



Mediterranean Conflict: Humans & the Environment

Course Details

Course Designator & Number: SCLY 3208

Number of Credits: 3

Language of Instruction: English

Contact Hours: 45

Instructor: Dr. Clara Monaco

Course Description

Our seas provide us with plentiful natural resources, support wildlife, keep our climate stable, and create employment opportunities. However, unsustainable practices threaten the balance of marine ecosystems. Climate change, pollution, and other human-induced, anthropogenic pressures lead to ongoing global change in marine environments, including water acidification, sea surface warming, sea water level rising, deoxygenation, and changes in nutrient and light regimes. These changes alter multiple chemical and physical seawater properties, propagating to diverse marine microorganisms, through the entire food chain, up to the top predators, including humans.

Marine biodiversity is essential for balanced food webs, which in turn enable ecosystems to be more adaptable to key challenges such as climate change, habitat degradation, and other major ecological disruptions. Within this framework, mitigation actions, management plans, and the establishment of protected areas, along with responsible and sustainable management of marine resources can be strategic for the restoration of damaged species communities and habitats.

Field trips in the coastal areas of Eastern Sicily allow students to observe the presence of marine vulnerable species and their coexistence with anthropogenic activities.

Course Objectives

Upon successful completion of the program, students will be able to:

- Recognize an activity capable of maintaining healthy, productive, and resilient marine ecosystems while securing a more sustainable use of marine resources.
- Understand the key elements of a monitoring program for putting in place measures to improve the state of marine waters.
- Explain the concepts of biodiversity and sustainability and how an ecosystem is affected by them.
- Understand the effects of unsustainable anthropic activities on the marine environment and on the quality of life of the human himself.
- Comprehend the elements that contribute to the environment degradation and how to mitigate their impact.
- Identify the main vulnerable species in the Mediterranean Sea and their ecological role.
- Identify the main commercial species of the Mediterranean Sea and sustainable seafood products.
- Explain the main cases of negative interaction between human activities at sea and marine wild fauna.
- Give examples on best practices and on virtuous case studies for ocean conservation.
- Apply scientific protocols, upload, manage and analyze data on marine monitoring and conservation.
- Discuss policies in force for marine resources and habitat safeguard.

Methodology

This course applies an integrated approach combining the following main methodologies to explore specific case studies throughout the Mediterranean Sea and gain a solid understanding of the anthropogenic and environmental impact on the marine environment: lecture-based learning, technology-based learning, group and cooperative learning, individual learning, thinking-based learning, inquiry-based learning, field trips and expeditionary learning, brainstorming, debates, oral reports, learning by doing.

Experiential Learning & Field Visits

- Snorkeling activity and guided observations with a certified diving center at the Plemmirio MPA (Syracuse).
- Visit to a hatchery and aquaculture facility (Agroittica siciliana. Biancavilla, Catania).
- Visit to the historic open-air fish market of Catania, and to the fishing fleet at the harbor.
- Whale and dolphin observations and monitoring: “Cetologist for a day” field activities on a sailing boat with the Marecamp association in the Gulf of Catania.

Required Reading / Materials

- FAO. 2022. The State of Mediterranean and Black Sea Fisheries 2022. General Fisheries Commission for the Mediterranean. Rome. <https://doi.org/10.4060/cc3370en>
- Louisy, P. (2015). Europe and Mediterranean marine fish identification guide. ISBN 9782379222689, Edition 4, May 2022.
- ACCOBAMS. (2021). Conserving Whales, Dolphins and Porpoises in the Mediterranean Sea, Black Sea and adjacent areas: an ACCOBAMS status report, (2021). By: Notarbartolo di Sciarra G., Tonay A.M. Ed. ACCOBAMS, Monaco. 160 p.
- Carpentieri, P. & Gonzalvo, J. (2022). Dolphin depredation in Mediterranean and Black Sea fisheries – Methodology for data collection. FAO Fisheries and Aquaculture Technical Paper No. 688. Rome, FAO. <https://doi.org/10.4060/cc2943en>
- Mele, B. H., Russo, L., Crocetta, F., Gambi, C., Dell’Anno, A., Danovaro, R., ... & D’Alelio, D. (2020). Ecological assessment of anthropogenic impact in marine ecosystems: the case of Bagnoli Bay. *Marine environmental research*, 158, 104953.
- Tsirintanis, K., Azzurro, E., Crocetta, F., Dimiza, M., Frogli, C., Gerovasileiou, V., ... & Katsanevakis, S. (2022). Bioinvasion impacts on biodiversity, ecosystem services, and human health in the Mediterranean Sea. *Aquatic Invasions*, 17(3), 308-352.
- Garofalo, G., Quattrocchi, F., Bono, G., Di Lorenzo, M., Di Maio, F., Falsone, F., ... & Fiorentino, F. (2020). What is in our seas? Assessing anthropogenic litter on the seafloor of the central Mediterranean Sea. *Environmental Pollution*, 266, 115213.

