SANT'ANNA INSTITUTE SORRENTO

COURSE NUMBER AND TITLE: MSC 101 with Lab - Introduction to Marine Biology with Lab
(4 credits)

This syllabus is informational in nature and is not an express or implied contract. It is subject to change due to unforeseen circumstances, as a result of any circumstance outside the University's control, or as other needs arise. If, in the University's sole discretion, public health conditions or any other matter affecting the health, safety, upkeep, or well-being of our campus community or operations requires the University to move to remote teaching, alternative assignments may be provided so that the learning objectives for the course, as determined by the faculty and the University, can still be met. The University does not guarantee specific in-person, on-campus classes, activities, opportunities, or services or any other particular format, timing, or location of education, classes, activities, or services.

Mask Policy

Please be advised that the mask policy in this class will follow Sant'Anna Institute requirements. When/if the University enacts a mask policy, all students are expected to adhere to the policy.

COURSE DESCRIPTION

This course focuses on the biology of organisms residing in the sea, from the diversity of planktonic communities to marine megafauna, taking into consideration the ecological principles that govern marine life.The course aims to provide a solid educational background in basic and applied marine biology, also due to an intense **laboratory** activity. Emphasis will be placed on marine environment issues and the adaptive and evolutionary mechanisms of organisms that allow them to occupy marine habitats. In particular, the Mediterranean Sea and the conservation of marine environment will play a central role in the course subjects, profiting from the availability of unique ecosystems and a nearby renown marine protected area to conduct thematic field trips and practical tutorials.

COURSE OBJECTIVES / LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

- Interpret how marine fauna and flora interact and identify their role in marine systems.
- Describe the structure of marine communities and the transfer of energy and matter through marine food webs.
- Describe the ways that oceans are created and destroyed.
- Classify the various elements of the marine environment.
- Analyze the factors adversely impacting marine ecosystems and possible ways to overcome them.
- Critically evaluate evidence, arguments and ideas from different sources in a self-directed manner, leading to coherent and logical analysis.

FORMAT

Lectures will be integrated with student presentations, labs and discussions on scientific literature, and several **on-site activities**. Students will be expected to actively participate in class.

REQUIRED TEXTS

Required text

- J. Morrissey, J. Sumich, *Introduction to the Biology of Marine* Life, Jones and Bartlett Publishers, Inc, latest edition.
- E. Norse, L. Crowder, *Marine Conservation Biology*: The Science of Maintaining the Sea's Biodiversity, Island Press, latest edition.
- M. Speight, Martin, P. Henderson, *Marine Ecology*: Concepts and Applications, Wiley-Blackwell, latest edition.

Digital access and/or copies will be provided at no cost to students.

EXAMS and ASSIGNMENTS

20%: Mid Term Evaluation

25%: Presentations

25%: Attendance and Participation

30%: Final Exam

GRADING SCALE

A	95%-100%
A-	90%-94%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	77%-79%
C	73%-76%
C-	70%-72%
D+	67%-69%
D	63%-66%
D-	60%-62%
F	< 60%

SCHEDULE OF THE TOPICS

Module 1: The Marine Environment

This module sets the scene by looking at how the oceans are created and destroyed by sea floor spreading and plate tectonics and provides some basic information on the oceanography and the structure of the physical ocean from the continental shelf to the abyssal plain. The chemistry of seawater, the physics of light and sound propagation in the ocean, the dynamics of tides and major currents and the large-scale movements of seawater in the ocean basins are examined.

A. Origin and geology of the ocean

B. Properties of seawater

C. The ocean in motion

D. Classification of the marine environment

Laboratories

1. Geo & Geo – 3h, indoor and outdoor – Ocean geography, geology and topography, analysis of different bottom floors, substrates and sediments' composition

2. Water properties – 3h, indoor and outdoor – water properties, salinity, surface tension, heat and salinity dependence, sample collection, analysis inf wind and waves

Module 2: Marine organisms

In module two, students look at the evolution of life in the ocean and the peculiar flora and fauna that inhabit the various marine habitats from the tiniest one-celled organisms to the largest marine mammals. The primary productivity and the trophic food webs which support all life in the sea will be examined. Students will learn the extraordinary evolutionary adaptation of the marine vertebrates as they evolved from bland animals 200 million years ago to the fully adapted marine creatures we see today. This module includes a visit to the Marine Protected Area of Punta Campanella with a special program to study benthic primary producers on-field, with marine excursion (snorkeling with mask and fins) and microscope laboratory.

