



COURSE OUTLINE OF RECORD

Number: TITLE: Ocean Conservation and Community Science

EFF TERM: Fall 2022

SEMESTER UNITS: 3.0

CATALOG DESCRIPTION:

This course focuses on ocean conservation and the roles that aquariums can play in public education, research, and behavior change. Alongside instructors from the Aquarium of the Pacific, students will explore three central questions: What are the major conservation issues facing the ocean today? How do aquariums help species and habitats facing extinction? How can we work across the community to activate and inspire people to take meaningful action?

Students will learn about animal welfare, animal rehabilitation, captive breeding, community science and monitoring, habitat restoration, climate resilience, and public engagement. We will also examine how aquariums can create social change through robust, locally-relevant conservation work that engages communities in equitable and inclusive ways. This course is a collaborative effort with Orange Coast College and the Aquarium of the Pacific and all meetings will be held at the Aquarium of the Pacific in downtown Long Beach and in field sites at partner facilities.

JUSTIFICATION FOR COURSE:

Aquariums are a trusted source of environmental education that reaches people of all political persuasions and identities. As such they are on the frontlines of ocean conservation –especially as it relates to public engagement. This course will introduce students to basic conservation issues facing marine systems, and then explore how aquariums can address some of these challenges. It will emphasize the art and craft of communicating science to the public as well as the science itself.

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. Students will understand how aquariums support conservation of species and spaces through a variety of approaches.
2. Students will be required to collect public input through public engagement tools.
3. Students will work collaboratively to co-create a conservation campaign or initiative.

COURSE OBJECTIVES:

1. Identify three major conservation issues facing the ocean today.
2. Describe between 8-10 reasons why ocean conservation matters to humans.
3. Describe 2 strategies that are used to connect people to climate change mechanisms and solutions.
4. Use community engagement tools to understand public concerns.
5. Describe common goals and key differences between rescue/rehab, and keeping animals in protected settings like zoos and aquariums.
6. Understand and explain aquarium conservation strategies, including surrogacy, captive breeding, and assurance populations.
7. Provide examples of how aquariums collaborate with other zoo/ aquarium facilities, government agencies, and industry partners in conservation work.
8. Explain the benefits of community science work in engaging the public.
9. Collaborate with a team to create a campaign to engage the public in a conservation topic that is important to the communities you represent.

COURSE CONTENT:

What are the major conservation issues facing the ocean today?

Tuesday, August 30, 6:00pm – 8:30pm

What is conservation? Part 1

Thursday, September 1, 6:00pm – 8:30pm

What is conservation? Part 2

DUE: Read "[Give me your tired, your poor, your pods of dolphins...](#)" and also "[The reef builders](#)". Total reading time = 30 minutes. Reflect on "hope" versus "pessimism" in reading these articles. Please post a reflection and reaction (see "ASSIGNMENTS" section at end of syllabus.)

Tuesday, Sept. 6, 6:00pm – 8:30pm

History of conservation work

- Origins of the modern conservation movement
- Preservation vs conservation
- Early conservation actions/development of national parks/preserves

DUE: Listen to the podcast, "Science Talk" episode: "An Unblinking History of the Conservation Movement" *20 minutes*

<https://www.scientificamerican.com/podcast/episode/an-unblinking-history-of-the-conservation-movement/>

Please post a reflection and reaction (see "ASSIGNMENTS" section at end of syllabus.)

Thursday, Sept 8, 6:00pm – 8:30pm

Why ocean conservation matters: the ocean as a habitat/ tour and lecture

- Trop Reef- protecting biodiversity (coral habitats)
- Northern Pacific - protecting species (seastars, otters, keystone species)
- So Cal Gallery - protecting spaces - (marine protected areas, kelp habitats)
- Shark Lagoon - considering communities and conservation

DUE: Listen to the podcast, "Undiscovered" episode: "The Long Loneliness." *34 minutes*

<https://www.wnycstudios.org/podcasts/undiscovered/episodes/long-loneliness>

CW: some innuendo at the very beginning.

