

## COURSE OUTLINE

### (1) General

<b>School:</b>	Social Sciences		
<b>Academic Unit:</b>	Geography		
<b>Level of studies</b>	Undergraduate		
<b>Course Code:</b>	GEO 410	<b>Semester:</b>	G
<b>Course Title:</b>	Water Resources Management		
<b>Independent Teaching Activities</b>	<b>Weekly Teaching Hours</b>	<b>Credits</b>	
Lecture		3	
<b>Course total</b>			5
<b>Course Type:</b>	Required Elective		
<b>Prerequisite Courses:</b>	None		
<b>Language of Instruction and Examinations</b>	Greek		
<b>Is the course offered to Erasmus students:</b>	No		
<b>Course Website (Url):</b>	<a href="https://geography.aegean.gr/pps/index_en.php?content=0&amp;lesson=410">https://geography.aegean.gr/pps/index_en.php?content=0&amp;lesson=410</a>		

### (2) Learning Outcomes

#### Learning Outcomes

The purpose of the course is for students of Geography to understand the concept of Water Resources Management and to be able, initially, to calculate the water balance of a study area, then to recognize and understand the problems of WRM and finally to propose solutions.

Specifically, upon successful completion of the course, students will have understood the concepts:

- W.R.M. – Sustainable WRS – Integrated WRS, Hydrosystem
- different water use: irrigation, water supply, industrial use
- inputs, outputs, hydrological balance, water balance, surplus, deficit

They will then be able to:

- assess and evaluate the environmental, social, economic and political impacts associated with surface water, groundwater and its management;
- understand and be able to distinguish between the quantitative and qualitative crisis in water resources,
- link the impacts of climate change and other anthropogenic interventions on water resources and determine their degree of influence;
- understand the natural hazards associated with the water cycle (floods and drought),
- separate inputs (where water comes from) and outflows (where water goes) through land use, geology and soil science,
- estimate the hydrological and water balance of a river basin,
- prepare a hydrological budget for a study area (how much water is available),
- be informed about the Greek and European Institutional Framework and the existing Policy on water resources issues (national and transboundary),
- have a clear understanding of the processes required in integrated and sustainable water resources management.

## General Competences

1. Search for, analysis and synthesis of data and information, with the use of the necessary technology
2. Adapting to new situations
3. Decision-making
4. Working independently
5. Team work
6. Working in an interdisciplinary environment
7. Project planning and management
8. Respect for the natural environment
9. Criticism and self-criticism
10. Production of free, creative and inductive thinking

### (3) Syllabus

The course "Water Resources Management" aims to familiarize students with technical, regulatory, economic, and social issues related to water resources. The course encompasses the necessary knowledge on issues that concern:

- water supply and water demand,
- urban water use, as well as urban development and design in relation to water resources,
- agricultural and industrial water uses,
- sustainable and integrated water resources management,
- water-related legislation,
- effect of anthropogenic pressures and climate change on the water cycle,
- natural hazards associated with the water cycle (droughts - floods),
- application of modern technical tools (e.g. Geographic Information Systems) in water resources management,
- economic value of water, as well as the implementation of economic tools in water resources management,
- environmental education and awareness on water resources issues, and, finally,
- tourist development in relation to water resources.

### (4) Teaching and Learning Methods - Evaluation

<b>Delivery:</b>	Face to face (Lectures - Exercises - Laboratory practice - Optional tests)	
<b>Use of Information and Communication Technology:</b>	Student contact electronically. Power point presentations, multimedia learning materials (e.g. videos, interactive webpages) and use of the e-class platform. Use of PC and application of appropriate computer software (ArcGIS) for conducting laboratory exercises.	
<b>Teaching Methods:</b>	<b>Activity</b>	<b>Semester workload</b>

Lecture	39
Laboratory practice	3

Project	40
Non-supervised study	40
Performance evaluation/Exams	3

**Course total<**

125

**Student Performance Evaluation**

(A1) Written examination of 1st progress 20% (A2) Participation in lectures with Worksheets - participation in discussions 10% (A3) Evaluation of water resources management assignment 20% (B) Written Exams (Theory - Exercises) 50%. In case of non-participation in assessment methods A1-A3, the percentage of written examinations B respectively is increased up to 100%. Students of previous semesters written exams 100%

**(5) Attached Bibliography**

- Lecture material
- European Commission (2000) Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Official J Eur Commun. 327, 1-72. (διαδικτυακά)
- Slobodan P. Simonovic (2009) Managing water resources: methods and tools for a systems approach/ UNESCO,Earthscan, 978-1-84407-554-6 (βιβλιοθήκη)
- Mays L.W. (2005) *Water resource systems management tools*, New York: McGraw-Hill.
- Mays L.W. (2007) *Water resources sustainability*, New York: McGraw-Hill.
- Pennington K.L., Cech T.V. (2009) *Introduction to water resources and environmental issues*, Cambridge: Cambridge University Press