

DEREE COLLEGE SYLLABUS FOR:	
ES 4135 SUSTAINABLE USE OF RESOURCES AND WASTE MANAGEMENT	
3/0/3	
UK LEVEL: 6	
UK CREDITS: 15	
(Updated Fall 2022)	
PREREQUISITES:	ES1010 Environmental Science: Energy Resources and Pollution
CATALOG DESCRIPTION:	Integrated Solid Waste Management with emphasis on Waste Prevention, Reuse, Recycling and Composting. Discussion of principles and policies aiming at Zero Waste societies. Discussion of Municipal Solid Waste Management Systems based on current Environmental E.U Policy. Economic and regulatory tools applied in order to promote prevention, reuse and recycling strategies and implementation of the “polluter pays principle”. Discussion of disposal options, landfills and incinerators, with emphasis on their environmental impacts.
RATIONALE:	The increasing amount of solid waste generated in Greece and other E.U. countries reflects the system failure to use resources in a sustainable, efficient and cost-effective manner. Sustainable solutions involve the implementation of the Prevent-Reuse-Recycle Waste Management hierarchy adopted by the EU Directive on Waste. The course provides a background on issues such as solid waste generation patterns, waste stream characteristics, EU and Greek legislation on solid waste as well as waste management options, with emphasis on practices and policies that lead to waste minimization and efficient use of resources. It is a course designed for environmental studies majors and aims to give them a thorough understanding of waste management issues and to provide them with skills for the selection, design and implementation of the appropriate waste management plans at regional and local levels.
LEARNING OUTCOMES:	As a result of taking this course, the student should: <ol style="list-style-type: none"> 1. Demonstrate knowledge of core concepts and principles on integrated solid waste management. 2. Apply the concept of sustainability to the selection and design of solid waste management systems. 3. Demonstrate knowledge of the solid waste management hierarchy (prevent – reuse -recycle) embraced by the EU and Greek solid waste legislation and understand how this influences future patterns of waste generation. 4. Categorize data and information collected on waste management systems and use them in order to propose solutions for the benefit of the society. 5. Demonstrate ability to plan, conduct and present an independent project effectively and appropriately with reliance on guidance. Demonstrate ability to communicate research findings effectively in several forms (e.g. written, graphical and verbal), and defend them in a professional manner.
METHOD OF TEACHING AND LEARNING:	In congruence with the learning and teaching strategy of the college, the following tools are used: <ul style="list-style-type: none"> • Class lectures, interactive learning (class discussions, group work), video presentations, and practical problems solved in class. • Exercises and primary source documents are assigned as homework, the answers and critical response to which are reviewed in class • Students’ projects and presentations

	<ul style="list-style-type: none"> Office hours: students are encouraged to make full use of the office hours of their instructor, where they can ask questions, see their exam paper, and/or go over lecture/lab material. Use of a blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources. 						
ASSESSMENT:	<p>Summative:</p> <table border="1"> <tr> <td>Project (3,000-3,500 words)</td> <td>40%</td> </tr> <tr> <td>Final examination (2 hours)</td> <td>60%</td> </tr> </table> <p>Formative:</p> <table border="1"> <tr> <td>Critical response to selected questions during the semester – including a sample test</td> <td>0</td> </tr> </table> <p>The formative tests aim to prepare students for the final examination and for the research project. The student project primarily tests learning outcomes 4 and 5 and, depending on the topic, learning outcomes 1 and/or 2 and/or 3. The final examination tests learning outcomes 1, 2, 3 and 4.</p>	Project (3,000-3,500 words)	40%	Final examination (2 hours)	60%	Critical response to selected questions during the semester – including a sample test	0
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Final examination (2 hours)	60%						
Critical response to selected questions during the semester – including a sample test	0						
INDICATIVE READING:	<p>Required Reading:</p> <ul style="list-style-type: none"> Tchobanoglous, G. and Kreith, F. 2002. <i>Handbook of Solid Waste Management</i>. 2nd Edition, New York: McGraw-Hill, 2002 Selected articles from scientific journals and the internet 						
INDICATIVE MATERIAL: (e.g. audiovisual, digital material, etc.)	<p>REQUIRED MATERIAL: N/A</p> <p>RECOMMENDED MATERIAL: N/A</p>						
COMMUNICATION REQUIREMENTS:	Verbal skills using academic/professional English						
SOFTWARE REQUIREMENTS:	Word, PowerPoint, Excel						
WWW RESOURCES:	<ul style="list-style-type: none"> Handbook of Solid Waste Management http://www.eea.eu.int/ http://www.epa.gov/ http://teachers.egfi-k12.org/website-think-green/ http://ec.europa.eu/environment/waste/framework/index.htm http://www.rreuse.org http://www.ecorec.gr/econew/ http://www.eedsa.gr/ http://www.herrco.gr/ 						
INDICATIVE CONTENT:	<ol style="list-style-type: none"> Integrated Solid Waste Management Solid Waste EU and Greek Legislation Planning for Solid Waste Management programs Solid Waste Stream Characteristics Source Reduction: Quantity and Toxicity Waste Collection Recycling Special Waste Streams Composting: A Sustainable Solution for Bio-waste Waste To Energy Facilities 						

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| | <ol style="list-style-type: none">11. Landfills12. Siting Municipal Solid Waste Facilities13. Financing and Life-cycle Costing of Waste Management. |
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