

Course Syllabus

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General Information

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Course Description:

Through weekly field trips and 2-3 weekend field experiences, students will study flora and fauna of California using current biological and ecological field research methods, collect and analyze data, demonstrate leadership and group work skills, and write and present a research proposal. Students must be able to hike in rough terrain and carry bulky equipment.

Course Objectives:

- Become familiar with flora & fauna of California & apply biological and ecological knowledge to field surveys.
- Understand the art & structure of conducting biological & ecological field research.
- Learn a variety of field techniques used in ecological and management studies to survey habitat and census plant and animal populations.
- Learn how to plan and conduct field research, demonstrating leadership and group work skills.
- Practice skills in data handling & analysis
- Practice skills in oral presentation



Student Learning Outcomes:

- *BIOL130 SLO1* - Demonstrate the techniques involved in recording data in the field, including proper journaling, photography, trapping and collecting, preservation of specimens, identification of specimens, and recording meteorological and habitat data.
- *BIOL130 SLO2* - Demonstrate techniques for creation and presentation of data through photography, graphs, charts, tables, and report layout for production of scientific reports & posters.
- *BIOL130 SLO3* - Plan, initiate and complete an original program of field research.
- *BIOL130 SLO4* - Produce original research reports in a standard scientific format based on field-collected data that include critical quantitative and qualitative evaluation of data to effectively communicate results, interpretations, and concepts.

Required Texts/Materials:

Rite in the Rain notebook. Available in the bookstore as a required text for the course.

Pens/pencils for field notebook (Pencils work well with Rite in the Rain, also fine point sharpies work well because they don't fade or smear)

All readings for each lab will be provided online. We also have a small library of reading and reference materials pertinent to the course.

Field Excursions:

On most class meetings, we will begin & end class at a local field site. Many of these sites, including the two long weekend camping trips, will be reserves operated as part of the UC Natural Reserve System. Visits are limited to university-level research and education and not fully open to the public. We are able to visit and stay at these reserves under a special permit. There are on-going studies and restoration projects occurring here, so it is imperative that you respect restricted areas & conduct yourself professionally.

For the long weekends, we will be camping in wilderness areas. There is a kitchen/meeting area, showers and outhouses. Alcohol & illegal drugs are not permitted. Violating the student code of conduct including possession of alcohol or drugs will result in your immediate dismissal from the course.

Transportation:

We will be visiting local field sites, some with limited parking so car-pooling will be imperative. On the long weekends, group transportation via vans or bus will be provided.

Clothing:

We will be working in a variety of local field sites including chaparral, forest, rocky intertidal, mudflats, marshes, open fields, and creek. Wear clothes appropriate for use in the field including: sturdy, comfortable shoes, sunhat, sunglasses, long pants, jacket. Bring clothes that will protect you from

comfortable shoes, sunhat, sunglasses, long pants, jacket. Bring clothes that will protect you from
s, poison oak, and insect bites. Be prepared to get wet and dirty.

Also see the Equipment List

Research Equipment:

We will be using a wide range of research equipment – from transect tapes to binoculars to computers. This only works if we all take responsibility for caring for it, and making sure it gets put back so that others can use it. Be conscientious. Also, it is common that equipment breaks or needs maintenance. We won't yell at you or charge you extra for breaking stuff (unless it's been gross negligence!). Don't put away a damaged or non-functional piece of equipment. Give it to us so that we can fix it or replace it.

Participation:

Students will be evaluated on their level of participation and engagement in each lecture and field activity. Participation and attendance is more than just showing up.

It requires you do the reading for each technique prior to the lab.

It involves helping set up exercises, collecting data, participation in planning sessions, participating in class discussions and helping your fellow students.

Participation includes demonstrating active involvement in class activities.

The assignment of points will be the result of a combination of observations made by your instructors and the observations and input of your fellow classmates.

Assignments

Field Journal:

Students are required to write and turn-in field notes in an organized notebook. We will grade your first notebook entry to provide you with feedback and set you in the right direction. A lesson on field note techniques will be given in the first lecture. You will be expected to take notes on each activity.

Your notebook will be graded and returned to you during the final class meeting. See the Field Notebook grading rubric

Field Leadership:

Pairs of students will lead one of the field excursions. The leaders will research the techniques to be used in the field and teach that technique to their group.

The assignment consists of the following:

- A write-up will be due one week prior to day consisting of step by step instructions on collecting data

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▶ including necessary equipment, notes on the benefits & limitations of the particular technique, and the utility of this technique for other ecosystems.

- Acting as team leaders for a group of students during the field excursion. During this time you must ensure that your team is conducting the research correctly, collecting clear data, and working well together.
- Collection of all data collected by your team. You must go over each data sheet with each data collector to ensure that the data is accurate and readable.
- Entry of data into an Excel file.
- Provide a post-trip write-up that includes the data, brief analysis of it (average values, significant conclusions, important findings etc.), and a summary of the trip including what worked, what the challenges were to quality data collection.

See the Field Leadership grading rubric.


