3.4 CE0340 – Geodesy

(1) GENERAL

SCHOOL	ENGINEERING SCHOOL		
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CE0340**	**SEMESTER**	**3**
COURSE TITLE	**Geodesy**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	5	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background Course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/CIV241/

(2) LEARNING OUTCOMES

Learningoutcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

ConsultAppendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to give the students fundamental concepts of Geodesy

Upon completion of the course, students will have:

1. Basic knowledge of Geodesy and Topography.
2. In-depth knowledge and critical understanding of Geodesy and Topography.
3. Knowledge and understanding of the main subjects of Geodesy and Topography.

Specifically, students will be able to:

1. Have adequate fundamental knowledge of the subject of Geodesy and Topography and also comprehension skills of these.
2. Have acquired a general overview of the wider subject of the Surveying Engineering.

3. Be familiar with the basic field topographic procedures and develop skills in measurements using a measurement tape, surveying level and a total station.
4. Be able to combine knowledge to resolve fundamental topographic problems:
   coordinate calculation, coordinate conversions (polar, cartesian), coordinate transformations, calculations of geometric quantities (distances, areas).
5. Be able to use and combine the knowledge and practices they have acquired, in the next courses of their studies with a related subject (Geodetic Applications).
6. Be able to link theory with practice through participation in individual and group exercise.
7. Become familiar with the organization and presentation of geodetic measurements.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the DiplomaSupplement and appear below), at which of the following does the course aim?;.

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*

Specifically, students will be able to perform:

- Apply knowledge in practice.
- Search, analyze and perform the synthesis of data and information, using the necessary technologies.
- Autonomous work.
- Teamwork.
- Exercise criticism and self-criticism.
- Promoting free, creative and inductive thinking.

(3) SYLLABUS

The course (theoretical part of 2 hours per week) is organized in 6 sections, which are developed in 12 lectures. The 13th lecture is a summary of the lesson. The lectures are presented below:

1. Introduction - Historical background - General concepts.
2. Shape and size of the earth.
3. Surfaces and Reference Systems.
4. Units for measuring geodetic aggregates. Errors.
5. Length measurements and reductions.
6. Angle measurements and calculations.
7. Determination of height differences.
8. Fundamental Problems - Basic Calculations.
9. Geodetic instruments (classical, modern) - Basic principles of their operation.
10. Calculations in Geodesy.
11. Error theory.
12. Simple topographic stakeouts.
13. Revision.

The Laboratory (Practice Exercises of 3 hours per week) are applications of the theory carried out in the field.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In the classroom and in working groups with the physical presence of students (Face-to-face). In more detail: 1. Theory:

<table>
<tr><td></td><td>

- Delivery of the course in the classroom using .ppt presentations and by solving applications in the table
- Presentation and analysis of semester assignments

2. Laboratory – Rural Exercises:
   - Use of topographic instruments and solution of on-site applications
</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>

- Use of the course website (Outline, Plan provided, Chart implemented, Details for semester work, Lecture material - Notes and presentations).
- Use of electronic presentation media (slide show in Powerpoint).
- Use of Program material “OPEN ACADEMIC COURSES” (video lectures, presentations, exercises).
- Communication with the students is normally made face to face and by e-mail, in special circumstances such as pandemic.
</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Theory Lectures</td><td>26</td></tr>
<tr><td>Rural Workshop</td><td>39</td></tr>
<tr><td>Study - solving exercises in the classroom or weekly exercises</td><td>55</td></tr>
<tr><td>Solve and write a semester topic</td><td>30</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>150</td></tr>
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<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Language of evaluation: Greek

Final written examination: 60%
Laboratory: 40%
* Weekly laboratory exercises or exercises in the classroom
* Semester topic - Individual work
It is mandatory to participate in both types of examination (written examination & laboratory), with a grade of over 5 in each of them.
All information is accessible to students on the course website.</td></tr>
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(5) ATTACHED BIBLIOGRAPHY

Greek Bibliography:

6. Kofitsas, I., (2009), Lessons of Topography, Athens: ION Publications (in Greek).
7. Lambru, E., Pantagis, G., (2010), Applied Geodesy, Thessaloniki: ZITI Publications (in Greek).
8. Sabaidis, P., Ifantis, I., Dukas, I., (2007), Geodesy I: Geodesy Measurements and Calculations, Thessaloniki: Kiriakidi Publications (in Greek).
9. Georgopulos, G., (2007), Lessons of Topography, Athens: Tziolas Publications (in Greek).