

## ΠΕΡΙΓΡΑΜΜΑ ΜΑΘΗΜΑΤΟΣ

<b>FACULTY/SCHOOL</b>	TECHNOLOGY		
<b>DEPARTMENT</b>	ENVIRONMENTAL SCIENCES		
<b>LEVEL OF STUDY</b>	<i>Undergraduate</i>		
<b>COURSE UNIT CODE</b>	<b>NEW COURSE</b>	<b>SEMESTER</b>	H (6 <sup>th</sup> )
<b>COURSE TITLE</b>	SOLID WASTE MANAGEMENT & PROCESSING TECHNOLOGIES		
<b>INDEPENDENT TEACHING ACTIVITIES</b> In case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
<b>THEORETICAL BACKGROUND</b>		3	3
<b>LABORATORY</b>		2	2
<i>Προσθέστε σειρές αν χρειαστεί. Η οργάνωση διδασκαλίας και οι διδακτικές μέθοδοι που χρησιμοποιούνται περιγράφονται αναλυτικά στο 4.</i>		5	6
<b>COURSE TYPE</b> Background knowledge, Scientific expertise, General Knowledge, Skills Development	BACKGROUND		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION &amp; EXAMINATION/ASSESSMENT:</b>	GREEK		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	YES		
<b>COURSE WEBSITE (URL)</b>			

### (2) LEARNING OUTCOMES

#### Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:

APPENDIX A: Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework. Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and

APPENDIX B: Guidelines for writing Learning Outcomes

The purpose of the course is for the student to become acquainted with the nature of solid wastes,

their sources and their composition. Also the student will learn of the methods of solid waste management such as recycling, combustion with energy recovery, anaerobic and aerobic digestion and land disposal.

**General Competences**

*Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?*

*Search for, analysis and synthesis of data and information by the use of appropriate technologies, Adapting to new situations Decision-making Individual/Independent work Group/Team work, Working in an international environment, Working in an interdisciplinary environment, Introduction of innovative research, Project planning and management, Respect for diversity and multiculturalism, Environmental awareness, Social, professional and ethical responsibility and sensitivity to gender issues, Critical thinking, Development of free, creative and inductive thinking.*

- Search, analyze and synthesize data and information, using the necessary technologies
- Decision making
- Autonomous work
- Teamwork
- Project design and management
- Respect for the natural environment
- Promoting free, creative and inductive thinking

**(3) COURSE CONTENT**

**Theory**

Introduction into the nature of solid wastes, main sources, composition, physical, chemical and biochemical characteristics. Temporary disposition and hauling. Solid waste processing stations. Methods of recycling, combustion of rdf and heat recovery. Initial investment and operating costs for combustion utilities and land disposal facilities. Advantages and disadvantages of management methods. Centers for hand or mechanical selecting and sorting of recyclable materials. Land disposal facilities. Criteria for selecting the placement of land disposal facility, structure of land disposal facility, design and isolation of land disposal facilities, protection of the underground environment. Management of the biogas produced. Management of run-off liquid waste effluents from land disposal facilities. Environmental restoration of land disposal facilities.

**(4) TEACHING METHODS-ASSESSMENT**

<b>MODES OF DELIVERY</b> Face-to-face, in-class lecturing, distance teaching and distance learning etc.	<ul style="list-style-type: none"> <li>• Lectures in the classroom or by distance</li> <li>• Team discussion</li> <li>• Laboratory exercises</li> </ul>	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b> Use of ICT in teaching, Laboratory Education, Communication with students	<ul style="list-style-type: none"> <li>• Powerpoint.</li> <li>• View video material</li> <li>• e-mail.</li> <li>• e-class</li> </ul>	
<b>COURSE DESIGN</b>	<b>Activity</b>	<b>Semester Workload</b>

<p>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc. The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</p>	Lectures	39
	Problem solving	20
	Team Working-Laboratory	30
	Educational visits	25
	Homework(s)	16
	Individual Theory Study	20
	<b>Course total (25 hours of workload per credit unit)</b>	<b>150</b>
<p><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b> Detailed description of the evaluation procedures:</p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, openended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically, defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<ul style="list-style-type: none"> <li>• Midterm (optional, exam or homework assignment) = 40%</li> <li>• 60% final exam, or 100% if midterm exam is not given</li> </ul>	
<p><b><u>SUGGESTED BIBLIOGRAPHY:</u></b></p> <ol style="list-style-type: none"> <li>1. A. Skordillis, (2006), Non-Toxic solid waste disposal, ION Printing, ISBN: 960-411-130-2, 2006.</li> <li>2. Παναγιωτακόπουλος Δ., (2007), Βιώσιμη Διαχείριση Αστικών Αποβλήτων, Β' Έκδοση, Εκδότης: Μάρκου &amp; ΣΙΑ Ε.Ε.</li> <li>3. Tchobanoglous G., and Kreith F., (2018), Διαχείρισης Στερεών Αποβλήτων, Β' Έκδοση, Εκδόσεις Τζιόλα.</li> <li>4. Κόλλιας Π., (1993), Απορρίμματα: Αστικά - Βιομηχανικά, ISBN: 960-220-270-X, 1993.</li> </ol> <p><b><u>Complementary bibliography</u></b></p> <p>Instructor class notes</p>		