



COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Technology		
ACADEMIC UNIT	Department of Environmental Sciences		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AY704	SEMESTER	7th
COURSE TITLE	WATER QUALITY and TREATMENT		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Teaching Hours		4	5
COURSE TYPE	Special Background		
PREREQUISITE COURSES	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/ENV_U_158		

(2) LEARNING OUTCOMES

Learning outcomes
Upon successful completion of the course, students will have acquired specific knowledge, skills and competences, and will be able to: • Clearly identify the different uses of water. • Choose the water quality control criteria. • Understand how important it is to take into account many parameters (chemical, microbiological, physical, radiological) for the final assessment of water quality. • Evaluate water quality laboratory results. • Assess whether human health is exposed to hazard by poor water quality, based on current legislation. • Provide consultancy services on water treatment and technology issues.
General Competences
• Adapting to new situations • Decision-making • Working independently • Team work • Working in an international environment • Working in an interdisciplinary environment • Production of new research ideas • Respect for the natural environment • Showing social, professional and ethical responsibility and sensitivity to gender issues • Criticism and self-criticism • Production of free, creative and inductive thinking

(3) SYLLABUS

• Importance of water. Hydrological cycle. Water composition. • Waterborne epidemics. • Biological & physicochemical processes in water. • Surface, underground, marine, drinking, spa and bathing waters. Differentiations & their quality characteristics. • Differentiation of natural & polluted waters. • Effect of pollution on water quality characteristics. • Toxic organic compounds.

- Water pretreatment methods.
- Physical & chemical precipitation of water.
- Flocculation, adsorption, ion exchange.
- Use of selective membranes for microfiltration, ultrafiltration, nanofiltration.
- Reverse osmosis. Desalination.
- Legislation.

(4) TEACHING and LEARNING METHODS – EVALUATION

DELIVERY	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of PowerPoint slides • View material in video • Communication with students via e-mail • Use of asynchronous distance learning (e-class)	
TEACHING METHODS	Activity	Semester workload
	Lectures	26
	Laboratory practice	26
	Study and analysis of bibliography	47
	Project	26
	Course total (25 hours workload per credit)	125
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 makes up 70% of the final grade and includes one or more of the following assessment methods: Multiple-Choice Test, Short-Answer Questions, Problem-Solving. • The elaboration of an individual project, in the 2nd half of the semester, which forms 30% of the final grade. The individual project may be presented by the students in class. Final Grade = 70% Exam Grade + 30% Assignment Grade	

(5) ATTACHED BIBLIOGRAPHY

- Mitrakas, M. (2001) *Quality characteristics and water treatment*. Thessaloniki: TZIOLA Publications. (in Greek)
- Pontius, F.W. (Technical Editor) (1990) *Water Quality and Treatment: a handbook of community water supplies / American Water Works Association*. 4th Edition, New York: McGraw-Hill Inc. ISBN 0-07-001540-6.
- Tsonis, S. (2003) *Water purification*. Athens: Papasotiriou Publications. (in Greek)