Please post a reflection and reaction (see "ASSIGNMENTS" section at end of syllabus.)

IN CLASS ASSIGNMENT: Take photos for Photo Journal. During the tours, take photos of exhibits. Try to capture images that resonate with you in some way: a memory you have, something that strikes you as odd or interesting, something you're just realizing, etc.

Select 3-5 photos that you've taken on our gallery tour to tell a conservation story that is meaningful to you. Write 2-3 paragraphs about it. This will be due in class next session on 13 SEPTEMBER.

Tuesday, Sept 13, 6:00pm – 8:30pm

Why ocean conservation matters: ecosystem services from the ocean, part 1

- Carbon storage and sequestration
- Transportation
- Food (fisheries and aquaculture)

DUE: Photo Journal from AOP Tours. See above for more details. This writing exercise should be 2-3 paragraphs long, and include the photos that you're using as inspiration.

Please post a reflection and reaction (see "ASSIGNMENTS" section at end of syllabus.)

Thursday, Sept 15, 6:00pm – 8:30pm

Why ocean conservation matters: ecosystem services from the ocean, part 2

- Energy and mineral extraction
- Coastal habitat services (storm protection, pollution)

- Human community services (cultural heritage, recreation, and tourism)

DUE: Listen to the podcast, “99% Invisible” episode: 282. “Oyster-tecture.” 34 minutes.

<https://99percentinvisible.org/episode/oyster-tecture/>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Tuesday, Sept 20, 6:00pm – 8:30pm

Conservation Challenges: Habitat Loss, Biodiversity Loss

- Case studies on habitat and biodiversity loss
 - Rainforests
 - Polar Regions

DUE: Watch this short video, “Why is biodiversity so important?”-

<https://ed.ted.com/lessons/why-is-biodiversity-so-important-kim-preshoff> (4 mins)

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, Sept 22, 6:00pm – 8:30pm

Conservation Challenges: Climate Change

Class will start in Ocean Science Center. You can review data visualizations here after class:

<https://sos.noaa.gov>

- How is the ocean impacted by climate change?
 1. What is climate change
 2. The ocean as the heart of earth’s climate system
 3. How is the ocean impacted by climate change?
- Climate Resilience in Our Communities

DUE: Read “A Citizen’s Guide to Building a Climate-Resilient Long Beach”

https://www.aquariumofpacific.org/downloads/Climate_Resiliency_0217.pdf

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

ASSIGNMENT: Community Conversations.

- Conduct 4 interviews using the instrument provided to collect information about the things your community values.
- See description at the end of the syllabus for more details. **DUE ON 3 November 2022.**

How do aquariums help species and habitats facing extinction?

Tuesday, Sept 27, 6:00pm – 8:30pm

Rescue, Rehab, and Reintroduction

- Sea Turtle Rescue
- NOAA Partnerships

DUE: Read this NOAA article and watch the YouTube video, “Urban Sea Turtles of the San Gabriel River” (10 min total)

<https://www.fisheries.noaa.gov/west-coast/science-data/green-turtle-research-and-conservation-southern-california>

<https://www.youtube.com/watch?v=494Z4Ynm--g>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, Sept 29, 6:00pm – 8:30pm

Otter Surrogacy Program // marine mammal rescue and rehabilitation

- How does otter surrogacy work?
- Partnerships across aquariums
- How does this care differ from the care we typically provide?

DUE: Watch this video about Monterey Bay Aquarium’s Sea Otter Surrogacy Program (6 minutes)

<https://www.youtube.com/watch?v=iQq3gD6eOy0>

Read/ Scan this journal article: [“Surrogate rearing a keystone species to enhance population and](#)

[ecosystem restoration.](#)

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Tuesday, October 4, 6:00pm – 8:30pm (Note: October 4 is [Yom Kippur](#))

Captive Breeding

- Abalone
- Giant Sea Bass
- Other Assurance populations- salmon as an exemplar
- Mountain Yellow Legged Frogs

DUE: Read this page from AZA’s website on Reintroduction Programs

<https://www.aza.org/reintroduction-programs?locale=en>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, October 6, 6:00pm – 8:30pm

Aquarium Science and Current Research – Visit MACC

- Beyond basic healthcare
- Shark AI Research

DUE: Listen to the Podcast “Rossifari Podcast- SEZARC Reactor with Dr. Linda Penfold of SEZARC” (55 min; Start listening at 8 minutes in- Season 2, episode 13).

