choice). Practice questions will be incorporated into the workshops to help you prepare for the first quiz.

Project: Your final project will be an opportunity to show your development in the course "learning goals" as you use actual ecological data (either as provided to you or collected on your own) to evaluate research questions and hypotheses related to population and community ecology. The project will have the following steps:
Oct. 27 – Receive project dataset & start brainstorming research questions
Nov. 5 – Deadline to submit project plan (5 pts)
Nov. 24 – Rough draft due (15 pts), receive peer paper to review
Dec. 1 – Peer review due (bring 2 printed copies to class) & discussed during class (5 pts)
Dec. 8 – Final presentation (10 min PowerPoint given during final exam period) (10 pts)
Dec. 8 – Final paper due (5 pts)
Further details, instructions, and grading rubrics will be provided in class and on Canvas.

Please Note: Students are responsible for adhering to UCI policies on class attendance (beyond the participation policies listed above), requesting disability services, and academic honesty.

Schedule *(subject to change)*

Day	Date	Topic	Activity	Ch's*
TH	9/24	Introduction	How to read a scientific paper	8
TU	9/29	Life History: From Individuals to Populations	Paper discussion (Cascade)	7
TH	10/1	Life History & Population Growth	Demographic analysis in Excel	7,9 / 3
TU	10/6	Population Growth	Population growth curves in Excel	9 / 1,2
TH	10/8	Population Dynamics	Paper discussion (Group 1)	9,10 / 1,2
TU	10/13	Population Dynamics	Population survey methods	8,10
TH	10/15	FIELD TRIP: Marsh Reserve		
TU	10/20	Population Persistence & Metapopulations	Paper discussion (Group 2)	10 / 4
TH	10/22	Population Prediction: Applications	** Quiz 1 (Populations)	
TU	10/27	Competition	Introduce project dataset	11 / 5
TH	10/29	Predation	Interaction models in Excel	12 / 6
TU	11/3	Positive Interactions	Paper discussion (Group 3)	14
TH	11/5	Community Interaction Webs	Data interpretatn; ** Proj. plan due	15
TU	11/10	Community Development	Paper discussion (Group 4)	16
TH	11/12	Community Diversity	Analysis in R (Dr. N. Silbiger)	18
TU	11/17	Research talk on roles of biodiversity	Paper discussion (Prof. M. Bracken)	18
TH	11/19	Biogeography	** Quiz 2 (Communities)	17
TU	11/24	NO CLASS - Community surveys on your own	** Paper Draft Due	
TH	11/26	NO CLASS - HOLIDAY	HAPPY THANKSGIVING!	
TU	12/1	TBD	** Peer Reviews Due in Class	
TH	12/3	Conservation applications	Conservation discussion/debate	
TU	12/8	FINAL PRESENTATIONS	** Final Paper Due	

* Chapters in suggested, optional texts given as: Cain, Bowman & Hacker / Gotelli
Required reading assignments will be announced and distributed in class and/or on Canvas.