COURSE: Hydrological Modelling	
ACADEMIC YEAR: 2018-2019	
TYPE OF EDUCATIONAL ACTIVITY: Characterizing (3 ECTS) , Affine (6 ECTS)	
TEACHER: Prof. Vito Telesca	
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phone: +39.(0)971.205149	
Language: Italian and English	

ECTS: 9	n. of hours: 81	Campus: Potenza School of Engineering Program: Master's Degree in Civil Engineering	Semester: II

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The overall objective of this course is to familiarize students with criteria and methods to understand hydrological dynamics and to apply hydrological modelling at local, regional and global scales. The main knowledge areas cover theoretical, methodological and practical aspects of hydrological modelling.

At the end of the course and when the exam has been passed, the student shall be able to identify, independently, and argue, clearly and technically, the main procedures and techniques regarding to flood risk evaluation, even in condition of climate change.

PRE-REQUIREMENTS

Course prerequisites include: knowledge of differential and integral calculus; knowledge of statistics and probability

SYLLABUS

- introduction to MATLAB (5 hours)
- climate change and hydrological modelling, global climate change models, regional climate models, statistical downscaling models (10 hours)
- hydrological cycle, at global, regional and local scales, hydrological and energy balance (5 hours)
- hydrological losses models and soil-vegetation-atmosphere transfer (20 hours)
- precipitation-runoff models, flood risk evaluation (local and regional scales analysis) (10 hours)
- hydrological models application to real cases (31 hours)

TEACHING METHODS

The course is concerned with lectures and a suite of practical applications for a total of 81 hours. Students will perform numerical exercises in the classroom. These exercises will be collected in a project work to be submitted during the exam.

EVALUATION METHODS

The evaluation method consists of an oral examination based on the topics covered in the course and a discussion of the project work. The examination aims to evaluate the degree to which student learning outcomes meet the educational goals of the course with particular attention to the student's skill in flood risk evaluation by hydrological models, even in condition of climate change. The oral examination will last approximately 1 hour. The maximum grade is 30, the lowest is 18 out of 30. Brilliant exams are graded as 30 "cum laude".

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

On-line course notes (cloud)

INTERACTION WITH STUDENTS

After describing educational goals, syllabus, teaching and evaluation methods, textbooks and on-line educational materials will be made available to the students at the beginning of the course. A student class list containing: student ID, name, surname, and e-mail address will be set concurrently.

Professor's office hours are as follows: Tuesday from 10:00 AM to 12:00 AM. and Thursday from 10:00 AM to 12:00 AM at Macchia Romana Campus – School of Engineering (on the 5th Floor – professor's room). However, students can contact the professor at the end of each lesson.

EXAMINATION SESSIONS (FORECAST)[1]

June 27, 2019; July 18, 2019; September 19, 2019; October 17, 2019; November 14, 2019; December 12, 2019; January 16, 2020; February 13, 2020; March 12, 2020

SEMINARS BY EXTERNAL EXPERTS YES ☑ NO □

FURTHER INFORMATION

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