



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze della Terra e del Mare		
<b>ACADEMIC YEAR</b>	2023/2024		
<b>MASTER'S DEGREE (MSC)</b>	NATURAL SCIENCES		
<b>INTEGRATED COURSE</b>	BIOSCIENCE TEACHING METHODOLOGY		
<b>CODE</b>	22409		
<b>MODULES</b>	Yes		
<b>NUMBER OF MODULES</b>	2		
<b>SCIENTIFIC SECTOR(S)</b>	BIO/07, BIO/05		
<b>HEAD PROFESSOR(S)</b>	PARRINELLO DANIELA	Professore Associato	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	PARRINELLO DANIELA LEONE AGOSTINO	Professore Associato Ricercatore a tempo determinato	Univ. di PALERMO Univ. di PALERMO
<b>CREDITS</b>	6		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	2		
<b>TERM (SEMESTER)</b>	1° semester		
<b>ATTENDANCE</b>	Not mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<p><b>LEONE AGOSTINO</b> Thursday 14:00 16:00 Via Archirafi, 20 (DiSTeM) - 90123, PalermoPiano II - Stanza 8</p> <p><b>PARRINELLO DANIELA</b> Monday 09:30 11:30 Dipartimento di Scienze della Terra e del Mare (DiSTeM) Ed. 16 Viale delle Scienze piano seminterrato -1. Si prega di prenotarsi al ricevimento tramite mail daniela.parrinello@unipa.it</p> <p>Thursday 09:30 11:30 Dipartimento di Scienze della Terra e del Mare (DiSTeM) Ed. 16 Viale delle Scienze piano seminterrato -1. Si prega di prenotarsi al ricevimento tramite mail daniela.parrinello@unipa.it</p>		

**DOCENTE:** Prof.ssa DANIELA PARRINELLO

<b>PREREQUISITES</b>	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.
<b>LEARNING OUTCOMES</b>	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.
<b>ASSESSMENT METHODS</b>	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
<b>TEACHING METHODS</b>	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

<b>AMBIT</b>	20987-Attività formative affini o integrative
<b>INDIVIDUAL STUDY (Hrs)</b>	51
<b>COURSE ACTIVITY (Hrs)</b>	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**

<b>Hrs</b>	<b>Frontal teaching</b>
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*

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<b>INDIVIDUAL STUDY (Hrs)</b>	51
<b>COURSE ACTIVITY (Hrs)</b>	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 communities. Methodologies and educational technologies for the study of the relationship of biology with the current society in relation to the environment and health (ie: 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. 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**

<b>Hrs</b>	<b>Frontal teaching</b>
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.