

COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Environment		
ACADEMIC UNIT	Department of Environment		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	203Y	SEMESTER	3
COURSE TITLE	Introduction to Environmental Engineering		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
	Theory - Lectures	2	
	Exercises	1	
	Total credits		6
COURSE TYPE	General background		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (tutorials)		
COURSE WEBSITE (URL)	http://www.env.aegean.gr/studies/undergraduate-degree/curriculum/introduction-to-environmental-engineering/		

(2) LEARNING OUTCOMES

Learning outcomes
<ol style="list-style-type: none"> 1. To understand the basic principles of environmental engineering 2. To understand the main processes/methods that are used in environmental technology 3. To apply mass and energy balances to environmental problems 4. To apply simple mathematical equations for the estimation of population growth and resources production/consumption 5. To apply simple equations for evaluating the performance of wastewater and waste management systems 6. To calculate basic operational parameters of water and wastewater treatment systems 7. To compare different solid waste management methods
General Competences
<p>Search for, analysis and synthesis of data and information, with the use of the necessary technology</p> <p>Team work</p> <p>Respect for the natural environment</p> <p>Criticism</p>

(3) SYLLABUS

1. Introduction – Mass balances
2. Mass balances
3. Energy balances (1st thermodynamic law)
4. Energy balances (2nd thermodynamic law)
5. Population growth (Exponential growth, Sigmoid growth curve)
6. Natural resources use (Gauss curve)
7. Water quality (pollutants, Streeter-Phelps equation)
8. Water treatment (coagulation, sedimentation, filtration, disinfection)
9. Wastewater treatment (primary and secondary treatment)
10. Sludge treatment, sludge and wastewater reuse
11. Solid waste management (quantity, composition of municipal solid waste)
12. Solid waste management (collection, recycling)
13. Solid waste management (composting, incineration, landfilling)

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY.	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Power Point, Use of e-mail	
TEACHING METHODS	<i>Activity</i>	<i>Semester workload</i>
	Lectures	26
	Exercises	13
	Team essays	30
	Literature analysis	88
	Course total	157
STUDENT PERFORMANCE EVALUATION	Language of evaluation: Greek A. 5 sets of team essays (20%) B. Compulsory mid-semester examination (40%) C. Compulsory final examination (40%)	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Πηλίνης Χ., Στασινάκης Α. (2018) Εισαγωγή στην Περιβαλλοντική Μηχανική και Επιστήμη (3η έκδοση), εκδόσεις Κλειδάριθμος
- Κουγκολος Α.Γ. (2005) Εισαγωγή στην Περιβαλλοντική Μηχανική, Εκδ. Τζιόλα, Θεσσαλονίκη
- Masters G.M. (1996), "Introduction to environmental engineering and science", 2nd edition, Prentice Hall, New Jersey, USA
- Kiely G. (1996), "Environmental engineering", Irwin/Mc Graw Hill, UK
- Gleick P.H. (1993), "Water in crisis: A guide to the World's fresh water resources", Oxford University Press, New York, USA
- Crites and Tchobanoglous (1998), "Small and decentralised wastewater management systems", WCB Mc Graw-Hill, USA

- Related academic journals:

- Water Research
- Science of the Total Environment
- Chemosphere
- Environmental Pollution