



COURSE OUTLINE

1. GENERAL					
SCHOOL	School of Engineering				
DEPARTMENT	Department of Civil Engineering/ Master Program				
	'Hydrometeorological Disasters Program				
LEVEL OF STUDIES	7				
COURSE CODE	ΦΞΣΦΠΚΤΓ	SEMESTER 2 nd			
COURSE TITLE	Drought effect	rought effects in the natural environment and agriculture			
TEACHING ACT	IVITIES		TEACUUNIC		
If the ECTS Credits are distributed in distinct parts of the course e.g.					
lectures, labs etc. If the ECIS Credits	ts are awarded to the whole HOURS PER ECTS CREDITS			IS CREDITS	
corresponding FCTS Credits			VVEEN		
		3		6	
Please, add lines if necessary. Teaching methods and organization of					
the course are described in section 4.					
COURSE TYPE	Scientific Area	I			
Background, General Knowledge, Scientific					
	NO				
FREREQUISITES.	NO				
TEACHING & EXAMINATION	Greek/ English)			
LANGUAGE:					
COURSE OFFERED TO ERASMUS	NO				
STUDENTS:					
COURSE URL:	https://eclass.duth.gr/courses/1021376/				
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2. LEARNING OUTCOMES

Learning Outcomes Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.				
Once the course is completed, participants will be able to:				
 Implement appropriate techniques and models to assess the aquatic potential of an area. Provide for periods of drought 				
 To propose appropriate solutions for both technical and craft activities Understand climate change and explore possible solutions that they can implement. 				
 Understand and manage water resources. Be aware of the impact that climate change will have on the human, natural and built environment, covering key aspects such as water resources, floods, sea level rise and coasts, health, transport, infrastructure and cities. 				
 Be able to evaluate, propose and implement sustainable adaptation strategies to key infrastructure and environmental arrangements. Know precision farming methods. 				
• Be able to propose management measures in both the environment and agriculture for more efficient yields by protecting water resources.				
General Skills				

Name the desirable general skills upon successful completion of the moduleSearch, analysis and synthesis of data and information,Project design and management







ICT Use Equity and Inclusion Adaptation to new situations Respect for the natural environment Decision making Sustainability Demonstration of social, professional and moral responsibility and Autonomous work Teamwork sensitivity to gender issues Working in an international environment Critical thinking Working in an interdisciplinary environment Promoting free, creative and inductive reasoning Production of new research ideas Search, analysis and synthesis of data and information

- Production of new research ideas
- Project design and management
- Respect for the natural environment
- Promoting free, creative and inductive reasoning

3. COURSE CONTENT

- 1. Introduction to drought
- 2. Drought categories
- 3. Potential evaporation, plant coefficient, active rainfall, crop needs in water.
- 4. Effect of drought on ecosystems
- 5. Drought Indicators (SPI-RDI-PDSI-AI-RDIe)
- 6. Drought-water balance assessment models
- 7. Drought and Water Resource Management
- 8. Climate change and drought
- 9. Industrial and technical drought response projects
- 10. Vegetation management in water scarcity environments
- 11. Water productivity and precision irrigation
- 12. Plant Growth Monitoring and Simulation
- 13. Restoration of vegetation in water scarcity environments.
- 14. Selection and production of plants resistant to lack of water

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TEACHING METHOD Face to face, Distance learning, etc.	Distance learning			
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) Use of ICT in Teaching, in Laboratory Education, in Communication with students	Use of ICT in Teaching, and Communication with students • Digital slides • videos • MsTeams/ e-class, webmail			
TEACHING ORGANIZATION	Activity	Workload/semester		
The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.	Lectures	39		
	Final project	60		
	Bibliographic research & analysis	78		
	Final examination	3		
The supervised and unsupervised workload per				
per semester complies to ECTS standards.	TOTAL	180		
STUDENT EVALUATION				
Description of the evaluation process	Written Assignment, 50%			
Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions. Essay Development	Final Examination 50%			







Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others

Please indicate all relevant information about the course assessment and how students are informed

5. SUGGESTED BIBLIOGRAPHY

1. Τσακίρης Γ. (Υπεύθυνος Έκδοσης), (2013). «ΥΔΑΤΙΚΟΙ ΠΟΡΟΙ: Ι. Τεχνική Υδρολογία και Εισαγωγή στη Διαχείριση υδατικών πόρων», Εκδόσεις Συμμετρία, Αθήνα, ISBN 960-266-003-1

2. Spiliotis M., Iglesias A. and Garrote L., 2020. A multicriteria fuzzy pattern recognition approach for assessing the vulnerability to drought: Mediterranean region. Evolving Systems (in print, https://doi.org/10.1007/s12530-020-09332-7

3. Τσακίρης Γ. (2006). Υδραυλικά έργα: Σχεδιασμός και διαχείριση, Εγγειοβελτιωτικά έργα. Εκδόσεις Συμμετρία.







ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	Spiliotis M., Tsakmakis I.
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Supervisors: (1)	YES
Evaluation methods: (2)	Written Assignment, 50%, Final Examination 50%
Implementation Instructions: (3)	Oral remote examination will take place on the day and time indicated in the Department's examination program. The oral test will be conducted by MS TEAMS. Students will enter a joint conference scheduled day and time. The examination link will be sent via teachers.duth.gr to the institutional accounts of the enrolled students who have declared their intention to participate in the examination, having received knowledge and accepted the terms of the remote examination, and will be announced on eClass. Students will have to connect to the videoconference via their institutional account, otherwise they will not be able to participate in the process. In addition, they will participate in the camera examination which will be open throughout. Prior to the start of the examination, the students will show their identity on the camera in order to be identified by the supervisors. The students will be examined in the Semester Work entrusted to them, according to the instructions for its preparation. In the week before the examination, by the specified date and time, students should have submitted through eClass all of the deliverables of the Semester Work as described in its opinion. The deliverables of each student should be submitted through a single file. Students should therefore, prior to submitting their work, arrange to consolidate all of their deliverables into a single file of *.zip format or other format allowed by the system. In the event of serious failure or destruction of the computer system, the test will be repeated when conditions permit

