COURSE OUTLINE

1. GENERAL

SCHOOL	NATURAL SCIENCES		
ACADEMIC UNIT	BIOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**ΒΙΟ_ΡΥΠ**	**SEMESTER**	**6-8**
COURSE TITLE	**ENVIRONMENTAL POLLUTION**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures and laboratory exercises (interactive teaching)	3	6

COURSE TYPE	General background, specialised general knowledge, skills development.
PREREQUISITE COURSES	Students with basic knowledge in the fields of Ecology, Organic and Inorganic Chemistry, Plant and Animal Physiology.
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://eclass.upatras.gr/courses/BIO210/

2. LEARNING OUTCOMES

Learning outcomes

Elective undergraduate course that aims to acquire general knowledge on environmental pollution management issues.

Within the course the students will acquire the necessary knowledge related to:

- → the most important categories of pollutants/contaminants.
- → the entrance of chemical substances/pollutants into the environment.
- → the effects of pollutants on different levels of organism function (cellular, biochemical, molecular).

The aim of the course is to inform students about:

- → the current knowledge about the environmental status of ecosystems both in Mediterranean area and Greece.
- → the strategies that should be performed for assessing the health status of aquatic ecosystems (e.g. chemical and biological monitoring).
- → the different stages/processes of urban and industrial wastes treatment.
- → the Renewable Energy Sources (RES) as well as their role as alternative and environmentally friendly energy saving solutions.
- → the basic principles of (eco)-toxicology, via students' involvement in the implementation of simulation exercises (e.g. toxicity tests, using microalgae and organisms-bioindicators, water quality analysis, etc.).

The current course will enable students to:

- → interpret various phenomena related to the presence of pollutants in the environment (eutrophication, greenhouse effect, ozone hole, etc.).
- → understand basic phenomena, commonly related with the presence and the effects of environmental pollutants (e.g. bioaccumulation, etc.).
- → understand and apply water quality analysis methods.
- → know the main processes commonly performed in Waste Water Treatment Plants (WWTPs).
- → suggest solutions and strategies for assessing environmental issues commonly related with the presence of pollutants.
- → acquire the appropriate skills for conducting inter-scientific collaborations for assessing environmental pollution issues.

General Competences
After the end of the current course, the degree-holder will be able to: → search, analyze and synthesize biological data, using the necessary technologies. → make the appropriate decisions, regarding the scientific approach of environmental issues. → work in international and interdisciplinary environment. → plan and manage environmental projects. → respect and protect and natural sources. produce free. Creative and inductive thinking.

3. SYLLABUS

Environmental pollution; Pollutants and xenobiotic compounds; Environmental transport and fate of pollutants; Pollutants' effects on biota (organism behavior, cellular, biochemical and molecular effects); Environmental status of Mediterranean area and Greece (socio-economic effects of pollution); Monitoring strategies of pollution (chemical monitoring and biomonitoring); Wastewater Treatment Plant processes; Renewable Energy Sources (RES) and Environment.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Using information and communication technologies (PowerPoint presentations and video animation) during the teaching process.	
TEACHING METHODS	***Activity***	***Semester workload***
	Lectures (13 x 2h)	26
	Laboratory practice (4 x 1h)	4
	Laboratory report	4
	Interactive teaching (1 x 2h)	2
	Study and analysis of bibliography	5
	Project	15
	Self-study	94
	Course total	**150**
STUDENT PERFORMANCE EVALUATION	Student performance evaluation is conducted in Greek. Specifically, it includes: - Student participation in laboratory exercises and delivery of laboratory reports. - Presentation of a project related to the material and the intended outcomes of the course (up to 30% of the final grade). - Written exams, with short-answer questions, open-ended questions, problem solving (70% of final grade). Grading scale: 1-10. Passing grade: 5	

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

→ Biological effects of environmental Pollutants – Ecotoxicology: experimental approaches and outcomes (university notes; Ass. Prof. Stefanos Dailianis, in Greek).

→ Hill MK 2004. Understanding Environmental Pollution: A Primer (2nd Edition). CUP.

→ Rana SVS 2006. Environmental Pollution: Health and Toxicology. Alpha Science International Ltd.

→ Freedman B 1995. Environmental Ecology, Second Edition: The Ecological Effects of Pollution, Disturbance, and Other Stresses. Academic Press.

Related academic journals:
Environmental Pollution, Chemosphere, Aquatic Toxicology, Environmental International, Environmental Research.