Research Proposal & Presentation:

Students will work in teams of 3-4 to create a proposal for a project that involves collection of data in the field. The project will be presented orally to the class at the end of the semester and will be considered your final exam. You will have 15-20 minutes for this presentation. Each person in the team is required to contribute and present the project.

Your project must involve the following sections:

- *Research question & hypothesis:* come up with a question that is testable and present it as a hypothesis (for example, “Butterflies at Ellwood will be in their highest abundance during the warmest part of the spring season”)
- *Justification for why this question is of interest:* This can be short, but the goal is to “sell” your idea – why would someone want to fund you to do this study? How will it advance our knowledge about this system or others?
- *Background & Methods:* This will be the most detailed portion. Describe in detail exactly how and where you will conduct your research. You must refer to at least 2 published scientific papers or relevant ‘grey literature’ documents (i.e., government/organization handbooks) that have used this method. Discuss why this is the best method. Discuss the constraints of the method.
- *Logistics:* Provide a list of all field equipment you would need, the locations of your study, how often you would need to visit the sites, and the duration of your study. In a true proposal, this would also be where your budget would be derived from, which would include purchase of equipment, gear rental, and money to pay yourself and helpers for both time in the field and data entry.
- *Predictions:* what do you expect to find? You may want to create a general graph showing what you think your data would look like. What would it look like if your hypothesis was incorrect – would the data you collected allow you to still provide insights into the question?
- *Preliminary Data/Proof of Concept:* You may test out the technique and collect some data associated with your proposed project

with your proposed project.

 You will also be graded on group work and presentation skills (audible, well-explained, visuals to aid in explanation, teamwork ability, ability to answer questions). See the Final Project grading rubric.

Grade Breakdown

Activity	Point Value
Participation	300
Field Journal (1st Entry)	15
Field Journey (Final)	220
Field Leadership	150
Group Project and Presentation	150
Total	835

DSPS (<https://www.sbccc.edu/dsps/>) Accommodations

Disability Services and Programs for Students (DSPS) coordinates all academic accommodations for students with documented disabilities at Santa Barbara City College. If you have or think you might have a disability that impacts your educational experience in this class, contact DSPS to determine your eligibility for accommodations.

DSPS can be reached by phone or email. The phone number is [805-730-4164](tel:805-730-4164) or send email to dsps@sbccc.edu (<mailto:dsps@sbccc.edu>).

If you have already registered with DSPS, please submit your accommodation requests via the 'DSPS Online Services Student Portal' as soon as possible. This needs to be done each semester. If you have any questions or concerns about your accommodations, make an appointment with a DSPS Counselor.

Please complete this process in a timely manner to allow adequate time to provide accommodations.

Acomodaciones para estudiantes con discapacidades:

Los Programas y Servicios para Estudiantes con Discapacidades (DSPS) coordinan todas las adaptaciones académicas para los estudiantes con incapacidades documentadas en Santa Barbara City College. Si usted tiene, o cree que podría tener una discapacidad que afecta a su experiencia educativa en esta clase, póngase en contacto con DSPS para determinar si califica para servicios. Puede comunicarse por teléfono al 805-730-4164; o mandar un correo electrónico a DSPS@sbccc.com (<mailto:DSPS@sbccc.com>).

Si ya está registrado en DSPS envíe las solicitudes de adaptación a través del 'DSPS Online Services Student Portal' tan pronto como sea posible. Debe completar este proceso cada término académico. Si tiene alguna pregunta o duda acerca de sus acomodaciones, haga una cita con un consejero de DSPS.

Complete este proceso de una manera oportuna para permitir el tiempo necesario para ofrecer la



la acomodación.



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☰ ▾ Week 1 (Mar 11): Introduction



☰  Syllabus & Schedule of activities



☰  Zoom link for 1st class



☰  1st class meeting recording




☰  Field Leadership Sign-Up



☰  Field Notebook Rubric
(<http://www.sbccenvsgreen.org/BIOL130/equipment/Field%20Notebook.htm>)



☰  Guidelines for preparing a journal based on Grinnell guidelines.pdf



☰  Equipment
(<http://www.sbccenvsgreen.org/BIOL130/equipment/Equipment%20List.htm>)



☰  Food Group Sign-Up



☰  Sign up for Friday school van carpool



☰ ▾ Week 2 (Mar 18): Plant Phenology and Pollinator Surveys (Santa Barbara Botanic Garden)






☰  Location: Santa Barbara Botanic Garden



☰  Sign up for Friday school van carpool



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Plant Phenology Reading
 (<http://www.sbccenvsgreen.org/BIOL130/labs/PlantPhenology/Plant%20Phenology.htm>)
 ✓ ⋮

- 
Insect and Spider Survey Reading
 (<http://www.sbccenvsgreen.org/BIOL130/labs/InsectSpiderSurvey/Insect%20Spider%20Surveys.htm>)
 ✓ ⋮

