

COURSE OUTCOME

KM441 – TOPOGRAPHY - GEODESY

1. GENERAL

INSTITUTION	University of Thessaly		
SCHOOL	School of Technology		
DEPARTMENT	Department of Forestry, Wood Sciences and Design		
LEVEL	Undergraduate		
COURSE CODE	KM 441	STUDENT SEMESTER	4th
COURSE TITLE	Topography - Geodesy		
ACTIVITIES		WEEKLY HRS	ECTS
	Lectures and Workshops	2	5
	Laboratory	1	
	TOTAL	3	5
TYPE OF COURSE	Generic knowledge and Skills Development		
PREREQUISITES:	none		
LANGUAGE TEACHING AND EXAMINATION:	Greek		
THE COURSE OFFERED TO STUDENTS ERASMUS	No		
WEBPAGES COURSE (URL)	https://eclass.uth.gr/courses/FWSD_U_125/		

2. LEARNING OUTCOMES

Learning Outcomes
<p>The aim of the course is for students to understand the necessary knowledge regarding the measurement of the necessary quantities and the calculation of the data needed to describe the physical world that surrounds us in a detailed way. Also, the aim of the course stands for the understanding of the use of topographic instruments, the measurement of lengths, angles, slopes, altitude and polygonal paths, as well as the methods of horizontal and mixed field mapping, surface leveling and calculation of the volumes of excavations and embankments, and finally the methods for drawing angles, alignments, curves and drainage ditches. At the end of the course, students will be able to:</p> <ul style="list-style-type: none"> • To know the basic principles of operation and the structural elements of geodetic instruments. • To know the methods of measuring and calculating angles, lengths and height differences and to use the instruments used for the respective measurements. • To know and operate the modern geodetic instruments and measurement systems based on electronic or digital technology and currently used as a rule in everyday land surveying practice. • Describe land surveying and other map data. • Draw land surveying sketches.
General Skills
<ul style="list-style-type: none"> • Search, analysis and synthesis of data and information, using the necessary technologies. • Adaptation to new situations. • Teamwork. • Decision making.

- Demonstration of social, professional and moral responsibility.
- Work in an interdisciplinary environment.
- Respect for the natural environment.
- Promoting free, creative and inductive thinking.
- Production of new research ideas.

3. COURSE CONTENT

Description of the theoretical part of the course:

- Historical development of Geodesy and its relationship with other sciences.
- Introduction and basic definitions.
- Units of measurement.
- Land surveying instruments and ways of measuring angles.
- Distance measurement.
- Determining the position of a point on the earth's surface.
- Fundamental problems and their applications.
- Geometric spatial planning.
- Trigonometric zoning.
- Slopes and their applications.
- Polygonal paths and their applications.
- Ground survey: horizontal and mixed field mapping.
- Land survey map drawing.
- Areas: analytical, graphic, semi-graphical and mechanical method of calculating the area of a surface - Applications.
- Distribution of surfaces.
- Setting border lines.
- Spatial leveling of surfaces.
- Volumes: trapezoidal rule, Simpson rule, altimeter or grate method, altitude curve method.
- Methods for drawing alignments, angles and curves - Applications.

Laboratory part description:

- Design instruments and materials.
- Drawing scales.
- Grid design and numbering - Reporting points with rectangular coordinates.
- Drawing the landscape of the forest area with the magnetic azimuths and the side lengths, with rectangular coordinates of the vertices of the area and with polar coordinates.
- Theodolichos (centering, leveling, readings).
- Measuring angles with a theodolite and a compass.
- Distance measurement.
- Calculation of altitude differences between two points.
- Chorovatis.
- Road axis zoning.
- Use of an area meter.
- Use of inclinometers and rectangles.
- Field recording: with tape measure, with inclinometer - compass and tape measure and with polar coordinates.
- Recording of a residential area.
- Mixed field recording.
- Areas - use of area meters.

- Surface leveling and calculation of embankment or embankment volumes.
- Drawing of alignments and drainage ditches.

4. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY METHOD	Combined application of educational methods and techniques in order to enhance the active participation of students in the course and aim at the greatest possible effectiveness in "face to face" teaching: Presentations (in the amphitheater) enriched with real examples, questions - answers and discussion.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	<ul style="list-style-type: none"> • Use of PC, slides ppt, projector, short videos. • Support of learning process through the electronic platform e-class 	
MANAGEMENT OF TEACHING	Activity	Semester Workload
	Lectures	26
	Laboratory exercise	13
	Homeworks	41
	Individual and work study for term assignment	45
	Course Total	125
STUDENT EVALUATION	<p>The evaluation of the theoretical part of the course is done in two phases: (a) in the middle of the semester (6th -7th week) a written midterm exam is held (with optional participation of students), which includes development questions, (b) at the end of the semester (after the implementation of 13 courses) a final exam is held, according to the examination program of the Department, which also includes development questions.</p> <p>The evaluation of the laboratory part of the course is conducted through the written assignments that are prepared in groups, after the implementation of each laboratory exercise, and are delivered on a weekly basis.</p>	

5. RECOMMENDED BIBLIOGRAPHY

BOOKS IN EUDOXOS (in Greek):

- Δούκας, Α.Κ. 2001. Τοπογραφία Αγροτικών και Δασικών Περιοχών. Εκδόσεις Σ. Γιαχούδης & ΣΙΑ Ο.Ε. Σελ 328. ISBN-13: 960-7425-47-2. [Book Code in Eudoxos: 7953]
- Καριώτης, Γ. και Ε. Παναγιωτόπουλος. 2019. Εφαρμοσμένη Τοπογραφία – Τόμος Α'. Εκδόσεις Δίσιγμα. Σελίδες: 416. ISBN-13: 978-618-5242-54-1. [Book Code in Eudoxos: 86057397]

BOOKS EXCEPT EUDOXOS (in Greek):

- Καλτσίκης Χ. και Α. Φωτίου. 1999. Γενική Τοπογραφία. Εκδόσεις Ζήτη. Θεσσαλονίκη.
- Κοφίτσας Ι. 1997. Μαθήματα Τοπογραφίας. Εκδόσεις Ίων. Αθήνα.
- Νίκου Ν. 1999. Τοπογραφία Ι. Εκδόσεις Art of Text. Θεσσαλονίκη.

- Σαββαΐδης Π., Δούκας Ι., Υφαντής Ι. 2015. Γεωδαισία - Γεωδαιτικές μετρήσεις και υπολογισμοί. Εκδόσεις Κυριακίδη. Σελ. 544. ISBN-13: 978-618-5105-92-1
- Σαββαΐδης Π, Δούκας Ι., Υφαντής Ι. 2015. Γεωδαισία - Τοπογραφικές αποτυπώσεις – χαράξεις. Εκδόσεις Κυριακίδη. Σελ. 672. ISBN-13: 978-618-5105-93-8
- Χατζόπουλος, Ι. 2011. Γεωχωροπληροφορική τοπογραφία. Εκδόσεις Τζιόλα. Σελίδες:967. ISBN: 960-418-353-2.