



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare		
ACADEMIC YEAR	2022/2023		
MASTER'S DEGREE (MSC)	NATURAL SCIENCES		
SUBJECT	ECOLOGY APPLICATIONS		
TYPE OF EDUCATIONAL ACTIVITY	B		
AMBIT	50511-Discipline ecologiche		
CODE	19977		
SCIENTIFIC SECTOR(S)	BIO/07		
HEAD PROFESSOR(S)	GIANGUZZA PAOLA	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	6		
INDIVIDUAL STUDY (Hrs)	98		
COURSE ACTIVITY (Hrs)	52		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	GIANGUZZA PAOLA Wednesday 12:00 13:00		

DOCENTE: Prof.ssa PAOLA GIANGUZZA

PREREQUISITES	The student is expected to have basic knowledge of Chemistry, Biochemistry, Botany, Zoology
LEARNING OUTCOMES	Knowledge and understanding skills The course promotes the dissemination and application of the principles of ecology to conservation of nature. The specific training objective is to provide a solid cultural preparation in the analysis of the natural environment, in all its biotic and abiotic components and in their interactions; In particular it is proposed as a synthesis of the progress made in recent years by Ecology. The course provides the necessary cultural and methodological basics for analyzing issues related to the organization levels of ecology (individuals, populations, communities, ecosystems), including both vegetable organisms Learning Capacity Being able to deepen the subject by reading specific scientific articles and following seminars and insights into environmental conservation Ability to apply knowledge and understanding Ability to solve cases where a student has to relate to ecology, conservation and environmental policy. Judgment autonomy Being able to evaluate the proper management of natural resources and to promote conservation policies Communicative Ability To be able to communicate the basic concepts of conservation and the principal regulations found by the EC. Learning ability The student will have to develop the learning skills necessary to continue the study of Ecology applied to conservation by mastering basic cultural and basic contents needed to follow up the updates of the course
ASSESSMENT METHODS	Oral examination. Assessment criteria -assessment: excellent, grade: 30 - 30 cum laude, excellent knowledge of the topics of the course, excellent use of language, excellent analytical capacity, ability to apply knowledge to problem solving; - assessment: very good, grade: 26-29, good knowledge of the topics of the course, correct use of language, good analytical capacity, ability to apply knowledge to problem solving; - assessment: good, grade: 24-25, good knowledge of the main topics of the course, correct use of language, limited ability to autonomously apply knowledge to problem solving; - assessment: satisfactory, grade: 21-23, partial knowledge of the topics of the course, satisfactory use of language, limited ability to autonomously apply knowledge to problem solving; - assessment: sufficient, grade: 18-20, minimal knowledge of the main topics of the course and of technical language, scarce ability or inability to autonomously apply knowledge to problem solving; - assessment: fail, insufficient knowledge of the topics of the course.
EDUCATIONAL OBJECTIVES	The aim of the course is to provide the students with basic information on theoretical and experimental ecology. In particular, we intend to analyse the interactions between species and the environment with particular attention to the effects of anthropogenic activities.
TEACHING METHODS	teacher up front lessons, lectures, invited talks
SUGGESTED BIBLIOGRAPHY	Odum E.P. Barrett G.W. (2006) Fondamenti di ecologia. Piccin Pusceddo, Sarà Viaroli Ecologia UTET Università Anno edizione: 2020

SYLLABUS

Hrs	Frontal teaching
8	Basic Concepts: The energy environment and the flow of energy. Primary and secondary production in ecosystems. Microbial conversion of the main elements in the environment. Structure, size, dispersion and distribution of populations. Areal distribution. Growth patterns of populations and control factors (extrinsic and intrinsic factors). Interactions among species: competition, predation, parasitism, amensalism, commensalism, mutualism, cooperation. The logistic and exponential equations. Population dynamic. Age pyramids. K and r strategies. Carrying capacity. Resilience and resistance.
8	Approach to aquatic ecosystems. The fluvial lake network. Morphology and morphometry of the lake. Optical properties of the lakes. Thermal properties of lakes. Movements of lake waters. Chemical properties of waters. Classification of aquatic ecosystems by the analysis of the biotic component. River ecosystem: the four dimensions, metabolism and spiraling process. The marine ecosystem: elements of physical and chemical oceanography. Zoning in the Mediterranean: the communities of hard and mobile substrata. Eutrophication of surface water bodies and water protection: main factors. Identification of loads from different sources. Classification of freshwater.
4	Seagrass meadows: dynamics and evolution. Role in the balance of the coastal strip. Their roles in term of trophic net and biodiversity maintenance. Causes of natural and anthropogenic regression. Structural analysis, phenology and lepidochronology. Reforestation by seagrass.
4	The concept of sustainable development, policy and operational Implication
4	Ecological theory and its application to conservation biology
4	Ecological theory and its application to conservation biology Ecology, Conservation and Extinction of species
4	Different Strategies for Protecting Biodiversity: the role of Mediterranean MPAs and parks
4	Restoration ecology and the theory of alternative stable states

Hrs	Practice
6	Monitoring Biodiversity, The threats and problems affecting species and their survival Impact of habitat loss on species
6	Statistical approach to conservation