UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
CVEE-430	Geotechnical Engineering	6
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	CVEE-330
Type of Course	**Field**	**Language of Instruction**
Elective	Civil & Environmental Engineering	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	4th	Dr Ernestos N. Sarris
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

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 Contents:

- 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 and exercises, projects, discussion

Assessment Methods:

Homework assignments, final big project, mid-term, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Sam Helwany	Applied Soil Mechanics	John Wiley and Sons	2007	978-0471791072
David M. Potts and L. Zdravkovic	Finite Element Analysis in Geotechnical Engineering: Application (V2)	ICE Publishing	2001	978-0727739629

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
R.E. Goodman	Geotechnical Engineering: A Practical Problem Solving Approach	Ross Publishing Eureka Series	2010	978-1-60427-016-7
Braja M. Das, Khaled Sobban	Principles of Geotechnical Engineering, 8th Edition	Cengage Learning	2013	978-1133108665
C. Venkatramaiah	Geotechnical Engineering	New Age International Ltd	2006	81-22417930