COURSE OUTLINE Water and green technologies

EDUCATION LEVEL	7		
CODE	WBCC - 533op	SEMESTER	2nd
TITLE	Water and green technologies		
TEACHING ACTIVITIES		HOURS/WEEK	ECTS
Lectures, Practice exercises, homeworks		3	6
TYPE OF COURSE	Elective course (in both specializations)		
PREREQUISITE KNOWLEDGE	-		
LANGUAGE OF INSTRUCTION AND ASSESSMENT	Greek		
AVAILABILITY TO ERASMUS STUDENTS	-		
WEBSITE (URL)	https://eclass.uoa.gr/courses/GEOL582/		

LEARNING OUTCOMES

Learning Outcomes/Subject Specific Competences
Upon completion of the course, students will be able to: • Develop innovative water management plans that include appropriate green technology techniques (case study –based approaches) • Analyze problems incorporating the utilization of desalination techniques • Apply modern methods of soil and river engineering.

Generic Competences
Through this course, students will learn how to adopt and use green technologies to manage water resources. Case studies in areas such as solar, wind and geothermal energy for water resource management will be discussed. In addition, desalinated water will be studied, which is essentially an inexhaustible resource, the use of which in conditions of water scarcity can significantly reduce the problem of water supply. In addition, methods based on soil and river engineering are taught for more efficient management of water resources. These are methods that are more cost-effective and environmentally friendly than conventional engineering methods that are more applied and pre-planned on larger scales.

COURSE CONTENT

Course objects: • Understanding how to use the most innovative green technologies to improve water management • Understanding desalination techniques • Understanding the advantages and disadvantages of soil-river engineering methods • Comparingsoil and river engineering methods with classical techniques

LEARNING ACTIVITIES - TEACHING and ASSESSMENTS METHODS

MODE OF DELIVERY	Distance learning		
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	In Teaching: – Presentations using multimedia (images, animation, video). – Use of computers and specialized software and / or the use of MS programs (mainly MS Excel). – Completion of questionnaires. – PowerPoints (ppt) uploads in the e-class platform. In Communication with students: – Support of the learning process through the electronic platform e-Class (announcements, information, messages, documents, assignments, questionnaires, exercises, diary, user groups, multimedia, links, grading, e-book, etc.), and through personal contact.		
PLANNED LEARNING ACTIVITIES	Activity	Semester Workload	
	Lectures	3 hr x 13 weeks	
	Practice Exercises	50 hr	
	Individual Project	70 hr	
	Total	159 hr	
ASSESSMENT METHODS AND CRITERIA	Individual Exercises 20% Individual HomeWorks 30% Final Exams 50%		

TEXTBOOKS - BIBLIOGRAPHY

Papers:
- M. Young, C. Esau (Editors). Investing in Water for a Green Economy: Services, Infrastructure, Policies and Management. Routledge pp. 256 pages (2011).
- Cipollina, G. Micale, Lucio Rizzuti (Editors). Seawater Desalination: Conventional and Renewable Energy Processes (Green Energy and Technology). Springer; 1st Edition. pp. 307 (2009).
- R. Studer, H. Zeh, Soil Bioengineering: Construction Type Manual. vdf Hochschulverlag AG, an der ETH Zurich pp. 448 (2014).

Journals:
- International Journal of Water Resources Development, Taylor & Francis
- Water Resources Management, Springer
- Environmental Processes, Springer
- Water, MDPI