CW: Some innuendo that doesn’t land well.

<https://www.buzzsprout.com/1137146/9377920-sezarc-reactor-with-dr-linda-penfold-of-sezarc>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Tuesday, October 11, 6:00pm – 8:30pm

StAR Project – AZA initiatives – how zoos and aquariums work with communities

- Communities, technology, current research, and reintroduction of zebra sharks

DUE: Read <https://www.aza.org/connect-stories/stories/zebra-shark-conservation?locale=en>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, October 13, 6:00pm – 8:30pm

AZA Collaborative Work – how zoos and aquariums work together

- Shark, Vaquita, Sea Turtle, and Monarch SAFE
- SSP- Species Survival Plan – penguins as exemplar
- TAG- Taxon Advisory Groups – marine fish as exemplar
- Public Engagement Events- Party for the Planet, Earth Day, World Oceans Day, etc.

DUE: Read this article from AZA Connect: “Why Zoos and Aquariums Are Beneficial

<https://www.aza.org/connect-stories/stories/benefits-of-zoos?locale=en#:~:text=11%2F13%2F2020&text=Association%20of%20Zoos%20and%20Aquariums,research%2C%20education%2C%20and%20recreation.>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Tuesday, October 18, 6:00pm – 8:30pm

Agency partnerships- NOAA and the Aquarium

- abalone rearing, outplanting, outreach
- CINMS partnership

DUE: [Abalone: A forgotten treasure in Southern CA](#) – video by NOAA.

Watch this series of six videos about abalone from the Pacific Pals (20-25 min).

<https://www.youtube.com/playlist?list=PLofT2LwTg3TVv911scm6ylAjTdq0K12PY>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, October 20, 6:00pm – 8:30pm

Industry partnerships and beyond: Aquaculture

- bull kelp/ giant kelp seed banking

DUE: Read this post on bull kelp seed banking:

<https://caseagrants.ucsd.edu/news/scientists-create-a-seed-bank-to-preserve-bull-kelp>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Saturday, October 22, TIME TBD

FIELD TRIP OPTION: Visit to AltaSea, Holdfast Inc. for Aquaculture Lab

Tuesday, October 25, 6:00pm – 8:30pm

Industry partnerships and beyond: Ocean Food Systems and Conservation – guest lecture: Kim Thompson

- Introduction to Seafood for the Future
- Role of ocean-based food systems into the future

DUE: A reading or podcast will be assigned for this session soon. You’ll also be expected to post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, October 27, 6:00pm – 8:30pm

Engaging the public: Community Science

- Turtle monitoring project
- iNaturalist
- Monarch Monitoring Project
- Wetlands restoration
- TRASH project

DUE: Read this overview of community science from ASTC, the Association for Science and Technology Centers:

https://communityscience.astc.org/wp-content/uploads/2021/12/ASTC-Community-Science_1-pager_final-compressed.pdf

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

How can we work across the community to activate and inspire people to take meaningful action?

Tuesday, November 1, 6:00pm – 8:30pm

Media and information channels for conservation lessons

- Short videos and films
- Social media
- Print media

DUE: A reading or podcast will be assigned for this session soon. You’ll also be expected to post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, November 3, 6:00pm – 8:30pm

Revisiting our Community Conversations

- AOP Climate Resilience
 - Current climate challenges in Southern CA
- Reflecting on your experience conducting conversations

DUE: Community Conversations (*Assigned September 22, see detail at end of syllabus*)

GROUP PROJECT ASSIGNMENT : Envisioning Our Futures/ Coastal Challenges

- Students will be assigned groups and given time to share their community conversation results.
- Project goal: Students propose a conservation initiative that captures both community aspirations and our goals as a conservation community.

