

# **Syllabus: BIO 483: Marine Biology Capstone**

Course Title: BIO 483: Marine Biology Capstone

Semester: Fall 2024

Instructor: Prof. Emily Carter

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Office Hours: Thursdays 2:00-4:30 PM OR by appointment

Class Time & Place: Monday or Wednesday 3:00-4:15 PM in SANCA 745

## **Course Description:**

This capstone course focuses on the study of marine ecosystems and species. Students will conduct fieldwork, collect and analyze data, and present their findings at the Innovation Showcase. The course includes the development of a project proposal, fieldwork, data analysis, and a final report.

## **Course Objectives:**

Study and analyze marine ecosystems and species.

Conduct fieldwork in marine environments to collect data.

Develop and test ecological models of marine ecosystems.

Effectively present the research and conservation plan at the Innovation Showcase.

## **Learning Outcomes:**

Gain expertise in marine biology and ecological modeling.

Develop practical skills in fieldwork, data analysis, and conservation planning.

Improve communication skills through written reports and presentations.

Enhance the ability to manage marine biology research projects from conception to completion.

## **Group Project and Required Subtasks:**

The group project for this course will involve the study of marine ecosystems and the organisms within them. The project will be broken down into the following subtasks:

### 1. **\*\*Project Proposal (Week 3):\*\***

- Create a proposal detailing the marine ecosystem or species being studied, the research objectives, and the anticipated outcomes. Include a timeline and assign roles to team members.

### 2. **\*\*Fieldwork and Data Collection (Weeks 4-6):\*\***

- Conduct fieldwork in marine environments to collect data on species, habitats, and environmental conditions. Use techniques such as scuba diving, underwater photography, and sample collection.

### 3. **\*\*Data Analysis and Ecosystem Modeling (Weeks 7-10):\*\***

- Analyze the collected data using ecological models. Develop predictions about the health and stability of the marine ecosystem and test these predictions using statistical methods.

### 4. **\*\*Hypothesis Testing and Conservation Planning (Weeks 11-12):\*\***

- Test hypotheses about species interactions, environmental impacts, and conservation needs. Develop a conservation plan based on the findings.

### 5. **\*\*Final Report and Presentation (Weeks 13-15):\*\***

- Document the entire research process, including challenges, solutions, and outcomes in a final report.
- Prepare a presentation for the Innovation Showcase that highlights the key aspects of the research and conservation plan.

Groups are expected to collaborate closely, meeting regularly to discuss progress and resolve any

issues. Instructor check-ins will be scheduled to provide guidance and feedback.

**Evaluation:**

Class meetings (5): 20 points

Individual meetings (3): 12 points

Project Proposal: 10 points

Fieldwork and Data Collection: 15 points

Data Analysis and Ecosystem Modeling: 18 points

Hypothesis Testing and Conservation Planning: 10 points

Final Report: 10 points

Presentation: 5 points

Poster: 10 points

Total: 100 points

**Course Policies:**

**Attendance and Participation:** Regular attendance and active participation are crucial for success in this course. Students are expected to attend all scheduled class meetings and individual sessions. If a student is unable to attend a class, they should inform the instructor in advance and arrange to complete any missed work.

**Academic Integrity:** All students must adhere to ASU's academic integrity policy. Any form of academic dishonesty, including plagiarism, will be reported and may result in severe penalties, including a failing grade for the course.

**Accommodations:** Students with disabilities or special needs should contact the ASU Disability Resource Center to arrange appropriate accommodations and notify the instructor as soon as possible.

**Important Dates:**

Class Week 1: Introductions & Project Brainstorming (Aug 26)

Individual Meeting #1: Discuss Ideas and Readings (Sep 4)

Class Week 2: Proposal Presentation & Group Feedback (Sep 18)

Individual Meeting #2: Proposal Feedback & Methods Discussion (Oct 2)

Class Week 3: Revised Proposal Presentation & CERTT Tour (Oct 23)

Individual Meeting #3: Data Analysis & Progress Review (Nov 13)

Class Week 4: Professional Development & Project Discussion (Nov 27)

Innovation Showcase: Final Presentations & Poster Display (Dec 6)