

Ecology Lab (BIEB 121) - Fall quarter 2023

ECOLOGY LAB. 4 units. BIEB 121 is designed to familiarize students with ecological methods, problem solving, critical thinking, data presentation and analysis (in R), and scientific communication (in the form of presentations and writing). Students perform fieldwork and analyze data collected on or near the UCSD campus (e.g., UCSD Ecological Reserve, Scripps Coastal Reserve, Torrey Pines State Reserve). The natural history of organisms in our local ecosystems provides the context and inspiration for a majority of the assignments. Students should provide and use their own computer.

Prerequisites: BIEB 100, MATH 11 or SIO 187 **and** BILD 3

Course times: **WF 9-1250** in York Hall 4124 or in the field (see schedule)

Professor: David Holway (dholway@ucsd.edu); **Instructional assistants:** Deborah Chen (dsc001@ucsd.edu) & Kayleigh Cassidy (krcassid@ucsd.edu)

- **Assignments and grading.** There are **eight** assignments in this course and a total of **200** possible points. Assignments include the following: (i) plant trait data (PTD) analysis and presentation exercise (15 pts), (ii) southern California biodiversity presentation (15 pts), (iii) rare organism presentation (30 pts), (iv) invasive species fact sheet (ISFS; 20 pts), and (v) **four** lab reports based on field data projects (30 pts x 4). Note that of the five field data projects scheduled, you will pick four to write up for credit. You are expected to participate in the field portion of all data projects even if you don't plan to write up that lab. There is no final exam, and the class will not meet during finals week.
- **Field instruction.** Lab reports will be based on field data projects. For each field data project, the class will be divided into subgroups of students that will each collect their own data. Data sets will then be combined across the entire class for analysis. During class sessions that involve campus fieldwork, please bring a notebook, pen/pencil, phone, and water. Please wear sturdy shoes; a hat and sunscreen are recommended. Fieldwork will usually be conducted on Wednesdays (see schedule). Please follow all safety instructions in the field and be prepared to hike on trails.
- **Lab instruction.** We will meet in the lab to discuss data management, analysis, and presentation. Attending lab meetings will be essential for understanding how to write up lab reports. Lab meetings will typically be held on Fridays after each Wednesday field data project (see schedule). During lab meetings, we will also present an overview for the fieldwork planned for that next week. The classroom is not equipped with video / audio podcasting, but all presentations will be added to Canvas.
- **Remote instruction.** Class presentations (8 & 22 Nov) will be conducted on Zoom.
- **Readings.** There is no assigned textbook for this class. Each week's activities will involve supplementary readings (articles from the primary literature) that will be placed on Canvas prior to when readings are discussed.

Ecology lab schedule for Fall Quarter 2023

Date (day)	Lab meeting (F = field; L = lab; R = remote)	Due dates
29 Sep (F)	L / F: Course overview + campus tree tour + plant trait data	
4 Oct (W)	L: Introduction to R + plant trait data (PTD) analysis	
6 Oct (F)	F: Torrey Pines State Reserve field trip: native vegetation	PTD write up
11 Oct (W)	Symposium: Biodiversity in southern California	Presentations
13 Oct (F)	Symposium: Biodiversity in southern California	Presentations
18 Oct (W)	F: Lab 1 - Ant-mediated seed dispersal	
20 Oct (F)	L: Lab 1 intro + Lab 1 analysis + Lab 2 intro	
25 Oct (W)	L / F: Lab 2 - Caterpillar predation risk	Lab 1 report
27 Oct (F)	L / F: Lab 2 data collection and analysis + Lab 3 intro	
1 Nov (W)	F: Lab 3 - Macronutrient preferences of Argentine ants	Lab 2 report
3 Nov (F)	L / F: Lab 3 analysis + Lab 4 intro	
8 Nov (W)	R: Presentations on rare organisms I	Presentations
10 Nov (F)	Veteran's Day (no class)	Lab 3 report
15 Nov (W)	F: Lab 4 - Bird behavior lab	
17 Nov (F)	L: Lab 4 analysis + Lab 5 intro	
22 Nov (W)	R: Presentations on rare organisms II	Presentations
24 Nov (F)	Thanksgiving (no class)	Lab 4 report
29 Nov (W)	F: Lab 5 - Abundance vs range size in native perennial plants	
1 Dec (F)	L: Lab 5 analysis + introduced species intro	
5 Dec (W)	L / F: Introduced species field trip	Lab 5 report
8 Dec (F)	Careers in ecology and panel discussion	ISFS

- **Software & smart phone apps.** We will be using R, which can be downloaded for free onto your computer. The free smart phone app 'Seek' will also be used in this class.