



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare
ACADEMIC YEAR	2016/2017
MASTER'S DEGREE (MSC)	NATURAL SCIENCES
INTEGRATED COURSE	ECOLOGY APPLICATIONS - INTEGRATED COURSE
CODE	16512
MODULES	Yes
NUMBER OF MODULES	2
SCIENTIFIC SECTOR(S)	BIO/07
HEAD PROFESSOR(S)	GIANGUZZA PAOLA Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	GIANGUZZA PAOLA Professore Associato Univ. di PALERMO TOMASELLO AGOSTINO Professore Associato Univ. di PALERMO
CREDITS	12
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	GIANGUZZA PAOLA Wednesday 12:00 13:00 TOMASELLO AGOSTINO Monday 15:00 17:00 Per gli studenti del CdS in Biotecnologie e Innovazione Tecnologica, presso le strutture del polo didattico di Trapani O della struttura "Principe di Napoli". I ricevimenti, su richiesta, possono essere svolti anche su piattaforma teams. Ulteriori o differenti incontri possono essere concordati con il docente) Wednesday 14:30 15:30 Dipartimento di Scienze della Terra e del Mare, edificio 16 viale delle Scienze, piano seminterrato

DOCENTE: Prof.ssa PAOLA GIANGUZZA

PREREQUISITES	A basic understanding of biology, zoology and botany and general ecology is required.
LEARNING OUTCOMES	Ecology is the scientific study of the interactions that determine the distribution and abundance of organisms. An applied perspective often refers to how ecology can be applied to management questions to obtain certain goals in landscape recovery. Students will be encouraged to explore current and emerging problems such as the conservation of species, landscape restoration, and mitigation of environmental impacts above all in marine real. The course is suited for those interested in the applied aspects of ecology and environmental sciences for environmental management and consultancy, or for those interested in delivering user-defined integrative solutions via research. The course will provide also fields techniques and methods for monitoring wild and habitat species, including experimental and sampling design, data collection, statistical analysis of data.
ASSESSMENT METHODS	oral examination
TEACHING METHODS	teacher up front lessons

**MODULE
ECOLOGY APPLICATIONS**

Prof. AGOSTINO TOMASELLO

SUGGESTED BIBLIOGRAPHY

Odum E. (1994), Ecologia per il nostro ambiente minacciato, Piccin
 Ghetti P.F. (2001), Indice biotico esteso (I.B.E). Provincia Autonoma di Trento
 Tonolli V. (2001) Introduzione allo studio della limnologia, CNR Istituto Italiano di Idrobiologia
 AA.VV. (2014) Il trapianto delle praterie di Posidonia oceanica. ISPRA Manuali e Linee Guida
 Appunti delle lezioni

AMBIT	20987-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims is to provide a cultural background and experimental and analytical basis for tackling the basic studies on the ecology and functioning of ecosystems. In particular, it aims to highlight the network of relationships that bind organisms and the environment also with reference to the interactions resulting from human activities.

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.
16	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.
4	Eutrophication of surface water bodies and water protection: main factors. Identification and assessment of loads from different sources. Classification of freshwater.
8	Seagrass meadows: dynamics and evolution. Role in the balance of the coastal strip. Their roles in term of trophic net and biodiversity maintainance. Causes of natural and anthropogenic regression. Structural analysis, phenology and lepidochronology. Reforestation by seagrass.
12	Indices and environmental indicators: biotic indicators in Posidonia. Carlit index. Extended Biotic Index (I.B.E.) and STAR_ICMi Index.

MODULE
APPLIED NATURE CONSERVATION

Prof.ssa PAOLA GIANGUZZA

SUGGESTED BIBLIOGRAPHY

1. Primack R.B., 2003. Conservazione della natura. Zanichelli Editore
2. Miller G.T., 1997. Ambiente, Risorse, Sostenibilit . Piccin, Padova
3. Conservation Biology. Chapman & Hall, New York. Frankham R. et al., 2002.

AMBIT	50511-Discipline ecologiche
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

Achieve a comprehensive understanding of research based applied ecology and conservation within an interdisciplinary scientific framework
 Discuss appropriate ecological, mathematical, and statistical concepts and methods to interpret, understand and communicate wildlife ecology and conservation data.
 Have a broad knowledge of the range of relevant techniques available on marine and terrestrial conservation

SYLLABUS

Hrs	Frontal teaching
48	Ecological theory and its application to conservation biology The concept of sustainable development; Policy and Operational Implication Ecology, Conservation and Extinction Assessing and Monitoring Biodiversity Assessing the Impacts of Biodiversity Changes on Ecosystem Services. The threats & problems affecting species and their survival Impact of habitat loss on species Theory of Island Biogeography Minimum Population Size (MVP) and Population Viability Analysis (PVA) Metapopulation Dynamics The Importance of Connectivity Different Strategies for Protecting Biodiversity: the role of MPAs Impact of climate change on species Restoration ecology Invasive species management Fisheries bycatch The network of Marine protected areas