- ⋮ ▾ **Week 3 (Apr 1): NOAA Research Vessel**
✓ + ⋮


- ⋮  **NOAA boat trip information**
✓ ⋮

- ⋮  **NOAA Certificate of Vaccination for non-Federal Employees.pdf**
✓ ⋮

- ⋮  **NOAA certificate of vaccination**
 Mar 22 | 5 pts
 ✓ ⋮














































- ⋮  **Marine Mammal Surveys**
 (<http://www.sbccenvsgreen.org/BIOL130/labs/MarineMammalSurvey/Marine%20Mammal%20Survey.htm>)
 ✓ ⋮

- ⋮ ▾ **Week 4 (Apr 8): Estuary Research (Carpinteria Salt Marsh)**
✓ + ⋮











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	 Week 5 (Apr 15-17): Hastings Weekend			
	 <u>Hastings Reserve Information</u> (http://www.sbccenvsgreen.org/BIOL130/Hastings/Hastings_Info.htm)			
	 <u>Measuring and Monitoring Plant Populations</u> (http://www.sbccenvsgreen.org/BIOL130/readings/MeasMonPlantPop.pdf)			
	 <u>Birds of Hastings Reserve</u> (https://hastingsreserve.org/natural-history-resources/birds.html)			
	 <u>Bird Survey Techniques</u> (http://www.sbccenvsgreen.org/BIOL130/labs/BirdSurvey/Bird%20Censusin%20gH.htm)			
	 <u>Historic Bird Survey Data</u> (https://www.scribd.com/fullscreen/80408505?access_key=key-2nq48qoa1771oyzm9ogk)			
	 <u>Track Stations and Camera Traps</u> (http://www.sbccenvsgreen.org/BIOL130/labs/TrackingCameraTraps/Track%20Stations%20Camera%20Traps.htm)			
	 <u>Bat Surveys</u> (http://www.sbccenvsgreen.org/BIOL130/labs/Bats/Accoustic%20Survey%20Bats.htm)			
	 <u>Radio Telemetry</u> (http://www.sbccenvsgreen.org/BIOL130/labs/Telemetry/Telemetry.htm)			
	Week 6 (Apr 22): Rocky Intertidal Monitoring			
	 <u>Intertidal Survey Reading</u> (http://www.sbccenvsgreen.org/BIOL130/labs/IntertidalSurvey/IntertidalSurvey.htm)			





⋮	▼ Week 7 (Apr 29-May 1): Big Creek Weekend	✓ + ⋮
⋮	 Big Creek Reserve Information (http://www.sbccenvsgreen.org/BIOL130/BigCreek/Big%20Creek%20Info.htm)	✓ ⋮
⋮	 Elephant Seal Reading (http://www.sbccenvsgreen.org/BIOL130/labs/ElephantSeals/ElephantSeals.htm)	✓ ⋮
⋮	 Track Stations and Camera Traps Reading (http://www.sbccenvsgreen.org/BIOL130/labs/TrackingCameraTraps/Track%20Stations%20Camera%20Traps.htm)	✓ ⋮
⋮	 Stream Assessment (Physical and Chemical) Reading (http://www.sbccenvsgreen.org/BIOL130/labs/Stream/Stream%20Water%20Quality.htm)	✓ ⋮
⋮	 Stream Assessment (Invertebrate) Reading (http://www.sbccenvsgreen.org/BIOL130/labs/Stream/Stream%20Invertebrates.htm)	✓ ⋮
⋮	 Insect and Spider Survey Reading (http://www.sbccenvsgreen.org/BIOL130/labs/InsectSpiderSurvey/Insect%20Spider%20Surveys.htm)	✓ ⋮
⋮	▼ Week 8 & 9 (May 6 & 13): Group Presentations	✓ + ⋮
⋮	 Project Presentation Rubric (http://www.sbccenvsgreen.org/BIOL130/FinalProject_Rubric.htm)	✓ ⋮
⋮	 Final Projects Apr 29 150 pts	✓ ⋮

▶

⋮ ▾ **Week 2 (25 Jan): Monarch Butterfly tagging and population count** ⊘ + ⋮


⋮  **Monarch Reading** (http://www.sbccenvsgreen.org/BIOL130/labs/Monarchs/MonarchTagging.htm) ⊘ ⋮

⋮  **Monarch Lab Directions** (https://goo.gl/maps/zTXxi69hFrG2) ⊘ ⋮

⋮  **MonarchLab_Directions.pdf** ⊘ ⋮

⋮ ▾ **Week 7 (1 Mar): Field Leadership Prep (Big Creek)** ⊘ + ⋮

⋮ **Only those leading a technique at Big Creek Reserve need to attend to prep for their activity** ⊘ ⋮





⋮  **Field Leadership Rubric** (http://www.sbccenvsgreen.org/BIOL130/TA%20Rubric.htm) ⊘ ⋮




⋮ ▾ **Week 8 (8 Mar): Remote Sensing, Plant Surveys, and Big Creek Prep** ⊘ + ⋮








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 **Week 9-10 (18-22 Mar): Field Leadership Prep (Hastings)**   

 **Make an appointment with Adam or Jen to prepare your field leadership for Hastings Reserve**  


 **Week 11 (5 Apr): College required in class survey and prep for Hastings**   



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 **Week 14 (26 Apr): No Class**   



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