Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Slope stability	
ACADEMIC YEAR: 2016/17	
TYPE OF EDUCATIONAL ACTIVITY: Affine	
TEACHER: Caterina Di Maio, Roberto Vassallo	
e-mail: caterina.dimaio@unibas.it; roberto.vassallo@unibas.it	website: http://www2.unibas.it/dimaio/home.html; http://oldwww.unibas.it/utenti/vassallo/home.shtml
phone: : 0971 205388 - 205390	mobile (optional):
Language: Italian/English if foreign students will attend	

ECTS: (lessons and tutorials/practice) 9	n. of hours: (lessons and tutorials/practice) 81	Campus: Potenza Dept./School: School of Engineering Program: Civil Engineering	Semester: II

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course focuses on the stability analysis of natural and artificial slopes, on the methods for the stabilization of landslides or for the reduction of their displacements and on hydro-geological risk management criteria.

Main provided know-how concerns:

- methods for landslide investigation and monitoring, ability of data interpretation, knowledge and critical use of advanced software, design ability

- methods for slope stability analysis and for the improvement of safety conditions

- landslide typologies, triggering factors, methods for investigation and monitoring

- advanced software for slope and landslide modelling

Main attained abilities (i.e., ability to apply the acquired know-how) will be relative to:

- planning site and laboratory investigations

- data interpretation

- critical use of advanced software

- design of remedial measures for landslide risk mitigation

PRE-REQUIREMENTS

A good knowledge of Soil Mechanics is required

SYLLABUS

1. Advances in Soil and Rock Mechanics (14 hours)
2. Classification and kinematics of landslide phenomena, Landslide hazard and risk, Landslide investigation and monitoring of main parameters (pore water pressures, strains, displacements) (21 hours)
3. Analysis of the factors that influence the behaviour of slopes and landslides (rainfall, toe erosion, excavations, earthquakes) (14 hours)
4. Stability analysis methods (Limit equilibrium – Failure along planar surfaces: planar failure, wedge failure, infinite slope – Failure along curved surfaces: Methods of slices). Slope stability analysis according to the new Italian Technical Code (10 hours)
5. Stress – strain analysis by finite element software (6 hours)
6. Countermeasures for erosion control. Stabilization measures: Modification of ground surface topography, Drainage, Retaining structures, Soil nailing and anchors, Mechanically Stabilized Earth (MSE), Improvement of soil mechanical properties, Soil improvement by chemical and bioengineering methods (16 hours)

TEACHING METHODS

The course includes 81 class/external vist hours consisting of: Theoretical lessons, Classroom tutorials, Project works, Technical visits, Seminars.

EVALUATION METHODS

Oral examination, Discussion of project works.
The objective of the exam is to verify which level the student has reached relatively to the educational goals specified above.
During the exam the teacher will evaluate the student's ability to make links and compare the different aspects dealt with in the course.
On student's request, the exam can also consist in carrying out a project work in the classroom by a computer.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Selected journal papers, guidelines, course handouts provided by the professors.
On-line educational material is made available in a shared dropbox folder or at: http://www2.unibas.it/dimaio/home.html; http://oldwww.unibas.it/utenti/vassallo/home.shtml

INTERACTION WITH STUDENTS

At the beginning of the course, after describing objectives, syllabus and evaluation methods, the teachers make some educational material available to the students by a shared dropbox folder or by the websites mentioned above. At the same time, a list of the students is gathered reporting name, surname, matriculation number, and e-mail address.

Office hours:
Prof. Di Maio: Tuesday from 9 to 14, Macchia Romana Campus, Soil Mechanics Laboratory (Laboratorio di Geotecnica), room 2.
Prof. Vassallo: Monday from 15 to 18, Macchia Romana Campus, Soil Mechanics Laboratory (Laboratorio di Geotecnica), room 4.
Besides, the professors are always available for assisting the students by e-mail or by video-calling.

EXAMINATION SESSIONS (PLANNED)[1]

13/01/17, 03/02/17, 03/03/17, 07/04/17, 05/05/17, 09/06/17, 07/07/17, 28/7/17, 08/09/17, 06/10/17, 03/11/17, 11/12/17

SEMINARS BY EXTERNAL EXPERTS YES X NO □

FURTHER INFORMATION

[1] Subject to possible changes: check the web site of the Teacher or the Department/School for updates.