COURSE OUTLINE

(1) General

School:	Social Sciences		
Academic Unit:	Geography		
Level of studies	Undergraduate		
Course Code:	GEO 310	**Semester:**	E
Course Title:	Ydrogeography		
Independent Teaching Activities	**Weekly Teaching Hours**	**Credits**	
Lecture	3		
		Course total	5
Course Type:	Required Elective		
Prerequisite Courses:	None		
Language of Instruction and Examinations	Greek		
Is the course offered to Erasmus students:	No		
Course Website (Url):	https://geography.aegean.gr/pps/index_en.php?content=0&lesson=310		

(2) Learning Outcomes

Learning Outcomes

This course is introductory and important for students to get to know water as a basic element of physical geography, how it interacts with the environment (natural and anthropogenic). To realize water importance in the life cycle of the planet and its living organisms for which it is the main fuel. Learn about the processes associated with the different forms of water and how they are correlated.

Upon successful completion of the course, students will:

1. understand the importance of water as the main source of life on our planet,
2. master the concept of hydrological cycle and its main processes,
3. be able to calculate the hydrological balance and concepts: total, surface and underground runoff, precipitation, evapotranspiration and infiltration,
4. become familiar with the quantitative and qualitative analysis of hydrographic networks on paper and using GIS (ArcMap) and the role of scale in studies,
5. understand the basic characteristics of surface and groundwater, as well as their interaction with geology and the natural environment,
6. familiarize with groundwater aquifers and their types, the laws of groundwater flow,
7. develop skills on the use of GIS in the determination and calculation of hydromorphological parameters,
8. introduction on the utilization of surface and underground water resources and the necessity of water resources management,
9. come in touch with the current chemical composition of drinking water and irrigation,
10. be familiarized with pollutants sources regarding surface and underground water pollution, about salinization and nitrate pollution of aquifers.

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. Project planning and management
6. Respect for the natural environment
7. Criticism and self-criticism
8. Production of free, creative and inductive thinking

(3) Syllabus

The course “Hydrogeography” aims to familiarize students with issues related to the appearance, circulation and distribution of water (water cycle), as well as its interaction with the environment (natural and anthropogenic). The course includes:

- Water cycle (Hydrological cycle) - River catchments & hydrographic networks.
- Surface water hydrology - Hydrological balance: Precipitation, evapotranspiration, infiltration, runoff.
- Groundwater hydrology - Groundwater aquifers - Aquifers’ hydraulic parameters.
- Hydraulic head & hydraulic gradient - Groundwater flow - Groundwater flow networks.
- Groundwater abstraction.
- Exploitation of surface water and groundwater.
- Water chemistry - Water quality characteristics.
- Pollution and protection of water resources.

The course structure has:

- Lectures held in the form of Theory (delivery) - Worksheet with practical application of theory-exercise (which is completed during the lecture or in between lectures).
- Lectures on theory and design of work - study - Poster - laboratory exercise that take place in combination in a classroom and in the computer lab.
- Iterative lecture.

(4) Teaching and Learning Methods - Evaluation

Delivery:	Face to face (Lectures - Exercises - Laboratory practice - Optional tests)	
Use of Information and Communication Technology:	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.	
Teaching Methods:	**Activity**	**Semester workload**
Lecture	39	
Project	40	
Non-supervised study	40	
Performance evaluation/Exams	3	
Laboratory practice	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 Hydrogeography 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
- Gupta S.K. (2011) *Modern hydrology and sustainable water development*, New Jersey: John Wiley & Sons Ltd.
- Hiscock K.M. (2005) *Hydrogeology: Principles and practice*, Malden: Blackwell Science Ltd.
- Karamouz M., Ahmadi A., Akhbari M. (2011) *Groundwater hydrology: Engineering, planning, and management*, New York: CRC Press.
- Todd D.K., Mays L.W. (2005) *Groundwater hydrology*, New Jersey: John Wiley & Sons Ltd.
- Ward R.C. (2000) *Principles of hydrology*, London: McGraw-Hill.