

COURSE OUTLINE

(1) General information

FACULTY/SCHOOL	TECHNOLOGY		
DEPARTMENT	ENVIRONMENTAL SCIENCES		
LEVEL OF STUDY	<i>Undergraduate</i>		
COURSE UNIT CODE	NEW COURSE	SEMESTER	6th
COURSE TITLE	WATER RESOURCES MANAGEMENT		
INDEPENDENT TEACHING ACTIVITIES 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		WEEKLY TEACHNG HOURS	CREDITS
THEORETICAL BACKGROUND		4	5
LABORATORY PRACTICE		-	-
TOTAL		4	5
COURSE TYPE Background knowledge, Scientific expertise, General Knowledge, Skills Development	Background knowledge		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION & EXAMINATION/ASSESSMENT:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning Outcomes</p> <p><i>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:</i></p> <p>APPENDIX A</p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.</i> • <i>Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and</i> <p>APPENDIX B</p> <ul style="list-style-type: none"> • <i>Guidelines for writing Learning Outcomes</i>
<p><i>The aim of the course is to acquaint students with the basics of water resources management. Increasing pressure in the aquatic environment necessitates the implementation of sustainable water resources development and management policies, through the design, implementation and optimal operation of infrastructure projects and management interventions in both supply and demand, eg through austerity measures and reuse.</i></p>

A rational development policy must also take into account the management of extreme phenomena and crises such as water shortages and floods, but also longer-term environmental goals, such as long-term protection of water and related ecosystems, quality improvement and their ecological status and of course the gradual reduction of discarded pollutants and the gradual elimination of toxic waste. The students learn how to design water resources management projects, to calculate a water volumetric budget, to design water resources management plans at basin level.

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?

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

- *Search for, analysis and synthesis of data and information by the use of appropriate technologies,*
- *Decision-making*
- *Individual/Independent work*
- *Group/Team work*
- *Environmental awareness*
- *Critical thinking*
- *Development of free, creative and inductive thinking*

(3) COURSE CONTENT

1. Introduction: Concepts, methodology, sizes - Water resources management framework in Greece
2. Water resources and development projects
3. Water usage and restrictions
4. Introduction to the analysis of water resources systems
5. Environmental aspects of water resources management - Institutional framework
6. Assess and manage uncertainty with simulation techniques
7. Sustainable development and management of water in a state of uncertainty
8. Polyclinic analysis
9. Decision support systems for water resources management problems
10. Combined water and energy management

11. Hydronomer Software: Methodological framework and applications
12. Extreme hydrological events and extreme conflicting interests in water management
13. Drought management - Persistent drought of the years 1987-1994

(4) TEACHING METHODS-ASSESSMENT

<p>MODES OF DELIVERY Face-to-face, in-class lecturing, distance teaching and distance learning etc.</p>	<ul style="list-style-type: none"> • Lectures • Semester projects - homework 																
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY Use of ICT in teaching, Laboratory Education, Communication with students</p>	<ul style="list-style-type: none"> • Powerpoint presentation. • e-mail communication. • e-class theory and exercises 																
<p>COURSE DESIGN 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.</p> <p>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</p>	<table border="1"> <thead> <tr> <th><i>Activity/Method</i></th> <th><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>39</td> </tr> <tr> <td>Workshop</td> <td>13</td> </tr> <tr> <td>Laboratory work</td> <td>-</td> </tr> <tr> <td>Theory study</td> <td>43</td> </tr> <tr> <td>Weekly individual evaluation reports for laboratory exercises</td> <td>20</td> </tr> <tr> <td>Field exercise</td> <td>10</td> </tr> <tr> <td>Course total (25 hours of workload per credit unit)</td> <td>125</td> </tr> </tbody> </table>	<i>Activity/Method</i>	<i>Semester workload</i>	Lectures	39	Workshop	13	Laboratory work	-	Theory study	43	Weekly individual evaluation reports for laboratory exercises	20	Field exercise	10	Course total (25 hours of workload per credit unit)	125
	<i>Activity/Method</i>	<i>Semester workload</i>															
	Lectures	39															
	Workshop	13															
	Laboratory work	-															
	Theory study	43															
	Weekly individual evaluation reports for laboratory exercises	20															
Field exercise	10																
Course total (25 hours of workload per credit unit)	125																
<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS Detailed description of the evaluation procedures:</p> <p>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</p> <p>Specifically, defined evaluation criteria are stated, as well as if and where they are accessible by the students.</p>	<ul style="list-style-type: none"> • Final examinations • Students should watch at least half seminars • Work will be given during the semester to be assessed at a rate of 30% on the final grade. <p style="text-align: center;"><u>Final Grade</u> 70% in Final Exams + 30% in the semester projects</p>																

(5) SUGGESTED BIBLIOGRAPHY:

-Suggested bibliography

- Grigg, N. S., Water Resources Management, McGraw-Hill, New York, 1996.
- Loucks, D.P., E. van Beek, J.R. Stedinger, J.P.M. Dijkman, Water Resources Systems Planning and Management, An Introduction to Methods, Models and Applications, Studies and Reports in Hydrology, UNESCO Publishing, 680 pages, Paris, 2005.
- Mays, L. W., and Y.-K. Tung, Hydrosystems Engineering and Management, McGraw-Hill, New York, 1992

-Complementary bibliography

Teacher's notes and the full lecture material, which are available through the asynchronous education platform