- See description at end of the syllabus for more detail.
- **DUE ON TUESDAY, DECEMBER 6, 2022.**

Saturday, November 5, 8:30 – 11:30

FIELD TRIP OPTION: Sea Turtle Monitoring and Los Cerritos Wetland Clean Up

Tuesday, November 8, 6:00pm – 8:30pm

Conservation Programming: Engaging the public

- What are ways that zoos and aquariums engage the public in conservation?
- How do we include our communities meaningfully?
- How do we know we are successful?
- Group Project Time

DUE: Read this short article on community engagement at the St Louis Zoo:

<https://www.aza.org/connect-stories?xmod-2919-pp-349922-item=157225&locale=en>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, November 10, 6:00pm – 8:30pm

Wicked Problems

- Problems with complex solutions
- Understanding tradeoffs
- How social science adds to conservation
- Group Project Time

DUE: A reading or podcast will be assigned for this session soon. You’ll also be expected to post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Tuesday, November 15, 6:00pm – 8:30pm

Connecting to what matters to people: Climate Change Communication

- Strategic framing
- Tools that work
- Group Project Time

DUE: Read this Frameworks publication, “Reframing Climate Change- Impact Brief”

<https://www.frameworksinstitute.org/wp-content/uploads/2020/06/FRAJ7033-Reframing-Aquariums-Cas-e-Study-190822.pdf>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, Nov 17, 6:00pm – 8:30pm

Community Based Conservation – Part 2

- Stories from the Field: Vaquita
- and other opportunities we have
- Group Project Time

DUE: Watch this TED talk: “How a handful of fishing villages sparked a marine conservation revolution” (12 mins)

https://www.ted.com/talks/aldasair_harris_how_a_handful_of_fishing_villages_sparked_a_marine_conservation_revolution

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

November 22 and 24 is Thanksgiving Holiday Week (No Class)

Tuesday, November 29, 6:00pm – 8:30pm

Community Based Conservation – Part 1

- Stories from the Field: Black Mamba Anti-Poaching Unit

- Group Project Time

DUE: Read this National Geographic article on the Black Mambas:

<https://www.nationalgeographic.com/adventure/article/black-mambas-anti-poaching-wildlife-rhino-team>

Please post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Thursday, December 1, 6:00pm – 8:30pm.

The future of ocean conservation

- New opportunities
- Blue economy
- Group Project Time

DUE: A reading or podcast will be assigned for this session soon. You’ll also be expected to post a reflection and reaction (see “ASSIGNMENTS” section at end of syllabus.)

Saturday, December 3, 8:30 – 11:30

FIELD TRIP OPTION: Visit to Colorado Lagoon (East Long Beach)

Tuesday, December 6, 6:00pm – 8:30pm

GROUP PROJECT PRESENTATIONS: Envisioning Our Futures/ Coastal Challenges

Thursday, December 8, 6:00pm – 8:30pm

GROUP PROJECT PRESENTATIONS: Envisioning Our Futures/ Coastal Challenges

FINAL EXAM - December 9 - 15

Your final exam consists of **two** activities. Please plan ahead to leave time for both portions of your exam.

1. An in-person visit to the Aquarium of the Pacific.

- You will need to visit the Aquarium for 2-4 hours during the exam week between Saturday, December 10, 2022 - Thursday, December 15, 2022.
- You will need to identify one person to bring as your guest.
- We will arrange for complimentary tickets for you and a guest.
- Instructions for your visit will be uploaded to our course website on Friday, December 9 at 9:00 am.
- Please be sure to refer to the Aquarium’s website for our current *reservation policies* to see if you have to reserve a time slot to enter:
<https://www.aquariumofpacific.org/visit/tickets>

2. A written exercise to follow your in-person visit.

- The writing prompt for your final exam exercise will be assigned and available immediately following the end of classes on Friday, December 9 at 9:00 am.
- The written exercise should be completed following your in-person visit.
- The written exercise is untimed, but may take several hours.
- Please make time to complete both portions of your exam.
- Your final, written exercise will be due on Thursday, December 15, at 8:30 pm.
- You can submit the written exercise on Canvas.

