



General information	
Academic subject	TEACHING METHODS IN BIOLOGY
Degree course	<i>Environmental Biology</i>
Academic Year	2021/2022
European Credit Transfer and Accumulation System (ECTS)	4
Language	<i>Italian</i>
Academic calendar (starting and ending date)	March 2022 – June 2022
Attendance	<i>no</i>

Professor/ Lecturer	
Name and Surname	Cataldo Pierri
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Department and address	<i>Biology</i>
Virtual headquarters	
Tutoring (time and day)	On appointment

Syllabus	
Learning Objectives	-
Course prerequisites	- <i>Knowledge of general biology is required. Definition of a living being. The kingdoms of the living. Analogy and homology. The organization of living organisms. The main types of environments. Structures and functions of the main systems. Reproduction. Nucleic acids. The chlorophyll photosynthesis. Cellular respiration. Interactions between organisms. Evolution and adaptations</i>
Contents	<ul style="list-style-type: none">- <i>Didactic methodologies for the enhancement of scientific language and laboratory activities of biology</i>- <i>Epistemological foundations of animal biology: founding nuclei and structuring concepts</i>- <i>The intuition of biophilia</i>- <i>The planning of educational courses in biology</i>- <i>Levels of organization of biology, emergent properties, networks of concepts</i>- <i>The role of practical activities in teaching biology: design of laboratory and observation activities in nature.</i>- <i>Methods of approach to the observation of scientific phenomena: from observation to scientific experiment, hypotheses and theories, deduction, and induction</i>- <i>Biology teaching through case studies and peer learning</i>- <i>Approach to formalization: cataloging and classifying, concept of species, systematics, nomenclature, and taxonomy of animals</i>- <i>Analysis of the changing world: species to environment, adaptations, evolution of species (genetic variability, natural selection, speciation)</i>- <i>Didactics for projects on topics involving biology and society: environment, health, biotechnology.</i>- <i>Globalization in the animal world</i>- <i>Ecosystem services and human health, green economy and blue economy, conservation biology</i> <i>Laboratory activities, the use of the microscope, microstructure and taxonomy, the fertilization of the sea urchin, animal diversity</i>
Books and bibliography	<i>Emilio Padoa Schioppa - Metodi e strumenti per l'insegnamento e l'apprendimento</i>

	<i>della biologia – Edises Lectures by the teacher</i>
Additional materials	<i>The student is invited to deepen particular topics also with other digital contributions and available on the web.</i>

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
100	30		70
ECTS			
	4		
Teaching strategy		<i>case studies, modular programming, role-playing games, etc.</i>	
Expected learning outcomes			
Knowledge and understanding on:	<ul style="list-style-type: none"> - <i>Acquire the methods for the knowledge of the founding nuclei of biology and understand the role of didactics and methodologies in the teaching of biology through the reductionist / holistic approach useful for describing how biology assumes a decisive role in society for cultural and social aspects and sanitary</i> - <i>Application of the knowledge acquired for the purpose of teaching biology in the Secondary School, through frontal teaching, observation of natural phenomena and laboratory experiments</i> - <i>Acquisition of autonomy in the evaluation and interpretation of relations between species and with the environment, as well as in the promotion of surveys and didactic experiences that can facilitate the acquisition of knowledge.</i> - <i>Acquisition of methodological skills in dealing with the teaching of biology to get to the contents of this scientific discipline, fueling the desire for knowledge and promoting learning through the involvement of secondary school students in various teaching activities.</i> 		
Applying knowledge and understanding on:	<ul style="list-style-type: none"> - <i>Ability to disseminate the knowledge acquired on the methods and contents of biology to secondary school students, promoting constructive discussion on the issues of biology and new biotechnologies</i> 		
Soft skills	<ul style="list-style-type: none"> - <i>Knowledge and understanding</i> - <i>Ability to apply knowledge and understanding</i> - <i>Autonomy of judgment</i> - <i>Communication skills</i> - <i>Learning ability</i> 		

Assessment and feedback	
Methods of assessment	<i>Interactive lessons using PowerPoint, lesson simulations, case studies with territorial significance, educational workshop based on peer learning</i>
Evaluation criteria	<i>Oral interview Planning and Presentation of a Biology lesson for Secondary School students</i>
Criteria for assessment and attribution of the final mark	<i>Verification of the acquisition of the topics covered and the methods of biology. Assessment of the critical ability to use the notions of biology for the purpose of knowledge of natural phenomena. The student must show the ability to transfer knowledge to secondary school students through the use of examples and insights</i>



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DIPARTIMENTO DI BIOLOGIA

Additional information	