A. Life in a fluid medium

B. Marine organisms' classification (spatial, taxonomic and trophic)

C. The microbial world

D. Primary producers: phytoplankton, seaweeds, plants

E. Marine invertebrates

F. Marine fishes

G. Marine reptiles-birds

H. Marine mammals

Laboratories

3. Intertidal zone – 3h, outdoor – Analysis of different tide pools, measures of temperature and salinity, organisms' survey

4. First field trip – 6h, outdoor – Snorkeling excursion and analysis on spotted organisms

5. Into the blue – 3h, outdoor – Discovery Scuba Diving

6. Organisms' anatomy – 3h, indoor – Organisms' anatomy, different pHylums/Classes and different Structures/Strategies

7. Primary production – 3h, Analysis, biometric measures and sketching of seagrass Posidonia oceanica), seaweed (samples of algae) and associated fauna to identify with microscopes and guides

Mid-term Evaluation

Module 3: Marine ecosystems

In module three, students will deepen their knowledge of the various marine ecosystems and the peculiar relationships among the different species that inhabit these environments.

A. Introduction to marine ecology

B. Intertidal communities

C. Estuaries

D. Coral Reefs

E. Continental shelf and neritic zone

F. Open sea

G. Deep ocean

H. Polar Environments

Laboratories

8. Spatial distribution and migration – 3h, indoor – Analysis of organisms' behavior with photos/maps and ecosystems/biomes

9. 2nd field trip – 6h, outdoor – Snorkeling and kayaking trip in Ieranto Bay – marine protected area, analysis of organisms' behavior, underwater photography and sketching

10. Ecological index – 3h, indoor – data analysis of flora and fauna spotted during the field trip

Module 4: Human and the Sea

The final module looks at fisheries and the food we obtain from the sea and discusses the main food species along with the impacts of overfishing. Students will learn about ocean pollution, toxic pollutants, sewage and marine debris which are degrading the ocean and how the animals of the sea are coping with the circumstances. This module includes a case study on a threatened species with the visit to the Sea Turtle Rescue Center of the Zoological Station Anthon DOhrn, where

students will meet the team of biologists and veterinarians that are daily dealing with human impacts on marine megafauna.

A. Harvesting of the ocean's resources

B. Pollution and coastal development

C. Biological invasion and global warming

D. Case study: Mediterranean loggerhead turtle population

Laboratories

11. 3rd field trip – 6h, outdoor – Excursion to the Marine Protected Area visitor center, meeting with fishermen in Marina della Lobra

12. Street activity – 6h, outdoor – Delivering interviews and questionnaires about marine conservation, data analysis

13. Case study: Sea turtles of the Mediterranean Sea – 3h, indoor – Visit to the Sea Turtle Rescue Center at the "Anton Dohrn Zoological Station

CLASS POLICY

Attendance

You are allowed **ONE** unexcused absence. Documentation for any other absence MUST be produced and APPROVED by your faculty. For absences due to illness, please provide the faculty with a doctor's note upon returning to class as well as inform them and/or the Office the first day of illness.

Participation grants the student one point for each lesson they attend. Unjustified absences result in 0 points. Participation in **field-trips,** if any, awards 2 points, while non-participation results in a loss of 2 points.

Late submissions:
Assignments not submitted by the due date will receive a penalty of 10% for the first 24 hours, 20% for a 48-hour delay. No submissions will be accepted more than 3 days after the deadline, unless arrangements have been made with the instructor (for extensions under exceptional circumstances, apply to the course instructor).

Personal Technology:
Please turn cell phones off during class. You can use laptops to take notes, however social networking, e-mailing, surfing the Internet, playing games, etc. are forbidden during class. Any student caught using their laptop/cell phones inappropriately during class will be asked to turn them off. Repeated violations of this rule after the first warning will result in the student being

marked absent for the day and permanently losing their laptop privileges. Please be respectful and limit your use of personal electronic devices during class to academic purposes.

Contesting a grade:
If students wish to contest a grade, they must make an appointment to do so in person. The student should contact the instructor with any concerns within ONE week of receiving the grade. The student must also demonstrate that they have read the comments accompanying the grade by presenting a brief written statement specifying why the grade does not reflect the quality of the work. It is at the discretion of the instructor to decide whether the work and the student's request warrant any increase or decrease in the grade. Students should retain a copy of all submitted assignments and feedback (in case of loss) and should also retain all of their marked assignments.

