



FEDERAL UNIVERSITY OF SANTA CATARINA
GRADUATE COURSE IN ECOLOGY

SYLLABUS



SEMESTER 02 / 2021

1. GENERAL INFORMATION

| CODE | COURSE NAME | WORKLOAD - WEEK | | WORKLOAD - SEMESTER |
|------|---------------------------------|-----------------|-------------|---------------------|
| ECO | Spring School in Sustainability | 2 | | |
| | Number of students | Minimum: 4 | Maximum: 15 | N of credits: 4 |

2. SCHEDULE

Monday to Wednesday 08:00 to 12:00 and 14:00 to 18:00.

3. LECTURERS

Profa. Dra. Paulo Horta
Prof. Dr. Sergio Rossi

4. GRADUATE COURSE

Ecology, Oceanography, and related areas

5. COURSE OUTLINE

Students will discuss with researchers and professors from different countries and backgrounds that will provide the bases to increase the understanding of marine forest biodiversity patterns, eco-evolutionary drivers, and future trends, providing support to the application of ODS and the sustainable management of marine ecosystem goods and services. After a set of talks, a virtual round table will allow an active exchange of ideas, opinions, and perspectives, bringing students to the center of the discussion and development of potential solutions for all main problems considered during the presentations.
– all in English.

6. COURSE OBJECTIVES

To train MSc and PhD students to communicate in English and discuss main subjects related with amin marine environments.
To meet the requirements of CAPES for the internationalization of the PPGECO.

7. DESCRIPTION OF METHODS

Theoretical speeches, short talks and theoretical discussions. A final report written

asynchronously by the students, who will work for an extra week (beyond the period of the discipline) to deliver the work.

8. ASSESSMENT

Group exercises, participation in class, tasks on virtual platform, writing of a scientific text.

9. COURSE PROGRAM

Synchronous

13 September

Open section with representatives from all countries and institutions

1 h- Open lecture Sergio Rossi - Marine Forest in a post-pandemic world (Challenges to conservation and restoration)

- Introduction to the Marine Algal Forests of the world (Ester Serrão, UniAlg, Portugal) OK
- Introduction to the Seagrass Forests of the world (Rui Santos, UniAlg, Portugal) OK
- Introduction to the Rhodolith Beds of the world (Paulo Horta UFSC, Brazil) OK
- Introduction to the Marine Animal Forests (MAF) of the world (Sergio Rossi, UniSalento, ITALY/UFC, BRAZIL) OK
- Discussion first day

14 September

Mother care and nutritional condition, tools to understand the health status of the MAFs (Núria Viladrich, UB-SPAIN)

Marginal reefs (Marcelo Soares, UFC-BRAZIL) OK

Blue Carbon and the MAF (Martina Coppari, Università di Ancona, ITALY) OK

Plastics and the MAF (Lucia Rizzo, Stazione Zoologica di Napoli, ITALY)

Discussion second day

Fish assemblages and MF (Sergio Floeter, UFSC, Brazil)

Ecosystem services of the MAF (Paolo Vassallo, Università di Genova, ITALY) OK

Integrated Multitrophic Aquaculture and MAF restoration (Adriana Giangrande, UniSalento, ITALY) OK

Indicators of stress in Marine Animal Forests (**Luiz Cotovitz, UFC, BRAZIL**)

Discussion second day

15 September

Biogeography and macroecology of Algal Forests (Marina Sissini UFF, Brazil)

Diversity patterns of Echinoidea in Marine Forests (Cesar Cordeiro UFRJ, Brazil)

Biogeography and macroecology of fishes in the Southwestern Atlantic (Hudson Pinheiro, Cebimar and California Academy of Sciences, Brazil)

Functional diversity in Marine Forests of Southwestern Atlantic (Marina Bender - Universidade Federal de Santa Maria)

- Discussion third day

24 September

Seminars and Presentation of the results and discussions.

Asynchronous

13-22/09- Reading and writing activities.

10. REFERENCES

- BROWN, Christopher J. et al. Interactions between global and local stressors of ecosystems determine management effectiveness in cumulative impact mapping. **Diversity and distributions**, v. 20, n. 5, p. 538-546, 2014.
- EDENHOFER, Ottmar (Ed.). **Climate change 2014: mitigation of climate change**. Cambridge University Press, 2015.
- HUTCHISON, J., Manica, A., Swetnam, R., Balmford, A. and Spalding, M., 2014. Predicting global patterns in mangrove forest biomass. *Conservation Letters*, 7(3), pp.233-240.
- KABISCH, Nadja et al. Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge gaps, barriers, and opportunities for action. **Ecology and Society**, v. 21, n. 2, 2016.
- O'NEILL, Brian C. et al. IPCC reasons for concern regarding climate change risks. **Nature Climate Change**, v. 7, n. 1, p. 28-37, 2017.
- RICHARDS, D.R., Thompson, B.S. and Wijedasa, L., 2020. Quantifying net loss of global mangrove carbon stocks from 20 years of land cover change. *Nature communications*, 11(1), pp.1-7.
- RUSSELL, Bayden D. et al. Synergistic effects of climate change and local stressors: CO₂ and nutrient-driven change in subtidal rocky habitats. **Global Change Biology**, v. 15, n. 9, p. 2153-2162, 2009.
- RUSSELL, Bayden D.; CONNELL, Sean D. Origins and consequences of global and local stressors: incorporating climatic and non-climatic phenomena that buffer or accelerate ecological change. **Marine Biology**, v. 159, n. 11, p. 2633-2639, 2012.
- WERNBERG, Thomas et al. Impacts of climate change in a global hotspot for temperate marine biodiversity and ocean warming. **Journal of experimental marine biology and ecology**, v. 400, n. 1-2, p. 7-16, 2011.
- WOLF, Eric et al. Climate updates: what have we learnt since the IPCC 5th Assessment Report. 2017.