The instructor will provide students with articles, monitoring protocols, survey sheets, and lecture slides in digital format.

Suggested Readings

A reading pack including additional articles and booklets will be provided in digital format to the students by the instructor.

Grading

Grading Rubric

Letter Grade	Score or Percentage	Description
A	93–100	Achievement that is outstanding relative to the level necessary to meet course requirements.
A-	90–92	Achievement that is significantly above the level necessary to meet course requirements.
B+	87–89	
B	83–86	
B-	80–82	Achievement that meets the course requirements in every respect.
C+	77–79	
C	73–76	
C-	70–72	Achievement that is worthy of credit even though it fails to fully meet the course requirements.
D+	67–69	
D	60–66	
F	0–59	Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no

Letter Grade	Score or Percentage	Description
		agreement between the instructor and the student that the student would be awarded an I.

Summary of How Grades Are Weighted

Assignments	Percentage of Grade
Attendance and participation	10%
Mid-term	20%
Photo essay	30%
Teamwork project and presentation	20%
Final exam	20%
Overall grade	100%

Assessment Details

Class participation

This course requires that students participate in-class discussions. This means contributions to class discussions by relating to experiences, case studies, asking questions, and making comments appropriate to the topics being discussed. This course requires that students participate in field activities as site visits to Marine Protected Areas and fishing enterprises. This means their active involvement in each activity and also a reporting on the carried out experiences.

Mid-term exam

Multiple-choice and open questions on the topics covered in Units 1–3.

Final exam

Multiple-choice and open questions on the topics covered in Units 4–7.

Photo essay

The objective of the photo essay is to visually represent and critically reflect on the multifaceted relationship between humans and the marine environment, building on observations and experiences from your field activities. Students are expected to capture a series of 10–15 original photographs during the field activities. These photos should represent the interaction, impact, and/or dependency of humans on the marine ecosystem. The photos can showcase both positive (e.g., sustainable fishing, marine conservation) and negative (e.g., pollution, habitat destruction) interactions. *NB. Students should ensure that photographs respect privacy standards. Do not take pictures of individuals without their explicit permission.*

Each photo essay should have 3 sections:

1. **Introduction:** a brief overview of the theme of your photo essay and the perspective you have chosen.
2. **Photos and Captions:** every photo should be accompanied by a caption (2–4 sentences) providing context, highlighting the core message, and offering insight or reflection on the key themes you observed in the relationship between humans and the marine environment.
3. **Reflective Essay (500–700 words):** providing personal reflections on what you learned and how it might have challenged or deepened your understanding. Ideas on potential solutions or future directions for strengthening the human-marine relationship through environmental activism and narrative storytelling.

Teamwork project

Building upon the themes developed in the photo essays, the class will be divided into working groups which will work collaboratively on the topics and case studies of choice, deepening the analysis and formulating their own conclusions to be presented during an in-class presentation supported by slides.

Course Content

Unit 1

The balance of a healthy marine environment

- The water cycle, marine food chain, photoautotrophs, herbivores, carnivores, top predators, alternative food chains, trophic cascades.
- Heavy metals and bioaccumulation. Bioindicators.
- The meaning of sustainability.

Readings:

- FAO. 2022. The State of Mediterranean and Black Sea Fisheries 2022. General Fisheries Commission for the Mediterranean. Rome. <https://doi.org/10.4060/cc3370en>

Unit 2

The importance of biodiversity

- Marine biodiversity, biogeography, deep-sea gradients, conservation, species richness.
- The Mediterranean is a hotspot of biodiversity.
- Marine vulnerable species, flag species, regular and occasional species in the Mediterranean.
- Endemics and biological invasions by alien species.

Field activities:

- Snorkeling activity at the Plemmirio MPA (Syracuse).

Readings:

- Tsirintanis, K., Azzurro, E., Crocetta, F., Dimiza, M., Frogli, C., Gerovasileiou, V., ... & Katsanevakis, S. (2022). Bioinvasion impacts on biodiversity, ecosystem services, and human health in the Mediterranean Sea. *Aquatic Invasions*, 17(3), 308-352.

