Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Soil Mechanics

TEACHER: Roberto Vassallo

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Language: Italian

ECTS: 9	n. of hours: 90	Academic year: 2014/15	Campus: Matera	Semester: II

TOPICS

This course teaches the fundamentals of soil mechanics and provides the principles and the methods for their application in cases of interest for engineering practice.

TEACHING METHODS (please tick one or more options)

X Theoretical lessons
X Tutorials in classroom
X Tutorials in laboratory
☐ Project works
☐ Technical visits
Other activities (please specify) _____

TEXTBOOKS

R. Lancellotta – Geotecnica – Zanichelli
J. Atkinson – Meccanica delle Terre e delle Fondazioni – McGraw-Hill

ON-LINE EDUCATIONAL MATERIAL

web address: http://oldwww.unibas.it/utenti/vassallo/home.shtml

LEARNING OUTCOMES

Learning the fundamentals of soil mechanical behaviour. Knowledge of *in situ* and laboratory tests for soil characterization. Ability to solve with simple methods engineering problems such as: determining stress states in a subsoil, predicting the effects of seepage in soils, calculating the bearing capacity of shallow foundations, predicting settlements and their time trend, determining earth pressure on retaining structures.

REQUIREMENTS

It is necessary to know fundamentals of solid mechanics (such as: stress, strain, equilibrium, compatibility) and of fluid mechanics (such as: pressure, velocity and volumetric flow rate, Bernoulli equation).

EVALUATION METHODS (please tick one or more options)

☐ Intermediate verifications
☐ Written examination
☐ Discussion of a project work
☐ Practical test
X Oral examination
Other methods (please specify) Tutorials carried out during the course will also be discussed.

DETAILED CONTENT

Introduction to the role of Soil Mechanics in engineering practice; Soil Identification; Recapitulation of fundamentals of continuum mechanics; Effective stress principle; Lithostatic pressure; Seepage in steady state conditions; *In situ* pore pressure measurements; Pore overpressures induced in undrained conditions; Undisturbed sampling; Soil compressibility; One-dimensional consolidation; Settlements in one-dimensional conditions; Deformability and shear strength of soils; *In situ* measurement of deformability and shear strength; Settlements in 2-D or 3-D conditions; Bearing capacity of shallow foundations; Earth pressure on retaining structures.

Tutorials: Identification of a soil sample; Lithostatic pressure under either hydrostatic or seepage conditions; Soil seepage; Elaboration of oedometer test and triaxial test data; Calculation of bearing capacity and settlements; Calculation of earth pressure on retaining structures.

SEMINARS BY EXTERNAL EXPERTS YES ☐ NO X

FURTHER INFORMATION