UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare		
ACADEMIC YEAR	2022/2023		
MASTER'S DEGREE (MSC)	NATURAL SCIENCES		
INTEGRATED COURSE	BIOSCIENCE TEACHING METHODOLOGY		
CODE	22409		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	BIO/05, BIO/07		
HEAD PROFESSOR(S)	PARRINELLO DANIELA	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)	PARRINELLO DANIELA LEONE AGOSTINO	Professore Associato Ricercatore a tempo determinato	Univ. di PALERMO Univ. di PALERMO
CREDITS	6		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	**LEONE AGOSTINO** Thursday 14:00 16:00 Via Archirafi, 20 (DiSTeM) - 90123, PalermoPiano II - Stanza 8 **PARRINELLO DANIELA** Monday 10:00 12:00 Durante questo periodo di emergenza COVID-19 il ricevimento viene effettuato sulla piattaforma Microsoft team nel corrispondente team RICEVIMENTO codice per entrare : d7qhxil Si prega di prenotarsi al ricevimento tramite mail daniela.parrinello@unipa.it Thursday 09:30 11:30 Dipartimento di Scienze della Terra e del Mare (DiSTeM) Ed. 16 Viale delle Scienze piano seminterrato -1		

DOCENTE: Prof.ssa DANIELA PARRINELLO

PREREQUISITES	Basic knowledge of cell biology, genetics and botany. Knowledge of the ecological-zoological field with particular reference to the evolution and ecosystem vision of biodiversity.
LEARNING OUTCOMES	Knowledge and comprehension Acquisition of theoretical and methodological knowledge to support teachers for the construction of learning paths on different levels and skills. In any case, developed according to the criterion of maximum inclusiveness of the basic knowledge of biology, from cell to the ecosystem, with particular emphasis on evolution, biodiversity and environmental sustainability. Applying knowledge and comprehension. Ability to autonomously use the preliminary knowledge acquired for an application of available pedagogical methods. Ability to contextualize their use in the environmental and biological evolutionary context. Autonomous thinking Capacity for personal interpretation and didactic transposition aware of the level of integration of ecological components in natural or altered systems. Communication ability. Ability to express the acquired skills with clarity and language skills and to disclose them with scientific rigor in relation to the educational context. Acquisition of relational skills essential to collaborate in multidisciplinary studies in the laboratory and in the field. Learning ability Acquired skills on the design of executive practices such as lessons, workshops and practical activities through an integrated use of classical and modern methods. capacity for docimological analysis and evaluation of personal teaching ability.
ASSESSMENT METHODS	The course includes hours of classroom lectures. The teaching will be developed integrated in parallel by the two teachers in relation to their relative skills and integrations, with classroom lectures and teaching methodology laboratory. The teachers, during the course, will also provide students with specific study material and presentations of the lessons
TEACHING METHODS	Knowledge and comprehension Acquisition of theoretical and methodological knowledge to support teachers for the construction of learning paths on different levels and skills. In any case, developed according to the criterion of maximum inclusiveness of the basic knowledge of biology, from cell to the ecosystem, with particular emphasis on evolution, biodiversity and environmental sustainability. Applying knowledge and comprehension. Ability to autonomously use the preliminary knowledge acquired for an application of available pedagogical methods. Ability to contextualize their use in the environmental and biological evolutionary context. Autonomous thinking Capacity for personal interpretation and didactic transposition aware of the level of integration of ecological components in natural or altered systems. Communication ability. Ability to express the acquired skills with clarity and language skills and to disclose them with scientific rigor in relation to the educational context. Acquisition of relational skills essential to collaborate in multidisciplinary studies in the laboratory and in the field. Learning ability Acquired skills on the design of executive practices such as lessons, workshops and practical activities through an integrated use of classical and modern methods. capacity for docimological analysis and evaluation of personal teaching ability.

MODULE
ECOLOGY TEACHING METHODOLOGY

Prof. AGOSTINO LEONE

SUGGESTED BIBLIOGRAPHY

Didattica della Biologia. Metodi e strumenti per l'insegnamento e l'apprendimento della biologia. E. Padoa-Schioppa- EdiSES
Presentazioni e supporti testuali a cura del docente

AMBIT	20987-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	51
COURSE ACTIVITY (Hrs)	24

EDUCATIONAL OBJECTIVES OF THE MODULE

Development of experimental laboratory approaches aimed at observing natural phenomena with regard to their alterations and the ways in which organisms associate to form populations and biotic communities. Methodologies and educational technologies for the study of the relationship of ecology with the current society in relation to the environment, health and biotechnology (ie: energy flows and matter in living beings; biodiversity; pollution).

SYLLABUS

Hrs	Frontal teaching
4	The birth and evolution of ecology
4	Concept of species, populations, communities and ecosystems
4	Biotic and abiotic components of biological systems
4	Energy flows and matter cycle, species responses to different environmental conditions
4	Global warming, acidification and environmental education importance
4	Restoration ecology and alternative stable state theory

MODULE
ZOOLOGY TEACHING METHODOLOGY

Prof.ssa DANIELA PARRINELLO

SUGGESTED BIBLIOGRAPHY

Didattica della Biologia. Metodi e strumenti per l'insegnamento e l'apprendimento della biologia. E. Padoa-Schioppa- EdiSES
Presentazioni e supporti testuali a cura del docente.

AMBIT	20987-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	51
COURSE ACTIVITY (Hrs)	24

EDUCATIONAL OBJECTIVES OF THE MODULE

Development of experimental laboratory approaches and / or aimed at observing natural phenomena with regard to their alterations and environmental education and the ways in which organisms associate to form populations and biotic communities. Methodologies and educational technologies for the study of the relationship of biology with the current society in relation to the environment, health and biotechnology (ie: energy flows and matter in living beings; biodiversity; pollution). Use of innovative and interactive educational tools and technologies for teaching and learning biology. Guided reflections, brainstorming, simulations, field teaching. Scientific communication, aims, means, methods. Scientific disclosure in postmodern science.
Design of educational paths on the fundamental concepts of biology, in accordance with national guidelines and guidelines of MIUR (D.M. del 10.8.2017 n.616).

SYLLABUS

Hrs	Frontal teaching
4	Educational methodologies in Biology. Pedagogical methods for Sciences. Didactic methodologies and their context. Teaching transposition and systemic vision
4	Models of Learning Units. From observation to correlation: the teaching of life sciences and the problem posing as a methodology for a field study.
4	From the genome to the biodiversity, tools for assisted observation. From Binocular to microscopes like when and why. The hidden connections between nature and living beings.
2	That is the pleasure of discovering biological phenomena through the didactic transposition.
3	Pedagogical value of biodiversity. Population genetic and spiral of extinction
3	Evolutionary theories.
4	didactic proposals and applications for teaching biology in secondary schools.