Recommended behavior:

- Class begins promptly at the beginning of the class period. It is advisable that you be in your seat and ready to start participating in class at that time.
- Always bring the required supplies and be ready to be actively engaged in the learning process. This communicates preparedness and interest.
- Turn your cell phone off or to vibrate mode before the start of class;
- It is fine to bring a drink or a snack to class, as long as it is not distracting. In conjunction with this, please pick up your trash when you leave the room.
- Your professor expects your full attention for the entire class period. If you know that you'll need to leave before the class is over, try to sit as close to the door as possible so as not to disrupt others. Similarly, if you arrive in class late, just slip in as quietly as possible and take the first available seat you come to.
- Do not sleep in class! Laying your head on the desk or sleeping in class is rude, and it is distracting to others. Turn in assignments on time.
- When you have a question or comment, please raise your hand first as a courtesy to your classmates and the professor. Remember, your questions are NOT an imposition – they are welcome. So, ask questions! You'll learn more, it makes the class more interesting, and you are helping others learn as well.
- If an emergency arises that requires an absence from a session, it is your responsibility to get the notes and all other information that was covered in class from a colleague you trust.

Secular and religious holidays:

Sant'Anna Institute recognizes that there are several secular and religious holidays - not included in the Italian calendar - that affect large numbers of its community members. In

consideration of their significance for many students, no examinations may be given and no assigned work may be required on these days. Students who observe these holidays will be given an opportunity to make up missed work in both laboratories and lecture courses. If an examination is given on the first class day after one of these holidays, it must not cover material introduced in class on that holiday. Students who wish to observe such holidays must inform their instructors within the first two weeks of each semester of their intent to observe the holiday even when the exact date of the holiday will not be known until later so that alternative arrangements convenient to both students and faculty can be made at the earliest opportunity.

Students who make such arrangements will not be required to attend classes or take examinations on the designated days, and faculty must provide reasonable opportunities for such students to make up missed work and examinations. For this reason it is desirable that faculty inform students of all examination dates at the start of each semester.

ACADEMIC HONESTY

"Members of the Jacksonville University community are expected to foster and uphold the highest standards of honesty and integrity, which are foundations for the intellectual endeavors we engage in.

To underscore the importance of truth, honesty, and accountability, students and instructors should adhere to the following standard:

"On my honor as a student of Jacksonville University, I promise to uphold the values of honesty, trust, fairness, respect, and responsibility in all my dealings with faculty, staff, and students."

Academic misconduct occurs when a student engages in an action that is deceitful, fraudulent, or dishonest regarding any type of academic assignment that is intended to or results in an unfair academic advantage. In this context, the term "assignment" refers to any type of graded or ungraded work that is submitted for evaluation for any course. Academic misconduct includes but is not limited to cheating, collusion, falsification, misrepresentation, unauthorized collaboration on assignments, copying another student's work, using or providing unauthorized notes or materials, turning in work not produced by the individual, attempting to get credit for a single instance of work submitted for more than one course, and plagiarism. Furthermore, providing deceitful, fraudulent, or dishonest information during discussions of an academic matter with faculty are also examples of academic misconduct." (Jacksonville University Academic Integrity Policy).

Throughout this course we will be reading and reporting about the work of others. All information that is not original to the student must be appropriately attributed in both presentations and written work. All students are expected to do their own work and give appropriate credit for all sources used in the process of preparing papers, presentations, and homework assignments. Group assignments will be graded based on the product of the work, although some adjustment may be made for participation. [If you have a question about whether or not collaboration is allowed, or how to cite a reference, please ask. It is always better to check than to be accused of an unintended violation of the academic honesty policy].

Violations of the academic honesty policy will be dealt with in accordance with university policies [Refer to current Academic Catalog “Academic Integrity and Misconduct”].

Course Level Penalties: A first offense may result in a failing grade for the assignment. Second offenses may result in failure in the course. Significantly egregious violations may result in expulsion from the university. When in doubt give credit for all information that did not come directly out of your head!

DISABILITY STATEMENT

Students with a documented disability requesting classroom accommodations or modifications, either permanent or temporary, resulting from the disability are encouraged to inform the faculty in the first week of the program.