

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	SCHOOL OF ENGINEERING		
<b>DEPARTMENT</b>	ENVIRONMENTAL ENGINEERING		
<b>LEVEL OF STUDIES</b>	SECOND CYCLE, DIRECTION II		
<b>COURSE CODE</b>	E8YΠ	<b>SEMESTER</b>	7 <sup>th</sup>
<b>COURSE TITLE</b>	GEODESY		
<b>TEACHING ACTIVITIES</b> <i>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.</i>	<b>TEACHING HOURS PER WEEK</b>	<b>ECTS CREDITS</b>	
	3	5	
<i>Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.</i>			
<b>COURSE TYPE</b> <i>Background, General Knowledge, Scientific Area, Skill Development</i>	SCIENTIFIC AREA		
<b>PREREQUISITES:</b>	MATHEMATICS		
<b>TEACHING &amp; EXAMINATION LANGUAGE:</b>	GREEK		
<b>COURSE OFFERED TO ERASMUS STUDENTS:</b>	NO		
<b>COURSE URL:</b>	<a href="https://eclass.duth.gr/courses/TMC219/">https://eclass.duth.gr/courses/TMC219/</a>		

### 2. LEARNING OUTCOMES

<b>Learning Outcomes</b> <i>Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.</i>																
<p>The course aims to bring students in contact with an important part of the science of engineering, Geodesy. The aim is for the student to become familiar with the instruments and methods needed to chart and calculate a route, to measure and calculate field areas, to make topographic drawings and to read topographic maps.</p> <p>Upon successful completion of the course, students:</p> <ul style="list-style-type: none"> <li>• They know the objects of Geodesy.</li> <li>• They are familiar with the functions of geodetic instruments.</li> <li>• Understand and solve polygonal paths.</li> </ul> <p>Students also, acquire the ability to:</p> <ul style="list-style-type: none"> <li>• Calculate the coordinates of points</li> <li>• Calculate areas and volumes</li> </ul>																
<b>General Skills</b> <i>Name the desirable general skills upon successful completion of the module</i>																
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Project design and management  
Working in an interdisciplinary environment

### 3. COURSE CONTENT

1. Introduction, Basic definitions (distance, length, area, vertical, horizontal angle, vertical angle, etc.), Units of Measurement (lengths, angles, etc.), Surfaces and reference systems (global, European, Greek geodetic systems), Greek Geodetic Reference System 1987 (EGSA '87).
2. Basic fieldwork: Marking, Securing, Alignment thickening, Length measurement methods.
3. Error theory elements: Error transmission law. Area calculations.
4. The three (3) fundamental problems of Geodesy.
5. Principles of operation of geodetic instruments.
6. Theodolite, Angle measurements (horizontal, vertical).
7. Length measurements, Methods of height difference determination, Trigonometric altitude.
8. Establishment of new trigonometric points, Trigonometric point positioning, Establishment of new points from highly elevated known station.
9. The computation of traverses.
10. Topographic surveys: Surveying with a theodolite and stadia or a total station.
11. Horizontal surveying of small parcels.
12. Topographic plans, Ground sections (length, cross section), Use of topographic maps, Volume calculations.
13. Satellite positioning systems. The Greek positioning system (HEPOS).

### 4. LEARNING & TEACHING METHODS - EVALUATION

<b>TEACHING METHOD</b> <i>Face to face, Distance learning, etc.</i>	Face to face.  Classroom lectures using power-point overheads (uploaded in e-class) and blackboard-solved exercises. A book is distributed containing the theoretical part of the course and solved examples and exercises.	
<b>USE OF INFORMATION &amp; COMMUNICATIONS TECHNOLOGY (ICT)</b> <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i>	Use of ICT in teaching and in communication with students	
<b>TEACHING ORGANIZATION</b> <i>The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research &amp; analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.</i>  <i>The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i>	<b>Activity</b>	<b>Workload/semester</b>
	Lectures	39
	Bibliographic research & analysis	61
	Field Exercise	20
	Study / creation, project	30
	Total	<b>150</b>
<b>STUDENT EVALUATION</b> <i>Description of the evaluation process</i>	Assessment Language: Greek	

*Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others*

*Please indicate all relevant information about the course assessment and how students are informed*

Course evaluation is based on:

- a) weekly projects (30%) and
- b) the final written exam (70%).

## 5. SUGGESTED BIBLIOGRAPHY

1. «Applied Geodesy», E. Lamprou, G. Pantazis, Eds. ZITI. ISBN 978-960-456-205-3
2. «Geodesy Courses: Basic Principles - Applications», Georgopoulos G., Eds. TZIOLA. ISBN 978-960-418-736-2
3. «Geodesy» Volume I, A.G. Bantelas, P.D. Savvaidis, I.M. Ifantis, I.D. Doukas, Publishing House Kyriakidis Brothers S.A., ISBN 978-960-343-328-6.

## ANNEX OF THE COURSE OUTLINE

### Alternative ways of examining a course in emergency situations

<b>Teacher (full name):</b>	GEORGIOS D. GIKAS
<b>Contact details:</b>	ggkikas@env.duth.gr
<b>Supervisors: (1)</b>	YES
<b>Evaluation methods: (2)</b>	Written examination with distance learning methods, ensuring the integrity and reliability of the examination.
<b>Implementation Instructions: (3)</b>	

(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.