



University of Nicosia, Cyprus

Course Code CEE-280	Course Title Engineering Surveying	ECTS Credits 7
Department Engineering	Semester Fall, Spring	Prerequisites None
Type of Course Required	Field Civil and Environmental Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 2 nd	Lecturer(s) Dr Loizos Papaloizou
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Introduce the basics of Geoinformatics and Field Surveying
- Provide students with the essential tools needed in surveying
- Teach students to understand and analyze errors in surveying
- Provide students experiences via the practical usage of surveying equipment
- Improve students' knowledge of the mathematical background required in engineering surveying methods

Learning Outcomes:

After completion of the course students are expected to:

- Understand the various stages of survey work.
- Identify, formulate, and solve survey engineering problems.
- Understand the propagation of errors, variance and covariance.
- Develop skills, and knowledge needed for completing engineering project surveys- requirements and specifications.

Course Contents:

- Geoinformatics- definition, disciplines covered, importance.
- Field Surveying- definition & objectives; concept of Geoid and reference spheroids, coordinate systems, plane and geodetic surveys.
- Methods of location of a point- classification of surveys; principles of surveying
- Errors in measurements- sources, types of errors and their treatment. Random error distribution, accuracy, precision and uncertainty. Surveying instruments- temporary and permanent adjustment concept, principle of reversal.
- Maps- types, importance, scales/CI, conventional symbols, and generalization; topographic maps, map projection systems, sheet numbering systems, map layout

- Direct and indirect methods; Chain and tape measurements- corrections to tape measurements; Optical methods- tachometers, sub tense bar; Electronic methods- EDMs, total stations.
- Various terms; Methods of height determination; Spirit leveling- different types of levels and staves; booking and reduction of data, classification and permissible closing error; profile leveling and cross sectioning; curvature & refraction and collimation errors; reciprocal leveling.
- Contours: characteristics, uses and methods of contouring.
- Bearings and angles; Compass surveying- magnetic bearings, declination, local attraction errors and adjustments
- Purpose and classification of: Compass and theodolite traverses- balancing of traverses, computation of coordinates, omitted measurements. Triangulation-network, strength of figures, selection of stations, inter-visibility, satellite stations, measurements and computations; trigonometrical leveling.
- Merits and demerits, accessories; orientation and resection; methods of plane tabling; three point problem and solutions; errors in plane tabling.
- Engineering project surveys- requirements and specifications, various stages of survey work.

Learning Activities and Teaching Methods:

Lectures, Projects, Discussion, Lab experiments

Assessment Methods:

Homework, Project assignments, exams, final exam, lab reports

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Jack C. McCormac, Wayne Sarasua, William Davis	Surveying, 6th Edition	McGraw Hill	2012	978-0-470-49661-9

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