COURSE DETAIL

ADVANCED MODELS AND METHODS FOR WATER SECURITY
Country Italy
Host Institution University of Bologna
Program(s) University of Bologna
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Civil Engineering
UCEAP Course Number 162
UCEAP Course Suffix
UCEAP Official Title ADVANCED MODELS AND METHODS FOR WATER SECURITY
UCEAP Transcript Title ADV WATER SECURITY
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description

This course is part of the Laurea Magistrale degree program and is intended for advanced level students. Enrollment is by permission of the instructor. The course focuses on advanced methods and models to predict the vulnerability of a water body to natural and anthropic pressures and evaluate the risk of water scarcity or poor quality under current and future conditions. In particular, the course addresses the following main contents: analytical and numerical models of flow and contaminant transport, data-driven and risk assessment methods, and laws of similarity for model tests in hydraulics. It is divided into two modules:

Module 1:

- Analytical and numerical modeling of flow processes in natural domains
- Analytical and numerical modeling of transport processes
- Risk and sensitivity analysis
- Monitoring and data-driven methods for the analysis of water bodies
- Introduction to geostatistics

Module 2:

- Dimensionless numbers and laws of similarity for model tests in hydraulics
- Hydraulic measurements

Language(s) of Instruction
English

Host Institution Course Number
B5517

Host Institution Course Title
ADVANCED MODELS AND METHODS FOR WATER SECURITY

Host Institution Course Details
https://www.unibo.it/en/study/course-units-transferable-skills-moocs/course-uni...

Host Institution Campus BOLOGNA
Host Institution Faculty
Host Institution Degree LM in ENVIRONMENTAL ENGINEERING
Host Institution Department CIVIL, CHEMICAL, ENVIRONMENTAL, AND MATERIALS ENGINEERING
Course Last Reviewed 2025-2026

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