



Fridays 10am- 12pm, Room: TBA

**Course Instructor:**

Jill Sohм, Ph.D.

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Office: CAS 116B

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**Course Overview:**

This year, senior seminar is going to focus on the ecosystem service functions of biodiversity and native habitat along with the science behind genetically modified organisms. We will examine Southern California as our case study for native habitat diversity, particularly on the (relatively) pristine Channel Islands- Catalina and Santa Cruz. We will discuss these unique ecosystems, and the problems they face with a burgeoning population of 18 million Angelinos in close proximity. As we face increasing threats from climate change including water shortages, we will put GMO's and biodiversity in context here in California where a whopping 40% of the table food for the USA is grown.

**Course Learning Objectives:**

- Understand the natural history of California and the changes humans have made to the landscape, particularly with regard to water and agriculture
- Gain knowledge on the importance of biodiversity and it's interaction with agriculture
- Explore in depth the topic of genetic modification, specifically with regards to food, and learn how GM technology affects agriculture and biodiversity in the environment
- Learning objectives in this course are aligned with those of the Environmental Studies Program: <https://dornsife.usc.edu/environmental-studies/learning-objectives/>

**Student Conduct:**

***Field trips represent a significant component of this class, which places a significant responsibility on safety and conduct. While we are off campus on course- related field trips the following activities will not be permitted:***

- ***no use of tobacco***
- ***no substance abuse will be tolerated***
- ***no consumption of alcohol***

The trip to Catalina Island will involve intense academic programming from the time we reach the island Friday morning through Friday evening and all day Saturday, as well. For this reason

students will not be permitted to travel to the dining establishment in Two Harbors. Students will be required to attend a class meeting immediately following breakfast (8am) Saturday and be alert and ready for the day's activities.

Any significant violation of these policies will be reported to the student conduct office and to all other applicable entities as well.

**Attendance:**

Attendance is mandatory and will be taken at each class meeting. Missing a field trip will result in failure of the course. Students may have one unexcused absence without facing a grade penalty. Each unexcused absence after the first unexcused absence will result in the lowering of the final grade by one full letter grade.

**Course Texts:**

All course readings will be posted on Blackboard

**Course Grading:**

You will be graded on the basis of your performance on two midterm examinations, a research Paper, plant maps, and participation in discussions and on field trips.

**Reading Guides:**

Each week's reading will have a corresponding reading guide that will be posted on blackboard one week before the reading is due. In order to receive a grade for class seminars, you must come to class prepared with the appropriate readings finished, evidenced by completed reading guides and/or the reading marked as such with highlighting, comments, and/ or questions. You can do this by printing the paper out OR using adobe software to mark the pdf. Reading guides will be posted a week before class and you are required to download them and complete them.

**Plant maps:**

All students will be required to build a Google Earth map of a hike with native plant locations/pictures/details included. We will create the first map as a class on Catalina, and the second you can create in small groups (3-4 people) from data and images we collect on Santa Cruz Island. Map images will include the common name, the scientific name, that plant status (native, endemic, invasive), identifying features, and one fun fact. Students will be given a list of the native and non-native plants most commonly found on the islands, which they can work from.

**KML files for Santa Cruz Island will be due in April 6.**

**In Class debate:**

We will have a debate in class on whether or not we should label genetically modified foods. For this debate, you will be assigned randomly to a position and each do your own research, turning in a short summary with references. In class, you will meet briefly with your group, select representatives, and hold a debate with opening remarks, rebuttals, and a period for answering questions.

**Student Research Paper:**

All students will write a position paper on their opinion of Genetic Modification technology. Some questions you want to answer include: should GMO food be labeled or not? Should NGO's regulate it or only the government? Is biodiversity preservation more important than GMO foods? Should we be worried about GM technology getting into the environment? Should GMO's be banned because they threaten biodiversity? Your paper MUST be well researched and

well supported by peer-reviewed sources. Discuss your opinion PRIOR to starting class versus how it has changed given the class material and your research for the paper. The minimum paper length is 2,000 words (excluding bibliography/ works cited), which will be about eight pages, double-spaced, times-new roman 12-point font. Minimum of 15 citations, no more than 6 citations may come from course readings.

