UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
CEE-430	Geotechnical Engineering	5
Prerequisites	**Department**	**Semester**
CEE-330	Engineering	Fall, Spring
Type of Course	**Field**	**Language of Instruction**
Elective	Civil & Environmental Engineering	English
Level of Course	**Lecturer(s)**	**Year of Study**
1st Cycle	Dr Ernestos Sarris	4th
Mode of Delivery	**Work Placement**	**Corequisites**
Face-to-face	N/A	None

Course Objectives:

The main objectives of the course are to:

- Introduce the students to the discipline of geotechnical engineering.
- Teach the students how to perform ground investigation in the site and application of investigation methods.
- Introduce the students to the theories of elasticity and plasticity for geomechanical applications.
- Help the students understand the basics of rock mechanics.
- Application of the finite element method for solving geotechnical problems (e.g soil improvements, reinforced earth and slope stabilization).
- Calculate stability of deep excavations and support measures.
- Design stabilization measures for unstable soil and rock masses (e.g. landslides).
- Provide a basic understanding of physical phenomena related with soil and rock mechanics (e.g expansive soils, landslides and liquefaction.

Learning Outcomes:

After completion of the course students are expected to:

- Acquire knowledge on geotechnical engineering (site and ground investigation methods).
- Understand the theories of elasticity and plasticity useful for constitutive modelling of soils and rocks.

- Acquire practical knowledge with the application of the finite element method for solving geotechnical problems.
- Perform computational analysis for stabilization measures and stability of deep excavations.
- Understand and explain physical phenomena that are related with geomechanics.

Course Content:

- Introduction to Geotechnical Engineering.
- Ground investigation.
- Seepage.
- Theory of elasticity and plasticity (constitutive modelling).
- Introduction to rock mechanics.
- Finite element method for geomechanical applications.
- Retaining and stabilizations measures.

Learning Activities and Teaching Methods:

Lectures, in-class examples, tutoring exercises, Laboratory experimentation, discussion.

Assessment Methods:

Homework assignments, Project, Laboratory reports, Mid-term examination, Final examination.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Applied Soil Mechanics	Sam Helwany	John Wiley and Sons	2007	978-0471791072
Numerical Examples, Problems and Objective Questions in	A.V. Narasimha Rao & C. Venkatramaiah.	Orient Blackswan	2000	978-8173711459

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Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Finite Element Analysis in Geotechnical Engineering: Application (V2)	David M. Potts and L. Zdravkovic	ICE Publishing	2001	978-0727739629
Geotechnical Engineering: A Practical Problem Solving Approach	R.E. Goodman	Ross Publishing Eureka Series	2010	978-1604270167
Principles of Geotechnical Engineering, 8th Edition	Braja M. Das, Khaled Sobban	Cengage Learning	2013	978-1133108665
Geotechnical Engineering	C. Venkatramaiah	New Age International Ltd	2006	81-22417930