DIPARTIMENTO DI SCIENZE

ACADEMIC YEAR: **2016-2017**	
COURSE: **Applied Geomorphology**	
TYPE OF EDUCATIONAL ACTIVITY: **Other**	
TEACHER: **Prof. Mario Bentivenga**	
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Language: **ITALIAN**	

ECTS: n. **6** (n. **4** lessons and n. **2** tutorials/practice).	n. of hours: **56** (**32** lessons and **24** tutorials/practice).	Campus: **Potenza** Dept./School: **Dipartimento di Scienze** Program: Scienze Geologiche **(L-34).**	Semester: **I°** Course start: 3.10.2016 End of course 20.01.2017

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The Applied Geomorphology course concerns with the evolution of the different environments that interfere with human activities and provide guidance on how to take action to resolve them. The main objective of the course is to provide the students the basic knowledge needed for studying geomorphological characters of an area and have the ability to indicate appropriate solutions to very different problems.

The main knowledge provided will be:

- *provide students with all the geomorphological knowledge needed to tackle issues concerning the environment;*
- *the knowledge of the tools that allow to quickly solve, in a more precise manner, environmental issues;*
- *at the end of the course the student must to be able to plan the territory by means appropriate Environmental Geology techniques.*

The main skills, ability to apply the learned knowledge, will be:

- *to provide a detailed geomorphological analysis of the territory;*
- *to identify all the geomorphological characteristics of the study area;*
- *evaluate the analytical methods and practical applications, developed during the course, to autonomousely deal with the geomorphological issues affecting the territory;*
- *develop communication and interpersonal skills in a professional environment, with interlocutors more or less specialists. Exercises conducted on practical cases gives to the students, the opportunity to work as a group and discuss about the most suitable solutions.*

Knowledge and understanding:

The student must demonstrate the ability to faces issues concerning geology and geomorphology. It also must be able to organize and process the data from the statistical point of view using appropriate software;

Skill to apply knowledge and understanding:

The student must demonstrate to be able to identify geomorphological characteristics of an area, identify eventual issues and take appropriate technical arrangement;

Independently judgment skills:

The student must be able to evaluate independently the problems geomorphological and to identify the main relevant methodologies. Through the input provided during the lessons and exercises, students will acquire the ability to formulate considerations on analytical methods and practical applications developed during the course and simultaneously will acquire the ability to deal autonomousely with the encountered problems.

Communication skills:

The student must have the ability to compile, in a simple way even understandable for a non-specialist audience, a correctly written report using the most appropriate technical language. In the case of exercises on real cases, an exchange of ideas among students as working group is expected, at the aim to provide the best solutions. The final goal is to promote professional communication and interpersonal skills with more or less specialist partners.

Learning capacity:

The student must be able to update, through the consultation of literature, text books and technical manuals, related to geology professional field and related matters.

PRE-REQUIREMENTS

The student must have acquired the following basic knowledge:

- *mathematic*
- *geomorphology;*
- *physic.*

SYLLABUS

Main geotechnical characteristics of soils: *Recognition and geomechanical tests and processing of laboratory data (1 ECTS lecture)*

Applied climatology, soil erosion and dynamic slope: *General aspects of applied climatology and application examples. Soil erosion and geomorphological implications. Indications of works of hydraulic-forestry and natural accommodations for soil conservation. Classification of*

landslides and description of Deformation Gravitational Deep Versante DGPV. Description of the different methods used for slope stability analysis and preparation of geological surveys on a landslide: using direct and indirect methods and directions of accommodation works. Hazard due to instability of the slopes and description of the factors that determine (1 ECTS lecture).

***environmental management and hazard in river and coastal areas**: description of river and coastal systems and their management problems. Indications about works of hydraulic and natural accommodation along the waterways and coasts (1 ECTS lecture).*

***environmental management and danger in all other morphological environments, seismic hazards and subsidence and human activity:** direct and indirect consequences of human activity on the environment (1 ECTS lecture).*

***Interpretations of geomorphological and geological maps:** geomorphological interpretation of an area from aerial photographs (stereoscopic analysis) and from satellite images. Realization of geomorphological maps on an appropriate scale. Realization of maps showing the susceptibility to landslides and the geomorphological hazards (1 ECTS tutorial);*

***geomorphological hazard mapping and educational excursions**: inventory of the hazards, mapping of the factors predisposing the instability and reading forecast thematic mapping. Organization of educational excursions (1 ECTS tutorial).*

TEACHING METHODS

The course includes 56 hours of classroom teaching with lessons and exercises divided in: 32 hours of frontal lesson and 24 hours of exercises.The course is organized as follows:

- *lectures about different subjects of the course (32 hours);*
- *guided exercises bot in the classroom and in the field;*
- *individual exercise, assigned to each student, on an issue of professional interest, accompanied by literature search, numerical processing and a written report, shared and discussed with the student working groups (to be carried out during the hours of individual study of student, with review by the teacher during the hours of reception).*

EVALUATION METHODS

The aim of the examination is to test the level of achievement of the previously mentioned educational goals.
The examination will take place in a unique moment, at the same day, and consists of:

- *an oral test in which the ability to link and compare different aspects, covered during the course and with the practical exercise, individually assigned to the student, will be evaluated.*

The student passes the exam if achieves a mark of not less than 18/30.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Notes provided by the teacher during the course.
Text / reference:

M. Panizza - Geomorfologia applicata, La Nuova Italia Scientifica, Roma.
F. Dramis & C. Bisci - Cartografia geomorfologica, Pitagora Editrice, Bologna.
A. Vallario – Frane e territorio, Liguori Editore.

further information

G. Gisotti (2008) Le cave: recupero e pianificazione ambientale. Dario Flaccovio Editore. ISBN 978-88-7758-679-7.
M. Tanzini (2011) Fenomeni franosi e opere di stabilizzazione. Dario Flaccovio Editore. ISBN 978-88-579-0077-3
E. Pranzini (2004) La forma delle coste. Ed. Zanichelli. ISBN: 9788808179609
E. N. Bromhead "Stabilità dei pendii"- Dario Flaccovio Editore.
Specific topics may also be focused on texts suggested by the teacher, from time to time, during the course.

INTERACTION WITH STUDENTS

After describing the objectives, the program and the methods of verification, the teacher during the course will provide to the students the educational material. Office hours: from Monday to Friday 9:30 to 13:30 in the teacher office.
In addition to the weekly reception hours, the teacher is anytime available through his e-mail or phone. E-mail: mario.bentivenga@unibas.it, phone: 0971205834, mobile: 3204370976.

EXAMINATION SESSIONS (FORECAST)[1]

25/01/2017, 22/02/2017, 29/03/2017, 26/04/2017, 31/05/2017, 21/06/2017, 19/07/2017, 20/09/2017, 18/10/2017, 22/11/2017, 20/12/2017

SEMINARS BY EXTERNAL EXPERTS Yes □

FURTHER INFORMATION

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