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**ACADEMIC YEAR: 2016-2017**

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COURSE: Hydraulics and Forestry Soil Conservation

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TYPE OF EDUCATIONAL ACTIVITY: Affine

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TEACHER: Alessandro COMEGNA

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e-mail: [alessandro.comegna@unibas.it](mailto:alessandro.comegna@unibas.it)

Web:  
[http](http://)

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Phone: 0971 205474

mobile:

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Language: Italian

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ECTS: 9

- 6 frontal lectures;  
- 3 practice.

n. of hours:

-48 hours lectures.  
-48 hours practice.

Campus: Potenza

School: SAFE

Program: LT Forest and  
Environmental Sciences

Semester: I

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#### EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Through basic notions in hydraulics and hydrology, the course aims to provide the necessary skills to implement intervention techniques with a view to managing seasonal streams and consolidate hillsides. Particular attention is paid to enhancing knowledge of fluid dynamics, water transport in streambeds and control of incipient sediment transport, both on bare or forested slopes and in natural channels. The necessary skills are also provided for making a sound choice of appropriate interventions of watercourse restoration, as well as the tools required for appropriate design of hydraulic and forestry management works.

- **Knowledge and understanding:** the course provides the general principles of hydraulics and forestry soil conservation. Part of the course emphasized on the understanding of the laws that regulates the surface flow in open natural channels. Furthermore during the practise unit are deepened explained the general tools for appropriate design of hydraulic and forestry management works.
  - **Applying Knowledge and understanding:** at the end of the course the student will acquire the necessary skills for a rational approach to the different hydraulics examined scenarios, as well as the ability for a proper use of the necessary tools required for a correct forest watershed management.
  - **Making judgements:** ability to evaluate, select and apply the most appropriate procedures to solve forestry soil and water conservation problems at basin scale, also through the use of naturalistic engineering tools.
  - **Communication skills:** ability to organize in a rational way the concepts developed during the whole course, using suitable mathematical and computer tools.
  - **Learning skills:** ability to assemble and to classify in a functional manner the explained information, in order to be able to define the best management practices in mountain areas.
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#### PREREQUIREMENTS

- Mathematics and Physics

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#### SYLLABUS

##### Lessons

Introduction, Hydrostatics, Pressure Measurement, Hydrodynamics, Water flow in pipes, Flow in open channels, Erosion, Classifying land capability, Preventing and controlling gullies, Cover crops, Soil bioengineering, Principles and scope of torrent control and streambed stabilization.

##### Practices

Design and calculation of dams

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#### TEACHING METHODS

The course is divided into three teaching units: the first part is composed by lectures on hydraulics, the second is about forestry soil and water conservation and the third teaching unit includes the necessary tools required for appropriate design of hydraulic and forestry management works.

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#### EVALUATION METHODS

Oral examination at the end of the course. Three questions will be drawn, and will be discussed the year-project carried out.

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**TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL**

1. Benini G. Sistemazioni Idraulico forestali UTET. Torino.
  2. Nebbia G. Dispense di Idraulica. Liguori Editore.
  3. Ferro V. La Sistemazione dei Bacini Idrografici. McGraw-Hill. Milano.
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**INTERACTIONS WITH STUDENTS:**

- In the office at planned days/hours (usually on Wednesday)
  - E-mail and telephone.
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**EXAMINATION SESSIONS (Forecast)**

Usually the second Wednesday of every month (except August)

**EVALUATION BOARD**

Alessandro Comegna

Antonio Coppola

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**SEMINARS BY EXTERNAL EXPERTS YES**

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