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| COURSE: Engineering Geology II | | | |
| ACADEMIC YEAR: 2018/2019 | | | |
| TYPE OF EDUCATIONAL ACTIVITY: Characterising | | | |
| TEACHER: Filomena Canora | | | |
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| phone: +39 0971 205075 | | mobile (optional): +39 347 3777788 | |
| Language: Italian | | | |
| ECTS: 6 CFU<br>ECTS 4 CFU lessons<br>ECTS 2 CFU tutorials | n. of hours: 54<br>n. of hours 32 lessons<br>n. of hours 22 tutorials | Campus: Potenza<br>School of Engineering | Semester: I |

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

**Knowledge:** The course focuses on providing the students with the specialized knowledge and the most important tools and methods of applied geology: for the geological-technical and geomechanical study of rock masses; for the definition assessment of engineering geology problems and geological risk in the design and construction of civil engineering works (roads, dams, galleries); for the study, monitoring and assessment of landslide hazard and risk. the design and implementation of civil engineering works (roads, dams, galleries).The course provides knowledge and methods for geological characterization and the geomechanical classification of rock masses; the main tools for studying the issues and assessing the geo-environmental risk in the design of civil engineering works; the criteria and methods for studying and monitoring the slope instability; the main models of landslide risk assessment, with particular reference to those that use the Artificial Intelligence.

**Ability:** The student has to demonstrate to be able to: identify, analyze and interpret the results of the engineering geology surveys for the geomechanical classification of rock masses; define and evaluate the main geological-technical problems and the geological risk associated with investigate, analyze and define the landslide risk; design, set up and manage a slope instability monitoring plan; apply assessment methods for the landslide risk, with particular reference to models using Artificial Intelligence The topics are related to the acquisition of specific skills in order to interact with similar professional figures that operate with different skills in a variety of phases related to the environmental interventions connected to the territory and the design of the works; to the engineering geology phenomena connected to the territory management and planning and the definition of mitigation actions.

PRE-REQUIREMENTS

It is necessary to have acquired and assimilated the basic knowledge provided by the Applied Geology course.

SYLLABUS

Earth surface processes and dynamics; natural and hydrogeological hazards. Natural and anthropogenic: systems, processes phenomena, system dynamics and system identification; complexity and uncertainties. Engineering geology of rock masses. Protection of the territory from geological risk. Slope Instability and dynamics of landslides. Landslide Hazard, Vulnerability, Exposure and Risk Assessment. Measurements and monitoring finalized to the prediction, prevention and mitigation of landslide risk. Aquifer Hydrodynamics. Flow equations. Modeling of groundwater. Hydrodynamics of fractured rocks. Engineering geology of civil engineering projects (tunnels, dams, roads): studies, survey, monitoring and tests of engineering geological monitoring, geomorphological and hydrogeological surveys.

TEACHING METHODS

Theoretical lessons and Classroom tutorials.

EVALUATION METHODS

Oral examination. It will be evaluated the ability to link and compare different aspects covered during the course.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Lecture Notes and Teaching handouts.

Scesi L., M. Papini, P. Gattinoni ( 2001) – GEOLOGIA APPLICATA: APPLICAZIONE AI PROGETTI DI INGEGNERIA CIVILE (vol. 2). Casa Ed Ambrosiana Milano

Scesi L., M. Papini, P. Gattinoni, L. Longoni (2015) - GEOLOGIA TECNICA. Casa Ed Ambrosiana Milano

Glade T., Anderson G.M., Crozier J.M. LANDSLIDE HAZARD AND RISK, Wiley, 2005

Civita M., IDROGEOLOGIA APPLICATA E AMBIENTALE. Casa Editrice Ambrosiana, 2005.

Fetter C.W. APPLIED HYDROGEOLOGY (4th Edition). Pearson, 2000.

INTERACTION WITH STUDENTS

At the beginning of the course, the teacher describes the objectives, program and evaluation methods, provides students educational material. She collects a list of students who intend to enroll in the course, together with name and email.

Office hours: Wednesday 11.00 to 13.00 hours; Friday 11.00 to 13.00 at the Campus of Macchia Romana, School of Engineering, third floor, st. n. 36 – Via dell'Ateneo Lucano, 10 - Potenza.

In addition to weekly reception, the teacher is available at all times for a contact with the students, through e-mail or by telephone.

EXAMINATION SESSIONS (FORECAST)[1]

6/2/19; 20/2/19; 6/3/19; 20/3/19; 3/4/19; 17/4/19; 10/5/19; 28/6/19; 17/7/1819; 5/9/19; 19/9/18; 11/10/19; 25/10/19; 10/11/19; 22/11/19; 12/12/19; 20/12/20

SEMINARS BY EXTERNAL EXPERTS YES

FURTHER INFORMATION

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