ESM 270: Conservation Planning and Priority Setting
Course Syllabus, Spring 2018

Instructor: Professor Ashley Larsen (Larsen@bren.ucsb.edu)
Prof. Larsen's Office hours: Wednesdays 3:15-4:15 @ GIS lab (and by appointment).

Teaching Assistant: Owen Liu (oliu@bren.ucsb.edu)
Office hours: Wednesdays 3:15-4:15 @ GIS lab (and by appointment).

Lectures: **Monday 2:00-3:15 (1424), Wednesday 2:00-3:15 (GIS lab)**

The objectives of this course are for you to:
1. Understand the principles and concepts underlying conservation planning
2. Understand how these principles are applied in real world settings
3. Gain exposure to and experience with a range of conservation planning tools

Course Structure: For most weeks, Monday will be a lecture on a key topic in conservation planning and Wednesday will be a computer lab exercise using a planning tool designed to apply that topic.

Lectures: Lectures will explore different topics in conservation planning. Lectures will start with a student-led discussion of the readings (8-10 min), followed by a lecture on a topic illustrated with case studies. If time permits, lecture will conclude with a few minutes of peer-to-peer discussion of the main take-away points. You will get the most out of lecture by participating.

Readings: Required readings accompany each lecture to provide context, and should be read **before** class. You are expected to participate in discussion on the readings. All readings will be available on Gauchospace.

Lab and Assignments: Lab sections are designed to explore commonly used tools in conservation planning. Lab sections will begin with a short introduction to the tool, and therefore it is essential to arrive on time to lab section. Students will then use real data to address a short conservation problem. Analyses will often require additional time outside of class to complete. All _analyses_ should be completed individually. Written assignments #2-9 will be completed in pairs, with the first author responsible for the rough and final drafts, and the second author responsible for detailed peer-review comments. Pairs will work together for two consecutive assignments such that each individual is a first and second author on one. A template for the written assignment is posted on Gauchospace. Note: one lab (Planning using R) counts double. For this lab, feel free to have both partners participate in the first and second author tasks to ensure your team gets as many points as possible.
***Assignments are due at the start of class on the day listed. Late assignments will lose 1 point if it is not turned in before lab and 1 additional point each day that it is late.

Assignment grading: See Gauchospace for general template and grading rubric.

Attendance & Participation: Students are required to actively participate in the lectures and labs. Only by actively participating will students earn 3 points/class. The rough breakdown is 1 point for arriving on time, 1 point for actively listening the whole class, and 1 point for engaging. Thus, attendance is required but is <u>not</u> sufficient for full points. Please email the instructor **prior to class** (Larsen@bren.ucsb.edu) to request an excused absence in the case of illness or family emergency. In the case of a unique career opportunity (e.g. international conference, interview, etc), please email the instructor as early as possible in the quarter to arrange make-up work.

Student-led Discussion: Each lecture will begin with an 8-10 minute student-led discussion of the readings. Sign up for a date in the first class. Students leading the discussion should be the experts on the papers assigned. You are welcome to contact the TA or professor (at least 24h in advance) with specific questions. The students should quickly summarize and synthesize the important aspects of the readings (~4-5m), and include class participation (~4-5m). A powerpoint is welcome, but not necessary. This is an exercise in literature synthesis, science communication, and time management. Discussion must end within 10 minutes and groups going over time will lose points.

Grading: Grading is based primarily on lab assignments and participation.
    Lab Assignments: 12 points each (all but R), 24 points R lab (120 points total)
    Attendance & participation: 3 points each class (60 points total)
    Student-led discussion: 20 points

Other: (1) We will try to organize an optional field trip to learn how restoration and conservation are done in practice. Stay tuned. (2) We want to make this class as rewarding as possible. We will be asking for your feedback throughout the quarter to make tweaks to our teaching style and content. We absolutely encourage an open dialogue so please come talk to us at any time during the quarter if you have ideas or concerns. (3) If you see something CP related in the news or come across a great youtube, pass it along!

Consider the syllabus a living document. The lecture topics and schedule are subject to change

Week 1

Monday, April 2 (lecture)
Introduction to Conservation Planning

Wednesday, April 4 (lecture/discussion)
Conservation elements and setting conservation objectives
Readings: Kareiva & Marvier 2012, Soule 2013
Assignment 1 due: What should conservation objectives be (**plus discussion/debate**). *This assignment should be completed solo.*

Week 2

Monday, April 9 (lecture)
Species-level conservation targets (viable populations)
Readings: Beissinger and Westphal 1998, Doak et al. 2015

Wednesday, April 11 (lab)
Species range mapping with Maxent

Week 3

Monday, April 16 (lecture)
Multi-species priorities and multi-criteria planning
Readings: Myers et al. 2000, Karieva & Marvier 2007

Wednesday, April 18 (lab)
Mapping hotspots with ArcGIS
Assignment 2 due: Using Maxent to map species ranges

Week 4

Monday, April 23 (lecture)
Scaling up (conservation networks and portfolios)
Readings: Rodrigues & Gaston 2001, Sala et al. 2003, Williams et al. 2004

Wednesday, April 25 (lab)
Marxan as a planning tool for reserve design
Assignment 3 due: Using ArcGIS to map hotspots in the California Current

Week 5

Monday, April 30 (lecture)
Conservation in a dynamic world
Readings: Hannah et al. 2007, Pressey et al. 2007, Runge et al. 2014

Wednesday, May 2 (lab)
Modeling connectivity with Circuitscape
Assignment 4 due: Prioritizing conservation in Morro Bay

Week 6

Monday, May 7 (lecture)
Restoration, reintroductions and rewilding
Readings: Seddon et al. 2014, Sarrazin & Barbault 1996; Sudding et al. 2015

Wednesday, May 9 (lab)
Hijacking tools for restoration planning
Assignment 5 due: Exploring connectivity between patches

Week 7

Monday, May 14 (lecture)
Social science in conservation planning (Guest lectures by Karly Miller, IGPMS PhDc)
Readings: Leslie et al. 2015, Sarkar & Montoya 2011

Wednesday, May 16 (lab)
AHP elicitation
Assignment 6 due: Exploring how to make restoration more strategic

Week 8

Monday, May 21 (lecture)
EBM/Comprehensive Planning
Readings: Halpern & Agardy 2013

Wednesday, May 23 (lab)
Conservation planning with R
Assignment 7 due: Eliciting and mapping preferences for conservation priorities

Week 9

Monday May 28 (lecture)
Memorial day, no class

Wednesday, May 30 (lab)
Conservation planning with R
Assignment due: None

Week 10

Monday, June 4 (lecture)
Ecosystem services
Readings: Egoh et al. 2007, Daily et al. 1997, Daily et al. 2009

Wednesday, June 6 (lab)
InVEST
Assignment 8 due: Conservation planning with R

Monday **June 11**
Assignment 9 due: Mapping ecosystem services