

COURSE OUTLINE Geographical information systems and water resources management

EDUCATION LEVEL	7		
CODE	WBCC-502	SEMESTER	2 nd
TITLE	GIS		
TEACHING ACTIVITIES	HOURS/WEEK	ECTS	
Lectures, exercises	3	6	
TYPE OF COURSE	Main course in the specialization «Water scarcity»		
PREREQUISITE KNOWLEDGE	-		
LANGUAGE OF INSTRUCTION AND ASSESSMENT	Greek		
AVAILABILITY TO ERASMUS STUDENTS	-		
WEBSITE (URL)	https://eclass.uoa.gr/courses/GEOL575/		

LEARNING OUTCOMES

Learning Outcomes/Subject Specific Competences
<p>After successfully completing the course, students will be able to:</p> <ul style="list-style-type: none"> understand the principles and techniques of data processing in a Geographic Information System import spatial data into GIS applications and determine how to visualize them compile a digital map and export it to a printable file to provide water resource data as easy-to-understand maps and electronic forms for water agencies use numerous GIS applications, apply methods of spatial analysis and creation of pseudo-3D models model the hydrological regime of an area through the processing of spatial data within a GIS software and develop spatial datasets at catchment scale related to water resources management use analysis and problem-solving techniques, based on GIS software, for sustainable planning and management of water resources

Generic Competences
<p>Measurement, research, analysis and synthesis of data and information, using the necessary technologies.</p> <p>Advancement of free, creative and inductive thinking.</p> <p>Critical thinking and constructive self-appraisal</p> <p>Adaptation to new conditions and situations.</p> <p>Self-contained (individual) work</p> <p>Teamwork</p> <p>Trans-disciplinary scientific work</p> <p>Respect for the natural environment</p> <p>Project design and management</p> <p>Decision making</p>

COURSE CONTENT

<p>GIS and its applications help solve many environmental problems, including water resources management. In today's world of technology, the use of GIS is a necessity for all water managers. This powerful toolset can be used for hydrologic modelling, environmental and habitat assessments, ecosystem-based studies, monitoring of riparian, wetland, and forest ecosystems, urban studies, and agricultural impact assessment. This course will explain to students the basics of GIS, teach techniques and methods so that it can be used as a tool for sustainable water management, and provide examples of real-world applications. It will demonstrate how to obtain the critical spatial information needed to design and implement water resource management plans and develop practical solutions to water management problems. It specifically includes:</p> <p>Introduction to geographic information systems,</p> <p>Learning to digitize, view spatial data and map composition,</p> <p>Creation of digital elevation models,</p> <p>Delineation of drainage basins and hydrographic network,</p> <ul style="list-style-type: none"> • Soil morphometric analysis for hydrological modelling

LEARNING ACTIVITIES - TEACHING and ASSESSMENTS METHODS

MODE OF DELIVERY	Distance learning
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	<p>In Teaching:</p> <ul style="list-style-type: none"> - Presentations using multimedia (images, animation, video). - Use of computers and specialized software and / or the use of MS

	<p>programs (mainly MS Excel).</p> <ul style="list-style-type: none"> – PowerPoints (ppt) uploads in the e-class platform. <p>In Communication with students:</p> <ul style="list-style-type: none"> – 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 hrs x 13 weeks
	Practice Exercises	50 h
	Study and analysis of educational material	40 h
	Assignments delivery	50 h
	Total	179 h
ASSESSMENT METHODS AND CRITERIA	<p>Language of evaluation: Greek</p> <p>Methods of evaluation: Individually written Project assignment after every lesson unit and Exams at the end of semester (multiple choice questions)</p> <p>The learning procedure and evaluation criteria are included in the course syllabus and is announced at the e-class Platform.</p>	

TEXTBOOKS - BIBLIOGRAPHY

Suggested bibliography:

Lecture presentations

Digital links on the Internet

Related academic journals:

Environmental Monitoring and Assessment	Netherlands	1981
Geomatics, Natural Hazards and Risk	United Kingdom	2010
International Journal of Applied Earth Observation and Geoinformation	Netherlands	