- Louisy, P. (2015). Europe and Mediterranean marine fish identification guide. ISBN 9782379222689, Edition 4, May 2022.

Unit 3

Degradation of marine habitats & ecosystems

- Habitat loss and global warming.
- Human maritime activities affecting marine resources (naval traffic, fishing, tourism).
- Ocean dumping, land runoff, dredging, NOx and SOx, ocean acidification, sea water level rising, ozone depleting substances, waste pollution from ships, underwater noise, sea floor integrity, oil spills, marine debris, and plastic pollution.

Readings:

- Garofalo, G., Quattrocchi, F., Bono, G., Di Lorenzo, M., Di Maio, F., Falsone, F., ... & Fiorentino, F. (2020). What is in our seas? Assessing anthropogenic litter on the seafloor of the central Mediterranean Sea. *Environmental Pollution*, 266, 115213.

Assessment:

- Mid-term exam

Unit 4

Sustainable fisheries & seafood products

- Industrial fisheries, small-scale fisheries, IUU fisheries, recreational fishing, aquaculture.
- Fishing techniques, national fleets, and landings.
- FLAGs, CoGePAs, and local management plans.
- Seafood chains, sustainability, and quality labels.

- Interactions between fisheries and marine mammals. Mitigation measures for by-catch cases of wild fauna and for dolphin depredation.

Readings:

- Louisy, P. (2015). Europe and Mediterranean marine fish identification guide. ISBN 9782379222689, Edition 4, May 2022.

Field activities:

- Visit to a hatchery and aquaculture facility (Agroittica siciliana. Biancavilla, Catania).
- Visit to the historic open-air fish market of Catania, and to the fishing fleet at the harbor.

Unit 5

Monitoring & assessment methods

- Protocols to collect data on the presence of vulnerable species, naval traffic, fishing activities, and marine litter.
- Procedures to assess the species status, the IUCN.
- Data loading and analysis on species abundance, environment productivity, anthropogenic impact.

Readings:

- Mele, B. H., Russo, L., Crocetta, F., Gambi, C., Dell'Anno, A., Danovaro, R., ... & D'Alelio, D. (2020). Ecological assessment of anthropogenic impact in marine ecosystems: the case of Bagnoli Bay. *Marine environmental research*, 158, 104953.
- Carpentieri, P. & Gonzalvo, J. (2022). Dolphin depredation in Mediterranean and Black Sea fisheries – Methodology for data collection. *FAO Fisheries and Aquaculture Technical Paper No. 688*. Rome, FAO. <https://doi.org/10.4060/cc2943en>

Field activities:

- Cetologist for one day experience, sailing with the Marecamp association in the Gulf of Catania

Assessment:

- Photo essays due

Unit 6

Conservation of marine resources

- The ACCOBAMS agreement; successes and challenges of sanctuaries, marine protected areas, reserves, no-take zones, blue islands, Natura 2000 sites, IMMAs. The 30x30 Campaign.
- Restoration and protection of the seabed and marine habitats.
- Responsible best practices to protect the oceans. Citizen science initiatives.

Readings:

- ACCOBAMS. (2021). Conserving Whales, Dolphins and Porpoises in the Mediterranean Sea, Black Sea and adjacent areas: an ACCOBAMS status report, (2021). By: Notarbartolo di Sciara G., Tonay A.M. Ed. ACCOBAMS, Monaco. 160 p

Unit 7

Policies to protect oceans, seas, & coasts

- European regulations on marine and coastal environment. The Marine Strategy Framework Directive (MSFD). International policies to protect oceans and ensure their sustainable use.
- International Directives and Conventions. Objectives and state of Agenda 2030.
- The Magnuson–Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, The Coastal Zone Management Act, The Clean Water Act, The National Environmental Policy Act in the United States.

Readings:

- Selected policy papers and reports

Assessment:

- Slide submission for teamwork presentations due
- Team presentations
- Final exam

Policies

Attendance Policy

Students are expected to be on time and attend all classes while abroad. Many instructors assess both attendance and participation when assigning a final course grade. Attendance alone does not guarantee a positive participation grade; the student should be prepared for class and engage in class discussion. See the on-site syllabus for specific class requirements.

University of Minnesota Policies & Procedures

Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

Scholastic Dishonesty

Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.

Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, ask.

Student Conduct

The University of Minnesota has specific policies concerning student conduct. This information can be found [on the Learning Abroad Center website](#).