



COURSE OUTLINE

1. GENERAL					
SCHOOL	Engineering				
DEPARTMENT	Environmental Engineering				
LEVEL OF STUDIES	Undergraduate				
COURSE CODE	15BY3N SEMESTER 2nd			k	
COURSE TITLE	Geographical Information Systems				
TEACHING ACTIVITIES If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.			TEACHING HOURS PER WEEK		ECTS CREDITS
2 hours of lectures per week and 2 hours of practical problem solving with Qgis		4 hours		5	
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.					
COURSE TYPE Background, General Knowledge, Scientific Area, Skill Development	Scientific area, skill development				
PREREQUISITES:	None				
TEACHING & EXAMINATION LANGUAGE:	Greek				
COURSE OFFERED TO ERASMUS STUDENTS:	Yes. The course is offered in English for Erasmus+ students				
COURSE URL:	https://eclass.duth.gr/courses/TMC127/				

2. LEARNING OUTCOMES

Learning Outcomes Please describe the learning outcomes of the course: Knowle the course.	edge, skills and abilities acquired after the successful completion of
 Understanding the geospatial database 	25
 Data capturing and data protocols with 	iin GIS
 Understanding the basic principles of g 	eostatistics
Familiarization with the layers of inform	nation
 Understanding GIS applications in envir 	ronmental sciences
General Skills Name the desirable general skills upon successful con	npletion of the module
Search, analysis and synthesis of data and information,	Project design and management
ICT Use	Equity and Inclusion
Adaptation to new situations	Respect for the natural environment
Decision making	Sustainability
Autonomous work	Demonstration of social, professional and moral responsibility and
Teamwork	sensitivity to gender issues
Working in an international environment	Critical thinking
Working in an interdisciplinary environment	Promoting free, creative and inductive reasoning
Production of new research ideas	
Capability of working with spatial data	

- Getting the ability of using the open GIS program Quantum (QGIS)
- Capability of spatial analysis of environmental data and thematic mapping
- Capability of performing a multicriteria analysis

3. COURSE CONTENT

1. Introduction to GIS: basic principles of digital mapping.







- 2. Types of spatial data: vector and raster format.
- 3. Spatial databases. Working at various scales.
- 4. Scales of data capturing. Generalization.
- 5. Data capturing through maps. Remote sensing data.
- 6. The Global Positioning System (GPS).
- 7. Methods of georeferencing.
- 8. Working with layers of spatial information.
- 9. Topology: geographical objects and their relations. Descriptive properties of spatial objects. Geocoding. Information retrieval: thematic maps, visibility analysis, spatial querying.
- 10. Network analysis: car navigation, travel time analysis, routing.
- 11. Mobile GIS: Location Based Services (LBS).
- 12. Custom GIS applications: flooding risk, emergency services, real estate applications, environmental protection, commercial and web GIS applications, OpenStreetMap and GoogleEarth databases.
- 13. Multicriteria decision making: raster layer preparation, analysis of variables case study application.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD Face to face. Distance learning. etc.	Face-to-face teaching with Power Point presentations.				
· · · · · · · · · · · · · · · · · · ·	All presentations available with additional study				
	material and assignments via elclass platform				
USE OF INFORMATION &	ICT is used throughout the course activities in				
COMMUNICATIONS TECHNOLOGY	teaching, laboratory exercises and communication.				
Use of ICT in Teaching, in Laboratory	annlication of open source software and open data				
Education, in Communication with students	analysis.				
TEACHING ORGANIZATION	Activity	Workload/semester			
The ways and methods of teaching are	Lectures – face to face	26			
Lectures, Seminars, Laboratory Exercise, Field	Exercises - supervised	26			
Exercise, Bibliographic research & analysis, Tutoring Internship (Placement) Clinical	Bibliographic research -	28			
Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.	unsupervised				
	Problem solving -	30			
	unsupervised	20			
The supervised and unsupervised workload per activity is indicated here so that total workload	Project development -	20			
per semester complies to ECTS standards.	Presentation preparation -	20			
	unsupervised	20			
STUDENT EVALUATION	Assessment is based on two assig	gnments (50% of the total			
Description of the evaluation process	score). Students are expected to	submit their assignments to			
Assessment Language, Assessment Methods,	e.class platform and present their findings in audience. The				
Formative or Concluding, Multiple Choice Test,		tten exams.			
Questions, Problem Solving, Written					
Assignment, Essay / Report, Oral Exam, Presentation in gudiance Laboratory Penort					
Clinical examination of a patient, Artistic					
interpretation, Other/Others					
Please indicate all relevant information about					
the course assessment and how students are informed					
injoinieu					

5. SUGGESTED BIBLIOGRAPHY

• QGIS and Generic Tools [electronic resource]







- QGIS and Applications in Water and Risks [electronic resource]
- QGIS and Applications in Territorial Planning [electronic resource]
- QGIS and Applications in Agriculture and Forest [electronic resource]







ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	Alexandra Gemitzi
Contact details:	agkemitz@env.duth.gr
Supervisors: (1)	YES
Evaluation methods: (2)	Oral examination with distance learning methods, provided that the integrity and reliability of the examination are ensured
Implementation Instructions: (3)	The oral examinations are conducted through presentation in Teams platform of the assignment conducted by each student. Five questions are set to the student and the grade is extracted by the assessment of the quality and clarity of presentation and the correctness of answers provided to the questions. Students should be equipped with a microphone, camera, internet connection and should be connected to the Teams platform. The inviolability of the exam is guaranteed by the identification of the student

(1) Please write YES or NO

(2) Note down the evaluation methods used by the teacher, e.g.

- written assignment or/and exercises
- written or oral examination with distance learning methods, provided that the integrity and reliability of the examination are ensured.
- (3) In the Implementation Instructions section, the teacher notes down clear instructions to the students:

a) in case of **written assignment and / or exercises:** the deadline (e.g. the last week of the semester), the means of submission, the grading system, the grade percentage of the assignment in the final grade and any other necessary information.

b) in case of **oral examination with distance learning methods:** the instructions for conducting the examination (e.g. in groups of X people), the way of administration of the questions to be answered, the distance learning platforms to be used, the technical means for the implementation of the examination (microphone, camera, word processor, internet connection, communication platform), the hyperlinks for the examination, the duration of the exam, the grading system, the percentage of the oral exam in the final grade, the ways in which the inviolability and reliability of the exam are ensured and any other necessary information.

c) in case of **written examination with distance learning methods**: the way of administration of the questions to be answered, the way of submitting the answers, the duration of the exam, the grading system, the percentage of the written exam of the exam in the final grade, the ways in which the integrity and reliability of the exam are ensured and any other necessary information.

There should be an attached list with the Student Registration Numbers only of students eligible to participate in the examination.

