



COURSE: River engineering and basin planning

ACADEMIC YEAR: 2019/2020

TYPE OF EDUCATIONAL ACTIVITY: Basic

TEACHERS:

Annamaria De Vincenzo

Vincenzo Masi

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mobile (optional):

Language: italian

ECTS: 9/12	n. of hours: 81 n. of class hours:48	Campus: Potenza School of Engineering: Program: 234	Semester: Annual
3/12	n. of lab or exercise hours: 33 n. of hours: 27 n. of class hours:16 n. of lab or exercise hours: 11		

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

- **Knowledge and understanding skills:**
Students should demonstrate their knowledge and understanding of the problems related to the morphological evolution of rivers, induced both by natural phenomena and human intervention.
 - **Ability to apply knowledge and understanding:**
Students must demonstrate to be able to design transverse and longitudinal fluvial structures and river training works
 - **Judgment autonomy:**
Students must be able to understand and independently evaluate nature and causes of any morphological imbalance processes in a fluvial reach and to indicate the main methodological approaches useful for reducing these processes.
 - **Abilità comunicative:**
Students should have the ability to explain what they learned about fluvial hydraulics and river basin planning even to people not familiar with these subjects. They must also show the ability to present exercises, degree dissertation..., using the correct scientific language.
 - **Learning skills:**
Students should continuously update their knowledge, through the consultation of books and scientific papers, in order to acquire the ability to attend Courses, Seminars and Masters.
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PRE-REQUIREMENTS

The following knowledge provided by the courses of hydrology, hydraulics and geology are requested:

- basic concepts of fluid mechanics, statistical and river basin geomorphology.
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SYLLABUS

The roughness in natural fixed beds
The sediment transport
Incipient motion condition
The resistance to flow in mobile bed
Bed sediment transport



Classification of fluvial reaches evolution

Energy analysis of evolution processes in a river, degradation or aggradation of a river toward the morphological equilibrium condition

Modeling laws of gravel beds (law of Meyer-Peter and Müller)

Modeling laws of meandering rivers (laws of Lacey and Hermanek)

Designing criteria of longitudinal and transversal river training works

TEACHING METHODS

Theoretical lessons, Classroom tutorials, Laboratory tutorials, Project works, Technical visits, Seminars by external experts.

EVALUATION METHODS

Discussion of a project work, Oral examination.

Course notes.

Textbooks:

- Principi di idraulica fluviale, autore A. Armanini, Ed. Bios
- La sistemazione dei corsi d'acqua montani, U. Maione, Bios
- Fluvial processes, S. Yalin, A.M. Ferreira da Silva, Ed. IAHR Monograph

INTERACTION WITH STUDENTS

At the beginning of the lessons, after describing objectives and evaluation methods, students will be provided with educational materials in printed form. Simultaneously, a list of students attending the course lessons, together with name, telephone number and email, will be compiled.

Office hours: Thursday from 9:30 to 11:30 at room n. 51, 5th floor, School of Engineering

In addition to weekly reception, teachers are always available by e-mail for contact with the students.

EXAMINATION SESSIONS (FORECAST)¹

24/06/2020, 22/07/2020, 16/09/2020, 21/10/2020, 16/12/2020

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.