



## COURSE OUTLINE

### (1) GENERAL

SCHOOL	School of Technology		
ACADEMIC UNIT	Department of Environmental Sciences		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AE810	SEMESTER	8th
COURSE TITLE	TOXIC and HAZARDOUS WASTE MANAGEMENT		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS		CREDITS
Teaching Hours	3		3
COURSE TYPE	Specialised general knowledge		
PREREQUISITE COURSES	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	<a href="https://eclass.uth.gr/courses/ENV_U_172">https://eclass.uth.gr/courses/ENV U 172</a>		

### (2) LEARNING OUTCOMES

<b>Learning outcomes</b>
<p>The precise definition of "toxic and hazardous waste" has today been broadened to include a wide variety of waste with properties that make it hazardous to the environment and/or human health. Hazardous waste is defined as solid, liquid and gaseous waste under pressure, and those waste materials which, due to their quantity, concentrations or physical, chemical or infectious properties, may (a) have lethal effects and/or contribute significantly to an increase in mortality and/or spread serious incurable diseases or diseases leading to physical incapacitation and (b) pose a significant risk to human health and/or the environment if not effectively treated or if not transported, stored or disposed of in an appropriate manner. The course aims to present the categories, properties, threat to public health and human consequences of hazardous and toxic waste and materials, as well as their basic treatment methods.</p> <p>Upon successful completion of the course, students will have acquired the necessary knowledge, skills and competence, and will be able to:</p> <ul style="list-style-type: none"><li>• Describe the main categories of hazardous and toxic waste, the exposure routes to the human body and their properties regarding their effects on human health and the environment.</li><li>• Propose and evaluate processing technologies for waste materials, as well as their management methods.</li></ul>
<ul style="list-style-type: none"><li>• Adapting to new situations</li><li>• Working in an interdisciplinary environment</li><li>• Production of new research ideas</li><li>• Respect for difference and multiculturalism</li><li>• Respect for the natural environment</li><li>• Criticism and self-criticism</li><li>• Production of free, creative and inductive thinking</li></ul>

### (3) SYLLABUS

<ul style="list-style-type: none"><li>• Introduction – Definitions – Classification – Labelling – statutory context.</li><li>• Risk analysis.</li><li>• Management of toxic and hazardous waste.</li><li>• Sanitary burial</li><li>• Physicochemical, Thermal, Biological processes.</li><li>• Electronic and electrical waste.</li><li>• Asbestos, Dioxins, Furans, Polychlorinated biphenyls (PBC's).</li></ul>
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- Hospital waste.
- Nuclear waste.

#### (4) TEACHING and LEARNING METHODS – EVALUATION

<b>DELIVERY</b>	Face-to-face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>	<ul style="list-style-type: none"> <li>• Use of PowerPoint slides</li> <li>• View material in video</li> <li>• Communication with students via e-mail</li> <li>• Use of asynchronous distance learning (e-class)</li> </ul>	
<b>TEACHING METHODS</b>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39
	Study and analysis of bibliography	26
	Project	10
	<b>Course total (25 hours workload per credit)</b>	<b>75</b>
<b>STUDENT PERFORMANCE EVALUATION</b>	<p>Students' performance is evaluated in the Greek language. The final grade is determined by:</p> <ul style="list-style-type: none"> <li>• A written exam (at the end of the semester) that contributes 70% to the final grade, applying one or more of the following evaluation methods: Multiple choice questions, short-answer questions, problem solving.</li> <li>• Students' participation in laboratory practice activities and the preparation and delivery of related assignments (during the semester) that contribute 30% to the final grade.</li> </ul> <p><b>Final Grade = 70% Exam Grade + 30% Assignments Grade</b></p>	

#### (5) ATTACHED BIBLIOGRAPHY

- Gidarakos, E. (2006) *Hazardous Waste*. Thessaloniki: Zygos Publications. (in Greek)
- Support to Member States in improving hazardous waste management based on assessment of Member States' performance, European Commission, Reference: ENV/2014/SI2.689463/ETU/A2.
- Wang, L. K., Shammass, N. K., Hung, Y. (eds) (2008) *Advances in Hazardous Industrial Waste Treatment*. CRC Press, Taylor & Francis Group.