EEB 87: California’s DNA: A Field Course
Fall 2019

Class Hours: M 4-4:50 pm
Classroom: Kaplan 169
Office Hours (OH): See below; can also meet by appointment

Instructors:
Robert Wayne  rwayne@g.ucla.edu  OH: By appt only, 4149 Terasaki
Maura Palacios Mejia  mauraeva@gmail.com  OH: T 10-11am, 4153 Terasaki

TAs:
Audra Huffmeyer  ahuffmeyer@ucla.edu  OH: M 1-2pm, Hershey Hall Courtyard
Daniel Chavez  dechavezv@ucla.edu  OH: M 12-1pm, Terasaki courtyard

Course Description
California has a tremendous diversity of plants and animals, many of which are the foundations of our thriving economy and enjoyment of our natural environment. Monitoring biodiversity from microbes to mammals in California is an urgent priority for conservation given climate change and habitat degradation. Join the CALeDNA community science program and do fieldwork to sample soil and sediments in California. You’ll get familiar with UC Natural Reserves spanning coast to woodland, and desert to mountains. We’ll analyze the samples for DNA, to capture a snapshot of the local biodiversity. You’ll get a sneak peek into high tech program and help pioneer new environmental DNA forensic technology. You will gain a new understanding of the role biodiversity has in ecosystem and human health. You will also understand how museums and non-profits translate science to better conservation practices. This course is limited to Freshman of any major, has no pre-requisites and prepares you for a more intensive related upper level science course in spring quarter, also reserved for Freshman and transfer students. Come experience nature, science and conservation in a non-threatening and engaging format.

Email Policy
All emails to instructors must have “EEB 87” in the subject line. We will make every effort to respond to your email within 48 hours.
Course Materials

- Course CCLE website: [https://ccle.ucla.edu/course/view/19F-EEBIOL87-1](https://ccle.ucla.edu/course/view/19F-EEBIOL87-1)
- iNaturalist website: [https://www.inaturalist.org/projects/eeb-87-california-s-dna-a-field-course](https://www.inaturalist.org/projects/eeb-87-california-s-dna-a-field-course)
- Smartphone or ipad (access to one can be provided if needed)
- iClicker (purchase through UCLA bookstore or online)
  - UCLA makes some iClickers available for rental: [https://oid.ucla.edu/iclicker-rentals](https://oid.ucla.edu/iclicker-rentals)
- Field notebook or sketchbook for making field observations
- Course readings and videos will be posted to the CCLE website.

Course Objectives

By the end of the course, you will be able to:

- Evaluate the roles of biodiversity, ecology, and evolutionary biology research in conservation biology
- Identify ecosystems and explain how they provide benefits to human health
- Recognize cutting edge molecular methods for surveying biodiversity
- Outline the steps of the scientific method and its application to eDNA studies
- Recognize your capability and importance as a community scientist by participating in field work at UC reserve sites
- Appreciate the University of California’s role in eDNA research and be exposed to diverse scientists working in this field

Course Structure

**Class Structure**
This class will include lectures, in-class activities, field trips and field reports.

**Grading Structure**
This is for Pass/No Pass only. Participation in a total of 3 field trips and attendance/participation of 8 lecture hours is required to pass.

You must also complete the course assignments. Each student must collect 2-3 eDNA samples, keep a field notebook, and make 30 photo observations of living organisms in the wild, and upload them to [https://www.inaturalist.org/projects/eeb-87-california-s-dna-a-field-course](https://www.inaturalist.org/projects/eeb-87-california-s-dna-a-field-course).

- Participation (Clicker questions; group discussion): 25%
- Class assignments (Homework questions; mini-project): 25%
- Field Trips (attendance; sample collection): 25%
- Field Notebook (individual notebook; iNaturalist observations): 25%
Assignments
Some field trips will require sampling of soil/sediment for environmental DNA analysis and all field trips require 10 iNaturalist observations and a field entry into your field notebook.

Each student will be required to attend two mandatory field trips (L.A. River off campus and Botanical Garden on campus) and one additional off campus field trip (see Field Trip section for more details).

Class: Assessment will be in the form of Short clicker-style questions and a short quiz at the beginning of class when readings are assigned.

Course Policies

Class Attendance Policy
This is a seminar-style class that meets once a week. Attendance is mandatory to receive credit for participation and in-class assignments. If you need to miss a class, you must obtain permission from the instructor before any anticipated absence, or there must be a serious, mitigating circumstances after the fact, also subject to approval. In all cases, you must be able to provide evidence to establish the basis of any request. Only one excused absence is permitted during the quarter. This is the only exception to the mandatory attendance policy.

Late Assignment Policy
Assignments must be submitted on time. Remember that for online assignments, technology can be fickle: don’t wait until the last minute, in case CCLE causes problems! After the deadline, assignments will be accepted for a 50% deduction to the score up to 24 hours after the deadline. After this any assignments handed in will be given 0. Extensions may be given on a case-by-case basis; please communicate with your instructor.

Academic Integrity and Honesty
Students are required to comply with the University policy on academic integrity. This includes plagiarism and cheating on in-class exercises, exams, and other assignments. The UCLA student guide on academic integrity is here.