<b>Assessment</b>	<b>weighted value</b>
Midterm I	30%
Midterm II	30%
Research Paper	15%
Class Debate	5%
Plant maps	15%
Field trip participation	5%
<b>TOTAL</b>	<b>100%</b>

### **Midterm Exam:**

The midterm exams will consist of short answer, and essay questions, which require students to critically analyze course readings and draw from class discussions and field trips. Identification of plant species from Catalina and Santa Cruz Islands will appear on midterm exams.

### **Field Trips:**

The course will include an overnight trip to Catalina Island, a weekend trip to Santa Cruz Island, and a day-trip to a sustainable farm in Moorpark. Field trips are a mandatory part of the course, as such you must attend all three trips, and failure to attend a field trip will result in a grade of F in the class. Students are required to wear closed-toe shoes on all boats. During the field trips, you will be engaged in intense seminars with the participants of the class and by USC faculty associated with the Wrigley Institute for Environmental Studies, doing environmental field research on the island, as well as some fun recreational activities. While on Catalina Island, you will have a room in the USC dormitory and meals in the cafeteria. While on Santa Cruz Island, you will have a room or be camping at the UCSB field station and we will cook communal meals together at the same facility. During the field trips there will be a significant component of fieldwork. In the field students must wear either athletic shoes or hiking boots. Hiking boots are strongly recommended. Students are also encouraged to wear pants, long-sleeved shirts, hats & sunglasses for sun protection and protection against poison oak & poison ivy.

<b>Course Schedule (Subject to change):</b>		
<b>Date</b>	<b>Topic</b>	<b>Reading</b>
January 13	Introduction, California and Channel Islands natural history, the Intrinsic Value of Biodiversity, Water in California	<i>Cadillac Desert Intro, Sandler, 2012; Myers 2012; Water and Power pp. 19- 40</i>
January 20	Water and Agriculture in California	<i>Cadillac Desert- Chinatwon (ch 10; Water and Power pp. 40- 69</i>

<b>January 27-28</b>	<b><i>Catalina Weekend Trip- Catalina native plants, GPS and mapping</i></b>	<i>TBA</i>
February 3	Climate Change, Agriculture, and Water in California; Relationship of biodiversity and agriculture	<i>Hayhoe, et al. 2004, CA Agriculture Statistics, Tscharnke et al. 2005</i>
February 10	Introduction to GMOs	<i>Signal to Noise GMO edition: intro; FAO intro to Mo.Bio and bioengineering</i>
February 17	Regulation of GMOs (role of government in GM technology)	<i>Signal to Noise GMO edition: regulation; Lynch and Vogel 2001 (through regulation in US and EU), Bucchini (2002)</i>
February 24	Environmental risk of GMOs; gene drives	<i>Signal to Noise GMO edition: genetic diversity; Ellestrand 2003; Ellestrand 2006, TBA</i>
March 2	<b><i>Midterm I</i></b>	
March 9	Health Risks of GMOs	<i>Seralini, Van Eenennaam 2014, Nicolai 2014, Hilbeck 2015</i>
<b>March 16</b>	<b><i>SPRING BREAK</i></b>	
March 23	GMO crop outcomes: Do they increase yields, reduce pesticide use, and reduce costs?	<i>TBA</i>
<b>March 31-April 2</b>	<b><i>Santa Cruz Island Field Trip</i></b>	<i>Island Fox papers: Courchamp, et al &amp; Fox letters, Roemer, Morrison</i>
April 6	Agribusiness, Monsanto, and NGOs <b><i>Santa Cruz plant map KML files due</i></b>	<i>Bitter Seeds, Gutierrez 2015, modern farmer and genetic literacy project articles</i>
<b>April 13</b>	<b><i>DAYTRIP Underwood Farms (Moorpark)</i></b>	<i>Hole, et al. 2005, CA paper</i>
April 20	Should GM products be labeled? (Class debate); Affect of organic farming on biodiversity & Conservation Agriculture	<i>Research on your own (come in with your citation list) CA response (in class)</i>
April 27	<b><i>Midterm II</i></b>	

### 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 is 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/departments/departments-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](mailto: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](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.

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