Testi del Syllabus

Resp. Did. **Matricola: null**

Anno offerta:	**2025/2026**
Insegnamento:	**2020011 - BIOLOGY**
Corso di studio:	**D720 - FOUNDATION COURSE IN ENGINEERING AND SCIENCE**
Anno regolamento:	**2025**
CFU:	**5**
Settore:	**NN**
Anno corso:	**1**
Periodo:	**Ciclo Annuale Unico**

Testi in italiano

Lingua insegnamento	English
Contenuti	PART 1: Introduction to Biology, Diversity of Life, and Evolution [4h]. The scientific method and the role of biology in applied sciences; structure and organization of life; viruses; cell theory; origins of eukaryotes and multicellularity; Darwin's theory of evolution; taxonomy, systematics, and phylogeny; diversity of life, including prokaryotes, protists, fungi, plants, and animals. PART 2: Cell Biology and Metabolism [16h]. The central role of carbon in biological systems; water and its essential properties for life; biological macromolecules such as proteins, nucleic acids, lipids, and carbohydrates; structure and function of prokaryotic and eukaryotic cells with a comparison between animal and plant cells; plasma membrane and transport mechanisms; cellular organelles and their functions; cellular metabolism including glycolysis, respiration, and photosynthesis; the cell cycle, mitosis, and meiosis. PART 3: Molecular Biology and Genetics [5h]. Discovery of DNA structure; from DNA to proteins, including the genetic code, protein synthesis, and gene regulation; Mendel's laws and inheritance patterns; fundamentals of human genetics. PART 4: Structure and Function of Organisms [10h]. Differences between unicellular and multicellular organization; structure and function of tissues, organs, and systems in animals; human organ systems including digestive, respiratory, circulatory, reproductive, excretory, endocrine, and nervous. PART 5: Evolution and Ecology [5h]. Reproductive strategies in animals; evolutionary theories and natural selection; ecosystem structure and energy flow; biogeochemical cycles; human impact on ecosystems and the biosphere.
Testi di riferimento	"Biology for AP® Courses", OpenStax, available online https://openstax.org/details/books/biology-ap-courses
Obiettivi formativi	The objective of this course is to equip students with a foundational understanding of essential biological concepts, serving as a preparatory framework for advanced studies in the life sciences. It aims to provide a thorough introduction to the fundamental biomolecules, cellular structure and metabolism, the organization and function of living systems, evolutionary mechanisms, and ecological interactions. By the conclusion of the course, students will have acquired a comprehensive pre-academic

	perspective on the significance of biology in elucidating life processes and its diverse applications across scientific disciplines
Prerequisiti	None
Metodi didattici	Lectures
Altre informazioni	--
Modalità di verifica dell'apprendimento	Exam: The assessment of learning is expressed on a thirty-point scale and will be carried out through a written test and an oral exam. A minimum score of 18/30 is required to pass

Obiettivi per lo sviluppo sostenibile

Codice	Descrizione

Testi in inglese

	English
	PART 1: Introduction to Biology, Diversity of Life, and Evolution [4h]. The scientific method and the role of biology in applied sciences; structure and organization of life; viruses; cell theory; origins of eukaryotes and multicellularity; Darwin's theory of evolution; taxonomy, systematics, and phylogeny; diversity of life, including prokaryotes, protists, fungi, plants, and animals. PART 2: Cell Biology and Metabolism [16h]. The central role of carbon in biological systems; water and its essential properties for life; biological macromolecules such as proteins, nucleic acids, lipids, and carbohydrates; structure and function of prokaryotic and eukaryotic cells with a comparison between animal and plant cells; plasma membrane and transport mechanisms; cellular organelles and their functions; cellular metabolism including glycolysis, respiration, and photosynthesis; the cell cycle, mitosis, and meiosis. PART 3: Molecular Biology and Genetics [5h]. Discovery of DNA structure; from DNA to proteins, including the genetic code, protein synthesis, and gene regulation; Mendel's laws and inheritance patterns; fundamentals of human genetics. PART 4: Structure and Function of Organisms [10h]. Differences between unicellular and multicellular organization; structure and function of tissues, organs, and systems in animals; human organ systems including digestive, respiratory, circulatory, reproductive, excretory, endocrine, and nervous. PART 5: Evolution and Ecology [5h]. Reproductive strategies in animals; evolutionary theories and natural selection; ecosystem structure and energy flow; biogeochemical cycles; human impact on ecosystems and the biosphere.
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	None
	Lectures
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	Exam: The assessment of learning is expressed on a thirty-point scale and will be carried out through a written test and an oral exam. A minimum score of 18/30 is required to pass

Obiettivi per lo sviluppo sostenibile

Codice	Descrizione