Accommodations for Disabilities
Reasonable accommodations for students with verified disabilities will be made in coordination with the UCLA Center for Accessible Education (CAE). Field trips will require extended walking and some movement over uneven ground; please contact the instructors if you need accommodations.
Schedule

*The schedule is tentative and subject to change.*

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Course Overview; What is biodiversity and why does it matter?</td>
</tr>
<tr>
<td>2</td>
<td>What drives the biodiversity of California’s ecosystems?</td>
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<tr>
<td>3</td>
<td>Why is the geology of California important for understanding biodiversity?</td>
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<td>4</td>
<td>What is the microbiome of California?</td>
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<td>5</td>
<td>How is the biodiversity of California changing?</td>
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<td>6</td>
<td>How can biodiversity be monitored?</td>
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<tr>
<td>7</td>
<td>Veteran’s Day - No Class</td>
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<tr>
<td>8</td>
<td>What can eDNA uniquely teach us about biodiversity?</td>
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<tr>
<td>9</td>
<td>What are other uses for eDNA research?</td>
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<tr>
<td>10</td>
<td>How can eDNA science influence and inform policy?</td>
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</tbody>
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Field Trips

You are required to participate in a **minimum** of three field trips. There is one mandatory *off campus* field trip to the L.A. River and one *on campus* field trip to the UCLA Mildred E. Mathias Botanical Garden (see dates below).

The remaining field trip should be to the *off campus* locations proposed below.

If you are unable to make one of the two off campus field trips, then the third trip option is to attend a CALeDNA bioblitz of your choice (sign up on the website [https://data.ucedna.com/events/](https://data.ucedna.com/events/)) or plan your own hike (you will need 20 iNaturalist observations and one page double spaced report on the location visited)!

<table>
<thead>
<tr>
<th>Week</th>
<th>Date(s)</th>
<th>Time</th>
<th>Location</th>
<th>Type</th>
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<tbody>
<tr>
<td>1</td>
<td>Saturday, October 5</td>
<td>8:00 am - 4:00 pm</td>
<td>Los Angeles River</td>
<td>off campus (bus)</td>
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<tr>
<td>2</td>
<td>Saturday, October 12</td>
<td>9:00 am - 4:00 pm</td>
<td>Carpinteria Salt Marsh Reserve</td>
<td>off campus (bus)</td>
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<tr>
<td></td>
<td>Saturday, October 19</td>
<td>9:00 am - 4:00 pm</td>
<td>Carpinteria Salt Marsh Reserve</td>
<td>off campus (bus)</td>
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<tr>
<td>4</td>
<td>Saturday, October 26</td>
<td>8:00 am - 4:00 pm</td>
<td>Stunt Ranch Santa Monica Mountains Reserve &amp; Mountain Restoration Trust</td>
<td>off campus (bus)</td>
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<tr>
<td>5</td>
<td>Saturday, November 2</td>
<td>8:00 am - 4:00 pm</td>
<td>Angeles Forest</td>
<td>off campus (bus)</td>
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<tr>
<td>7</td>
<td>Saturday,</td>
<td>9:00 am-2 pm</td>
<td>Mildred E. Mathias Botanical</td>
<td>on campus</td>
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<tr>
<td>Date</td>
<td>Event</td>
<td>Location</td>
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<td>November 16</td>
<td>Garden</td>
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<tr>
<td>7</td>
<td>Saturday, November 23</td>
<td>9:00 am-2 pm</td>
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<tr>
<td></td>
<td>Mildred E. Mathias Botanical Garden</td>
<td>on campus</td>
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**Learning Community Expectations**

This course is designed for a **learning community**, where each of us makes contributions and poses questions that enhance the learning experience. With that in mind, we strive to make this course engaging and a welcoming environment that inspires critical thinking, creativity, and continual feedback. We have developed a variety of activities and have a strong support system of instructors and teaching assistants to help answer any questions or concerns regarding difficulties or improvements for this class. You can contact anyone from the team in person, via email, and during office hours. If these times are not convenient, you can also schedule a time to meet.

In this class, we will work to promote an anti-discriminatory environment where everyone feels safe and welcome. Discrimination can be direct or indirect and can take place at both the institutional and personal levels. Discrimination of any kind, such as harassment, bullying or discrimination is unacceptable and we are committed to providing equal opportunity for learning. The success of this policy relies on the support and understanding of everyone. We all have a responsibility not to be offensive to each other, or to participate in, or condone harassment or discrimination of any kind. Any acts of discrimination are taken seriously, will be fully investigated, and may have severe consequences.

UCLA’s Office for Equity, Diversity, and Inclusion provides resources, events, and information about current initiatives at UCLA to support equality for all members of the UCLA community. We hope that you will communicate any occurrences of discrimination to any team member if you experience actions in this course that does not support an inclusive environment, and you can also report any incidents you may witness or experience on campus to the Office of Equity, Diversity, and Inclusion on their website.

**Use of Laptops, Tablets or Phones in Class:** You can decide how you want to use your laptop, tablet or phone in class. Research finds that laptop multitasking is likely to hinder not only your own learning, but also the learning of anyone who can see your laptop. For the sake of your peers’ learning, when using your electronic device, please only work on class material.