

## L-13 Class of the First-cycle degrees in Biological Sciences

### QUALIFYING EDUCATIONAL OBJECTIVES

The students who graduated in one of the first-cycle degrees of this class should:

- have an adequate basic knowledge of the different areas of the biological sciences;
- be able to acquire multidisciplinary methodological and technologic knowledge for the biological investigation;
- have solid expertise and operational as well as practical skills to perform biological analyses of various kinds, in relation to research activities, monitoring and control;
- be able to efficiently use a language of the EU, in addition to Italian, both in writing and in speaking, in the specific area of expertise, for exchange of information;
- possess adequate competences and instruments for information processing;
- be able to work in group, to operate with defined degrees of autonomy, to promptly fit into a work environment;
- possess the basic instruments for a continuous update of his / her own knowledge.

In particular, the professionalisms of the graduate students (*laureati*) of this class may find their actualization both in a path pointing at the basics of methodological aspects and theoretical knowledge - with the aim of avoiding the obsolescence of the acquired competences - that, although allowing direct access to the world of work, favors the prosecution of the studies; and in a path pointing at a more specific actualization of the acquired knowledge and skills using specific curricular routes and an elevated interaction with the world of work.

Main professional outlets for graduated students of this class are professional and technical activities in different areas, such as lab activities (biomedical, industrial, veterinary, alimentary, biotechnological in both public and private research or service structures) or analysis, control and management activities; in all public and private activities where classification, management and utilization of living organisms, as well as the management of the relationships between development and environmental quality, are needed; in multidisciplinary professional studies involved in the fields of environmental impact assessment, of projects for environmental conservation and restoration, of maintenance of biodiversity and of biological safety.

To these aims, the first-cycle degrees of this class should have in their study plans:

- activities to acquire the theoretical and operational background in relation to: biology of the microorganisms and of the vegetal and animal (humans included) organisms and species at the morphologic, functional, cellular, molecular and evolutionary levels; the mechanisms of reproduction and development; heredity; ecology, with reference to the presence and the role of organisms and to the interactions among the different components of ecosystems;
- sufficient background in Mathematics, Statistics, Informatics, Physics, and Chemistry;
- lab activities for at least 20 cfu in the different disciplinary sectors;
- external activities, such as apprenticeships in companies or in public administration structures and laboratories, stages in Italian or foreign universities with specific objectives, also within the frame of international agreements;
- different curricular study plans: at least one plan for the acquisition of a strong background knowledge allowing easy access to second-cycle degrees, or at least one plan more devoted to the acquisition of practical skills for rapid access to the world of work, for instance in analytical laboratories, in health care or industrial centers, in scientific information, in quality control, in the management of purification plants, and in all public or private field where the management of the relationship between development and environmental quality is needed.

## INDISPENSABLE EDUCATIONAL ACTIVITIES

<b>Educational Activities</b>	<b>Disciplinary field</b>	<b>Scientific/disciplinary sectors</b>	<b>CFU</b>	<b>Total CFU</b>
<b>Basic</b>	<b>Biologic Disciplines</b>	BIO/01 - General Botany BIO/02 - Systematic Botany BIO/04 - Vegetal Physiology BIO/05 - Zoology BIO/06 - Comparative Anatomy and Cytology BIO/07 - Ecology BIO/09 - Physiology BIO/10 - Biochemistry BIO/11 - Molecular Biology BIO/18 - Genetics BIO/19 - General Microbiology	24	48
	<b>Mathematic, physic, and computer disciplines</b>	FIS/01 - FIS/08 INF/01 - Informatics ING-INF/05 - Information elaboration systems MAT/01 - MAT/09	12	
	<b>Chemical disciplines</b>	CHIM/01 - Analytic Chemistry CHIM/01 - Physical Chemistry CHIM/03 - General and inorganic chemistry CHIM/06 - Organic Chemistry	12	
<b>Characterizing</b>	<b>Botanic, zoologic, and echologic disciplines</b>	BIO/01 - General Botany BIO/02 - Systematic Botany BIO/03 - Applied Environmental Botany BIO/05 - Zoology BIO/06 - Comparative Anatomy and Cytology BIO/07 - Ecology	12	42
	<b>Biomolecular disciplines</b>	BIO/04 - Vegetal Physiology BIO/10 - Biochemistry BIO/11 - Molecular Biology BIO/18 - Genetics BIO/19 - General Microbiology	12	
	<b>Physiologic and biomedic disciplines</b>	BIO/09 - Physiology BIO/12 - Clinic Biochemistry and Clinic Molecular Biology BIO/14 - Pharmacology BIO/16 - Human Anatomy MED/04 - General Pathology MED/42 - General and Applied Hygiene	9	
<b>TOTAL</b>				<b>90</b>