If you need any additional accommodation on your exam, please email a course instructor as soon as you can.

ASSIGNMENTS

Here is detail about the major assignments for this course:

1. WEEKLY POSTS AND ENGAGEMENTS

- For each class period, check if there are assignments that are labeled “DUE.”
- For **readings, videos, or podcasts**, please post twice on Canvas:
 - Post #1: Reflection. What ideas stand out to you? Is there anything that surprised you? Why or how? Write 5-7 sentences that capture your thoughts.
 - Post #2: Read through the posts from your classmates. Post a 3-5 sentence reaction to a classmate’s post.
- There are **IN CLASS ASSIGNMENTS**. These are activities that we’ll start in class (e.g., take photos during class) that you need to finish on your own time (e.g., a photo journal response.)

2. COMMUNITY CONVERSATIONS- DUE ON 3 November 2022, 6:00 PM.

- Please conduct four “interviews” as a part of your community conversations project.
- Two of the four interviews should be “stretch” interviews- two people who you don’t have direct contact with on a regular basis, but who are a part of your community. For example: neighbors, coworkers, etc.
- The questionnaire will be provided in class on September 22, 2022.
- Each interview will last 20-30 minutes, please take detailed notes and bring them with you on 3 Nov.
- We will ask you to identify themes and ideas that you see across all the interviews.

3. GROUP PROJECT- Envisioning Our Futures/ Coastal Challenges- DUE on 6 DECEMBER 2022, 6:00 PM.

- You will be assigned groups (3-4).
- A more detailed write up of the assignment will be distributed in class. *An overview is provided here:*
- Across your group, share your community conversation results.
 - Are there any commonalities across the folks who were interviewed? (Live in same community, same ages, basic demographics, etc.)
 - Are there any emergent ideas that you see across the group? (What are people hoping for?)
 - What are conservation goals that you have? What about your team?
 - Can you find the “sweet spot” where community aspirations overlap your goals? What could that look like?
- Project goal: Students propose a conservation initiative that captures both community aspirations and our goals as a conservation community. This end product is meant to be creative: you could pitch an event, design a social media campaign, or make a short film. We will provide some examples in class.

4. FIELD TRIPS

We have provided three tentative Saturday experiences and also offer an alternative assignment if you are unable to attend these options. There is a field trip write-up DUE **ON 12 DECEMBER 2022, 11:59 PM PT.**

PREPARING FOR FIELD TRIPS. Field trips may include some onsite programming (e.g., using an app to upload data, hands-on experiences, exclusive tours, etc). We will continue to update you on specifics about the field trips so that you can plan. Transportation is not provided.

Please be dressed comfortably, with closed-toed shoes and clothes that are outdoor- and weather-appropriate.

We welcome you to take photos during your field trips to include in your write up.

Saturday, October 22	TIME TBD	Visit to AltaSea and Holdfast Aquaculture https://www.holdfastaq.com/
Saturday, November 5	8:30 – 11:30	Los Cerritos Wetland Clean Up and Sea Turtle

Monitoring

<https://lcwlandtrust.org/>

Saturday, December 3 8:30 – 11:00 AM Colorado Lagoon Visit with Dr. Christine Whitcraft

<https://www.longbeach.gov/park/recreation-programs/aquatics/colorado-lagoon/>

FIELD TRIP WRITE UP.

Select one (1) topic specifically covered in the field trip. Write an essay describing what you learned and reflecting upon how you can apply the conservation content in your everyday life.

Include some concrete information about conservation that was covered in the field trip, explaining why this information is relevant and/or useful to you.

