UNIVERSITY OF SOUTHERN CALIFORNIA
Environmental Studies Program
Spring 2016

ENST 310: Sustainable Fisheries Management (4 units)
ENST Catalina Semester: Feb 8 to Mar 2, 2016

David Ginsburg, Ph.D. (Asst. Prof, Teaching, ENST)
Email: dginsbur@usc.edu; Office: SOS B15

Course Overview:
This course integrates scientific, social, political, and economic factors of fisheries management, engaging students in key issues of coastal and marine sustainability. Fisheries are an important source of food and livelihood for societies across the planet. Yet many fisheries are in decline or collapse due to overfishing and/or habitat degradation. This course will present the historical and modern significance of fishing to society, the causes and implications of fisheries decline, and current and proposed strategies for achieving more sustainable fisheries. Students will be exposed to the fundamental ecological, social, political, and economic dimensions of fisheries management from local to international scales, with case studies focusing on Southern California fisheries including the collapse of the California abalone and sea bass fisheries and the recent development of a state-wide marine reserve system. This course is designed for hands-on learning and includes quantitative components that allow students to evaluate ecological data and perform analyses related to stock assessment, game theory, and stakeholder analysis. Ultimately, students will learn about some of our most important—and most threatened—global resources, and why achieving sustainable fisheries will be essential to the future well being of humans and the environment.

Course Texts:
1. *Marine Fisheries Ecology* (abbreviated MFE below) by Simon Jennings, Michel J. Kaiser and John D. Reynolds
2. *An Unnatural History of the Sea* by Callum Roberts (abbreviated UHS below; *Note: available online by USC Library*)

Course Requirements:
Routine attendance and active participation are an important part of each class session. For the best learning experience, you are expected to have read the course materials (see below) by the date it is discussed in class. Roll will be taken periodically in the form of thought exercises, reading assignments, and in-class questions. You are responsible for information, announcements, date changes, and any other course material presented, regardless of your participation in the classroom.

Course Grading:
You will be graded on the basis of your performance on exams, data assignments, reading guides, presentations, fieldwork, and class participation. Course materials will be posted on Blackboard for download, subsequent study, and analysis. Note: Data Assignments and Reading Guides will be submitted via Blackboard (see Bb for specific deadlines and grading rubrics). Exam questions will be drawn from course readings and material discussed in lecture, and will include both multiple choice and essay questions. The Final Exam is partially cumulative and will include ~20% of material covered in the first two-thirds of the course; the remaining ~80% of the Final Exam will include only material covered after Exam 2 (i.e., the last third of the course). ***No make-up midterms or final exams will be allowed without explicit permission.*** If for any reason a student misses an exam or other course requirement, they will be given a zero for that assignment.

Below is a list of the graded assignments and their point value:

Midterm 1	Feb 16	100 pts	17%
Midterm 2	Feb 23	100 pts	17%
Final Exam	Mar 2	125 pts	21%
Group Data Project & Presentation	Mar 1	100 pts	17%
Data Assignments (4 total)	Rolling	100 pts	17%
Reading Guides & Discussions (3 total)	Rolling	60 pts	10%
TOTAL COURSE POINTS		**585 pts**	**100%**

Data Assignments:

Students will learn to use R-Studio, an open source, statistical programming and graphics program, and become proficient in the use of Microsoft Excel, a spreadsheet application used for data management. Using these software packages, students will analyze a series of datasets (provided by the instructor) and look for trends that support their hypotheses. Each data assignment will require an individual student to organize and quantitatively evaluate a relatively simple dataset (e.g., single parameter such as fish size), as well as provide a written report (2-3 pages max, single-spaced) on the results. The final data assignment is a group project (2 students per group) and will require students to analyze a more complicated set of data (e.g., multiple parameters such as fish size and biomass). Final projects will include a written (4-5 pages max, single-spaced) and oral presentation where students will showcase their research question and findings based on their analysis of the relevant data. Each data assignment (including the final project) will be evaluated for originality, accuracy and thoroughness of research, attention to detail, and quality of finished project.

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 Section 11, *Behavior Violating University Standards* https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/.

Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/. Neither discrimination, sexual assault nor harassment are tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* http://equity.usc.edu/ or to the *Department of Public Safety* http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources. Students are expressly prohibited from recording lectures.

Support Systems:

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* *http://emergency.usc.edu/* will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Statement on Religious Observation Accommodations:
USC policy grants students excused absences from class for observance of religious activities. Students may be given an opportunity to make up work missed because of religious observance. We are responsive to requests for an excused absence when made in advance. Please note that this applies only to religious activities that necessitate a student's absence from class and/or a conflict with a specific aspect of the course.

Course Schedule:
For the best learning experience, you are expected to have read the assigned material by the date it is discussed in class. Chapter and article readings will be posted online. The readings and schedule of topics may be adjusted throughout the semester depending on the progress of the

Day	Morning	Afternoon	Readings
Mon Feb 8	Fisheries Ecology: Methods & Management	Data Assignments Review (Excel & R-Studio); Group Project Discussion	MFE: Ch. 1-2 UHS: Ch. 1-3
Tues Feb 9	Overfishing & Shifting Baselines	*BFC Data Collection & Field Methods*; R-Studio Review I	MFE: Ch. 5-6; UHS: Ch. 11, 12; **Pauly & Watson 2003**
Weds Feb 10	Tragedy of the Commons, Cod Case Study	**Reading Guide 1 Due Student Presentation 1** R-Studio Review II	MFE: Ch. 10-11; UHS: 15, 18; **Jackson et al. 2001; Frank et al. 2005**
Thurs Feb 11	Sustainable Seafood for Future *Guest Speaker Kim Thompson AOP*	**Data Assignment 1 Due**	UHS: Ch. 25, 26 **Micheli et al. 2014**
Fri Feb 12	Case Studies Local Fisheries		
Mon Feb 15	*Presidents' Day Holiday – No Class*		
Tues Feb 16	**MIDTERM 1**	**Reading Guide 2 Due Student Presentation 2**	**Hughes et al. 2005**
Weds Feb 17	Population Dynamics & Stock Assessments	*BFC Data Collection & Field Methods*	MFE: Ch. 4, 7; **Pauly 1998; Chavez et al. 2003**
Thurs Feb 18	Fisheries Management: Impacts *Guest Speaker TBA*	**Data Assignment 2 Due**	MFE: Ch. 14, 15; UHS: Ch. 17; **Fog. & Murawski 1998**
Fri Feb 19	Marine Governance & Policy		MFE: Ch. 17; UHS: CH. 22-24; **Alexander 1993**
Mon Feb 22	Aquaculture & Sustainable Fisheries	**Data Assignment 3 Due**	MFE: Ch. 16; **Bush et al. 2014**; **Claisse et al. 2014**
Tues Feb 23	**MIDTERM 2**	**Reading Guide 3 Due Student Presentation 3**	**Ruckelshaus et al. 2008**
Weds Feb 24	Marine Reserves and Ecosystem-Based Management I	*Data Collection & Methods; Field Site TBA*	**Roberts & Polunin 1993**
Thurs Feb 25	Marine Reserves and Ecosystem-Based Management II	**Data Assignment 4 Due**	**Pikitch et al. 2003**
Fri Feb 26	Fisheries Overview: Resilience and The Future		
Mon Feb 29	Lecture TBA	Final Data Review	
Tues Mar 1	Group Presentations	**Group Projects Due**	
Weds Mar 2	**FINAL EXAM**		