

1.1.1 Irrigation and Drainage Systems

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ΥΔΡ015	SEMESTER	9th
COURSE TITLE	Irrigation and Drainage Systems		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
	4	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Specialization Course		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p>Consult Appendix A</p> <ul style="list-style-type: none"> • Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area • Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B • Guidelines for writing Learning Outcomes 								
<p>Upon successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • Identify and describe the required land improvement projects. • Explain the complex natural problem of water-soil-crops-atmosphere interaction. • Calculate and design an irrigation network and its necessary structures. • Adapt appropriate regulation and protection devices to the entire irrigation project. • Evaluate and assess technical, environmental, and economic factors in the design of land improvement projects. • Synthesize and propose optimal design solutions for irrigation projects. 								
<p>General Competences</p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <table> <tr> <td><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td><i>Project planning and management</i></td> </tr> <tr> <td><i>Adapting to new situations</i></td> <td><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td><i>Decision-making</i></td> <td><i>Respect for the natural environment</i></td> </tr> <tr> <td></td> <td><i>Showing social, professional and ethical responsibility and</i></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>		<i>Showing social, professional and ethical responsibility and</i>
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<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>							
<i>Decision-making</i>	<i>Respect for the natural environment</i>							
	<i>Showing social, professional and ethical responsibility and</i>							

<i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>Others...</i>
The course contributes to the following skills: _ Search for, analysis and synthesis of data and information _ Adapting to new situations _ Decision-making _ Working independently _ Working in an interdisciplinary environment _ Project planning and management _ Respect for the natural environment _ Production of free, creative and inductive thinking	

SYLLABUS

<p>Course Description:</p> <p>The course aims to provide students with the fundamental theoretical background for the course 'ΥΔΡ015 Irrigation and Drainage Systems'. It includes the necessary material for understanding theories and principles of (a) agricultural hydraulics, (b) quantitative assessment of irrigation water, (c) design and operation of land improvement projects, and (d) economic design of irrigation projects and networks.</p>
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TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY</p> <p style="text-align: center;"><i>Face-to-face, Distance learning, etc.</i></p>	Face to face.	
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p style="text-align: center;"><i>Use of ICT in teaching, laboratory education, communication with students</i></p>	Learning process support (teaching and communication with students) through PowerPoint lectures, through the online course website, through the electronic e-learning platform and through additional electronic communication with students (online announcements and comments, emails, etc.). Additional material (lecture presentations, educational videos, useful sites, and scientific articles) posted on the e-learning platform. Teacher-student collaboration time either in person or via teleconference.	
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	Activity	Semester workload
	Lectures	40
	Practice/exercises	12
	Project(s)	10
	Educational visit	
	Individual study	
	Course total (26 hours workload per ECTS credit)	130
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p style="text-align: center;"><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice</i></p>	Evaluation Language: Greek Written Examination with Extended Response Questions (Formative and/or Conclusive) Theory Assessment (80% of the final grade):	

questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

- Written progress exam (20% of the final grade) which includes:
 - o Extended Response Theoretical Questions (Formative and/or Inferential)
 - o Solving problems-exercises
 - Final written exam (60% of the final grade) which includes:
 - o Extended Response Theoretical Questions (Formative and/or Inferential)
 - o Solving problems-exercises
- Individual Assignment (20% of the final grade)
- This course description text with the evaluation criteria is accessible to students in the Department's study guide (Department website) and on the course's website. The outline is communicated orally to the students during the first lecture.

ATTACHED BIBLIOGRAPHY

- [In Greek] Τσακίρης Γεώργιος, Υδραυλικά Έργα, Σχεδιασμός και Διαχείριση, ΤΟΜΟΣ II: Εγγειοβελτιωτικά Έργα, Εκδόσεις Συμμετρία, 2006, ISBN: 978-960-266-171-0. Κωδικός Βιβλίου στον Εύδοξο: 45381
- [In Greek] Γεωργική υδραυλική, Γεωργική υδραυλική, Εκδόσεις Ζήτη, 1997, ISBN: 960-431-404-1. Κωδικός Βιβλίου στον Εύδοξο: 11157
- [In Greek] Παπαμιχαήλ Δημήτρης, Μπαμπατζιμόπουλος Χρήστος, Εφαρμοσμένη Γεωργική Υδραυλική, Εκδόσεις Ζήτη Πελαγία Σια Ι.Κ.Ε., 2014, ISBN: 978-960-456-415-6. Κωδικός Βιβλίου στον Εύδοξο: 41960118
- [In Greek] Τζιμόπουλος Χρήστος, Γεωργική υδραυλική, Τόμος I, Εξατμισοδιαπνοή - διηθητικότητα - ατομικά δίκτυα, Ζήτη, 1982, ISBN: 978-960-456-171-1. Κωδικός Βιβλίου στον Εύδοξο: 11423
- [In Greek] Τζιμόπουλος Χρήστος, Γεωργική υδραυλική, Τόμος II, Συλλογικά αρδευτικά δίκτυα με καταιονισμό, Ζήτη, 1995, ISBN: 978-960-456-158-2. Κωδικός Βιβλίου στον Εύδοξο: 11424