An example of such a clear, detailed statement might look something like this: "During our field trip to the Shark Lab, we learned about how fish tagging (called "telemetry") can be used to learn about the behavior of fish. I was especially struck by how this research was used to understand the diversity of fish that live on oil platforms off of our coast. This research will be important as our state moves forward with oil rig decommissioning. I've always thought of the oil rigs as an ugly structure, but now I'm rethinking about those ideas."

Your essay should be two (2) paragraphs or roughly 200-300 words and written in your own words (i.e., in your own voice)

If you use any outside sources (e.g., websites, primary articles), you need to formally cite them in a Works Cited section at the end of the essay. Use this quick Reference Generator to properly format your citations. References are not included in the word count.

Feel free to add photos, videos or graphs to your essay to help explain your thoughts (include citations for any sources used), but do not use these tools to avoid explaining the details in your writing.

FIELD TRIP ALTERNATIVES. If students are unable to attend any of those offerings, you are welcome to spend 90 minutes engaged in any activity that combines nature, animals, and conservation: a beach clean up with friends, attending a lecture at a local museum, volunteering for a local bird count, etc. You will still be expected to submit a field trip write up (see above).

5. FINAL EXAM ASSIGNMENT

The final exam will be issued December 9 at 9am and due by December 15 at 8:30pm. The assignment will require a visit to the Aquarium with a friend or family member and will include the completion of a written exercise.

Two complementary Aquarium tickets will be provided.

Please refer to the syllabus items for December 9 - 15 for more details.

LABORATORY

- I. Photo Journal
- II. Community Conversations
- III. "Envisioning Our Future" group project
- IV. Field Trip and Field Trip Write Up

METHODS OF INSTRUCTION:

- A. Lecture
- B. Field Trips (see above)
- C. Lab Activities – self guided with feedback
- D. Virtual Meetings
- E. Asynchronous Participation/ posts on reading, podcasts, etc.

INSTRUCTIONAL TECHNIQUES:

This class will employ a variety of instructional techniques. Guest speakers and field trips will help provide additional specialized information. Students in this course can anticipate: in-person lectures and activities; participation in online discussions (both generating comments and replying to comments); weekly readings, videos, or podcasts; field trips and reflections; and individual and group projects.

OFFICE HOURS

Standing office hours will be held virtually each Wednesday from 3-4pm, or by appointment.

Office hours are available at:

<https://us02web.zoom.us/j/85995958021?pwd=SHFIZmM0QTJsakF4RFlXS0tvYjE2dz09>

We will also make the link available on the Course's Canvas site.

If you need to make a separate appointment, please email course instructors through the Course's Canvas site.

COURSE ASSIGNMENTS:**Reading Assignments**

Reading assignments will be based on researching information related to weekly assignments or group projects that span several weeks.

Writing Assignments

Writing assignments will entail responses to assigned readings or other media; field trip reflections, and other assignments. (typically less than 1 hour / week).

Out-of-class Assignments

Out of class assignments will include one field trip of my choice (or alternative activity), working on assignments that are started in class, a group project, and some reading and writing assignments listed above. (About 1 hour / week).

METHODS OF STUDENT EVALUATION:

Written Assignments Projects (individual/group)

Problem Solving Exercises (individual/group)

Skills Demonstration

Demonstration of Critical Thinking:

Critical thinking will permeate this course. Students will be asked to respond thoughtfully to readings and engage in discussion with classmates. Students will also be given opportunities to consider how conservation topics are relevant to their lived experience. Students will think critically about different conservation strategies, partnerships, and consider how different species might require different conservation approaches.

Required Writing, Problem Solving, Skills Demonstration:

Students will be evaluated by engagement in the online learning platform (responses to assigned readings and media); community conversations data; participation and execution of a group project; participation in field trips including field trip write up; photo journal submission and writing; and successful completion of the two final exam activities.

TEXTS, READINGS, AND RESOURCES:

Other: No textbook, but short articles or excerpts from books will be assigned. Additionally, podcasts, videos, and other media will also be utilized in this course.

LIBRARY:

Adequate library resources include:

Print Materials and Non-Print Materials

Online Materials Services