



COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Technology		
ACADEMIC UNIT	Department of Environmental Sciences		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AY801	SEMESTER	8th
COURSE TITLE	ECOTOXICOLOGY		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Teaching Hours		5	6
COURSE TYPE	General Background		
PREREQUISITE COURSES	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/ENV_U_162		

(2) LEARNING OUTCOMES

Learning outcomes
Environmental pollution and exposure to toxic and hazardous chemicals can cause damage, morbidity, and mortality to biological systems. Ecotoxicology studies the effects of toxic chemicals on the ecosystem, considering the ecological dimensions and the complexity of interactions among biological organisms and between organisms and the natural environment in which they grow. Determining the biological effects of toxic chemicals on organisms is accomplished either by studying specific effects on particular species or by examining effects at higher levels of biological organization within individual organisms or populations. The course covers the structures, properties, and fate of pollutants in the environment, discusses the effects of pollutants on living organisms at the molecular, cellular, and individual levels, and explores their impacts on populations, communities, and entire ecosystems. Additionally, the use of ecotoxicology in biomonitoring environmental pollution, investigating environmental issues, and assessing environmental risks is also addressed. Upon successful completion of the course, students will have acquired the following specific knowledge, skills, and competences: • Understanding of the fundamental principles of environmental toxicology and pollution. • Ability to assess the toxicity of pollutants within the environment. • Proficiency in utilizing primary methodologies for evaluating environmental toxicity. • Identification of ecotoxicological challenges and formulation of suitable remedial strategies.
General Competences
• Search for, analysis and synthesis of data and information, with the use of the necessary technology • Adapting to new situations • Decision-making • Working independently • Team work • Production of new research ideas • Respect for the natural environment • Production of free, creative and inductive thinking

(3) SYLLABUS

• Introduction to Ecotoxicology - Basic concepts and principles. • Environmental Pollutants - Movement and processes that determine their environmental fate and distribution in environmental substrates.
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- Toxicity tests on terrestrial and aquatic organisms.
- Risk assessment.
- Biochemical effects of environmental pollutants.
- Effects of environmental pollutants on physiology.
- Effects resulting from the interaction of pollutants.
- Biomarkers.
- In situ biological monitoring.
- Effects of pollutants on populations and communities.
- Future perspectives.

Laboratory exercises:

- Toxicity testing using Microtox for environmental samples
- Toxicity testing of environmental samples using *Daphnia magna*
- Toxicity testing of pesticides on soil microorganisms
- Conducting risk assessment exercises for pesticides

(4) TEACHING and LEARNING METHODS – EVALUATION

DELIVERY	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of PowerPoint slides • View material in video • Accessing and utilizing resources from websites • Communication with students via e-mail • Use of asynchronous distance learning (e-class)	
TEACHING METHODS	Activity	Semester workload
	Lectures	39
	Laboratory practice	26
	Study and analysis of bibliography	55
	Essay writing	30
	Course total (25 hours workload per credit)	150
STUDENT PERFORMANCE EVALUATION	Students' performance is evaluated in the Greek language. The final grade is determined by: • A written exam (at the end of the semester) that contributes 80% to the final grade, applying one or more of the following evaluation methods: Multiple-choice questions, short-answer questions, true/false, fill in the blanks, matching. • The students' participation in laboratory practice activities and the preparation and delivery of related assignments during the semester, which contribute 20% to the final grade. Final Grade = 80% Exam Grade + 20% Assignments Grade	

(5) ATTACHED BIBLIOGRAPHY

- Valavanidis, Ath. (2007) *Ecotoxicology and Environmental Toxicology - Research methodology for the assessment of ecological risk from hazardous chemicals*. Publication: Department of Chemistry, University of Athens. (in Greek)
- Walker, C. H., Sibly, R. M., Hopkin, S. P. & Peakall, D. B. (2012) *Principles of Ecotoxicology - 4th Edition*. Athens: Klidarithmos Publications, ISBN: 978-960-645-017-4. (in Greek)