



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare
ACADEMIC YEAR	2023/2024
MASTER'S DEGREE (MSC)	MARINE BIOLOGY
SUBJECT	MARINE CONSERVATION AND COASTAL STRIP MANAGEMENT
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50506-Discipline del settore biodiversità e ambiente
CODE	13917
SCIENTIFIC SECTOR(S)	BIO/07
HEAD PROFESSOR(S)	CHEMELLO RENATO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	90
COURSE ACTIVITY (Hrs)	60
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	CHEMELLO RENATO Wednesday 10:30 12:30 Dipartimento di Scienze della Terra e del Mare, via Archirafi n. 20, Stanza n. 4, piano IV, Thursday 10:30 12:30 Dipartimento di Scienze della Terra e del Mare, via Archirafi n. 20, Stanza n. 4, piano IV,

DOCENTE: Prof. RENATO CHEMELLO

PREREQUISITES	Basic knowledge on the taxonomy of marine organisms, both animal and plant, with particular regard to macrofauna (Invertebrates and fishes) and macroalgae. Elements of basic ecology: species interactions, populations, communities and ecosystems, landscape.
LEARNING OUTCOMES	KNOWLEDGE AND UNDERSTANDING The knowledge and understanding processes will be oriented to the acquisition of skills related to the conservation of coastal and marine areas. The student will get knowledge on natural processes and the influence that human impacts exert on species, populations and marine communities. Skills are also acquired through participation in lectures and participation in seminars and conferences, properly organized by the course. Assessment of the achievement of learning is mainly through exams at the end of the course, consisting of a presentation and discussion of a specific topic. APPLYING KNOWLEDGE AND UNDERSTANDING. All the students must acquire skills for the study and monitoring of marine systems, finalized the establishment and management of marine protected areas. In particular, the student will be able to design plans for conservation and management of marine natural resources. The achievement of these capabilities will be reached through tests. MAKING JUDGMENTS In terms of independent judgment acquisition, each student will develop skills regarding the assessment and interpretation of experimental field data; safety procedures in the laboratory and field activities; principles of professional ethics and scientific approach to bioethical issues. Judgement is realized through the exercise of reading papers and reports, etc.. The acquisition of judgment skills is through evaluation of the documents that the student has to submit during the course. COMMUNICATION SKILLS Each student should become able to explain the basic concepts of modern conservation and management of the coastal area, integrating them with the concepts linked to the natural variability of marine systems and changes induced by human action. LEARNING ABILITY All the students will develop appropriate skills for independent study e.g.: consultation of library materials, access to databases and other information on the net, the basic cognitive tools for the continuous updating of knowledge. Learning skills are developed with particular reference to both individual and group study and elaboration of a research.
ASSESSMENT METHODS	An entry test is provided to evaluate the initial preparation. The assessment is based on a non-required mid-term test (e.g. a power point presentation) and a final test (through an oral exam). The final mark is given taking into account the average of the previous marks (in thirties) obtained in the mid-term and final tests. The positive evaluation of the mid-term test allows the student to take the final exam (only in the first useful session) just on the topics of the second part of the course. If the student wants to refuse the result of the mid-term test, the final exam will be focused on the entire program of the course. The final examination aims at assessing whether the student has knowledge and understanding of the subjects, has acquired interpretative competence and autonomy in judging concrete cases. The threshold of sufficiency will be achieved when the student shows the knowledge and understanding of the topics at least in the general guidelines and has minimal application skills; Her/he must equally have exhibits and arguments that enable her/him to convey his knowledge to the examiner. Below this threshold, the examination will be insufficient. Instead, the student manages to interact with the examiner with her/his argumentative and exhibition skills, and the more her/his knowledge and application skills go into detail of the discipline being tested, the more the evaluation will be positive. The final exam score will be done in thirtieth. Very good (26-29). Good mastery of the topics, full property of language. The student is able to apply her/his knowledge to solve proposed problems. Good (24-25). The student reached a basic knowledge of the main topics, discrete properties of language, with limited ability to independently apply the her/his knowledge to the solution of the proposed problems. Satisfactory (21-23). The student does not have full mastery of the main topics of teaching, but possesses the knowledge, satisfactory property language, poor ability to independently apply the acquired knowledge. Sufficient (18-20). The student has a minimum basic knowledge of the main topics and technical language issues, very little or no ability to independently apply the acquired knowledge. Insufficient - The student does not have an acceptable knowledge of the contents of the topics covered in the course.
EDUCATIONAL OBJECTIVES	The objectives of the Marine Conservation and Coastal Management course are to provide students with a sound cultural background on experimental and analytical frameworks of conservation ecology and the main methods of

	classification and management of the coastal areas.
TEACHING METHODS	Classroom lectures, exercises and labs
SUGGESTED BIBLIOGRAPHY	Carleton Ray G. & J. McCormick-Ray, 2004 – Coastal-marine conservation. Science and policy. Blackwell Publ.: 327 pp. Gubbay S., 1995 – Marine protected areas. Principles and techniques for management. Chapman & Hall, London: 232 pp. Salm R.V. & J.R. Clark, and E. Siirila, 2000 – Marine and coastal protected areas: a guide for planners and managers. IUCN, Washington DC: 371 pp Articoli su riviste scientifiche forniti dal docente

SYLLABUS

Hrs	Frontal teaching
8	GENERAL CONCEPTS Coastal area definition: fields, limits and conventions. Coastal area and changes: the increase in the sea-level and sea surface temperature. Economic value and importance of the coastal areas: human settlements; maritime traffic and trade; availability of foods. The problems for the coastal areas due to the increase of the human population. Relations between factors.
8	MARINE EXTINCTIONS AND THEIR CAUSES Natural and anthropic causes of extinction. Documented extinctions in the marine environment. Global and local extinctions. The role of fisheries in the extinctions: the concept of "near-extinction" and fishing at lower trophic levels. Fishing bycatch. Fishing and harvesting. The introductions of alien species.
8	THE CONSERVATION OF SPECIES, POPULATIONS, COMMUNITIES AND MARINE LANDSCAPES Keystone species, umbrella species and flagship species. Indicator species. Vulnerable and endangered species. The IUCN Red List. The marine biodiversity at a global, regional and local scale. Endemism and rarity. The gradients in biodiversity and the "hot spots" in the sea. The biodiversity of the Mediterranean: historical and ecological factors. Conservation and biodiversity: the reserve effect in MPAs in the Mediterranean.
8	COASTAL CLASSIFICATION The coastal classification: definitions, concepts and methods. The conflicting uses. The selection of sites. The concepts of coastal vulnerability and representativeness. Definition and use of selection criteria. MANAGEMENT PROCESSES Marine protected areas as systems for the coastal zone management. Definitions and management objectives. The situation in Italy. Critical analysis of the realization process of a marine protected area. The procedures in Italy. The Marep model. Environmental units and biogenic units. The sensitivity concept.
Hrs	Practice
4	Exercise 1. Simulation of visual census of fish fauna along random routes. Evaluation of the percentage coverage for benthic species and populations. Recognition of the main fish and coastal benthos species. Calculation of the main biological indexes.
4	Exercise 2. Evaluation of the characteristics of a modeled Sicilian coastline. Application of the Marep methodology. Calculation of sensitivity and vulnerability values. Simulation of the design of a protected marine area.
4	Exercise 3. Field trip for the assessment of coastal ecosystems.
Hrs	Workshops
8	Critical analysis of the making process of a marine protected area in the Mediterranean. Tools, indices and applications.
8	Critical analysis of the evaluation processes of marine protected areas in the Mediterranean. Tools, indices and applications.