



# UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

## ECOLOGY

<b>Enrollment year</b>	2020/2021
<b>Academic year</b>	2021/2022
<b>Regulations</b>	DM270
<b>Academic discipline</b>	BIO/07 (ECOLOGY)
<b>Department</b>	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
<b>Course</b>	BIOLOGICAL SCIENCES
<b>Curriculum</b>	PERCORSO COMUNE
<b>Year of study</b>	2°
<b>Period</b>	1st semester (01/10/2021 - 14/01/2022)
<b>ECTS</b>	9
<b>Lesson hours</b>	72 lesson hours
<b>Language</b>	Italian
<b>Activity type</b>	WRITTEN TEST
<b>Teacher</b>	OCCHIPINTI ANNA CARMEN (titolare) - 5 ECTS MARCHINI AGNESE - 3 ECTS PAVAN GIANNI - 1 ECTS
<b>Prerequisites</b>	The following courses are preparatory to Ecology: General and Inorganic Chemistry, Organic Chemistry, Elements of Physics, with particular reference to: molecular structure of the matter, chemical bonds, redox reactions, the chemical-physical properties of water, the laws of thermodynamics. The understanding of Ecology also requires knowledge of general and evolutionary Zoology and General Botany.
<b>Learning outcomes</b>	The aim of the course is to provide students with the basic knowledge necessary in understanding the complexity of interaction among organisms and with abiotic factors, as a fundamental tool in dealing with environmental issues.
<b>Course contents</b>	1) Introduction: definition of Ecology, relationship with other disciplines

and role in the development of Science.

2) Adaptation and evolution: natural selection and heritability.

3) The physical environment: climate, aquatic environment; terrestrial environment; adaptations of plants and animals to the environment.

4) Populations: properties, quantification, growth and intraspecific regulation.

5) Species interactions: interspecific competition, predation, parasitism, mutualism: ecological, evolutionary and quantitative aspects.

6) Community Ecology: factors influencing community structure; community dynamics; species richness and diversity; landscape ecology.

7) Ecosystem ecology: ecosystem energetics; energy flow nutrient cycling. Primary and Secondary production. Trophic chains. Decomposition; biogeochemical cycles.

8) Biogeographical ecology: types of ecosystems. Patterns of biological diversity. Alien species and problems of biodiversity conservation.

9) Human ecology: sustainability, resource use.

10) Global changes.

#### Teaching methods

Frontal lessons and practical exercises in classroom.

The course includes lectures and exercises in the classroom. For the learning of some topics involving an analytical-quantitative approach, some exercises are proposed in the classroom, to be solved by the lecturer together with the students.

Course attendance is strongly advised.

#### Reccomended or required readings

T. M.Smith & R.L. Smith Elements of Ecology 9th edition (MyLab). Pearson Publisher.

#### Assessment methods

The final written test consists of 11 multiple choice questions . Each answer has to be sintetically justified. Each corrected answer together with its explanation corresponds to 3 points. The written text may be followed by an oral discussion, depending on whether the student wishes to improve his/her mark. During the oral discussion, the capability of the student to correlated the different issues will be evaluated.

#### Further information

Additional studying and working material will be directly provided by the teachers on UNIPV KIRO website (<http://kiro2014.unipv.it/idcd/>).

#### Sustainable development goals - Agenda 2030

The contents of this course specifically address the following Goals of the 2030 UN Agenda for a Sustainable Development:

Goal 13. Take urgent action to combat climate change and its impacts

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

[The goals](#)