



Course Code CVEE-443	Course Title Water Resources Engineering	ECTS Credits 6
Department Engineering	Semester Fall, Spring	Prerequisites CVEE-211
Type of Course Elective	Field Civil and Environmental Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 4 th	Lecturer(s) Dr Loizos Papaloizou
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Introduce students to the fundamental principles and concepts of surface water hydrology
- Identify the key applications of water resources
- Introduce computational tools and techniques for hydrologic analysis and evaluation
- Define the main hydrologic cycles
- Provide knowledge and technical expertise on the design and maintenance of flood control systems
- Introduce design approaches to effective storm water control systems
- Provide techniques for the design and evaluation of sewers and culverts
- Provide solutions for street and highway drainage in extreme conditions
- Explain the degrading performance of hydraulics due to sediment accumulation and erosion
- Introduce water resources management systems for sustainability

Learning Outcomes:

After completion of the course students are expected to:

- Define fundamental principles and concepts of surface water hydrology
- Identify uses and applications of water resources
- Apply techniques, computational tools, and measurement data to perform hydrologic analysis
- Identify and define hydrologic cycles (rainfall, runoff, evaporation, and transpiration)
- Design and model management systems for flood control
- Design sewers and culverts for storm water control
- Use computational tools for modeling and performance evaluation of storm

- water management systems
- Evaluate the condition of hydraulic systems in terms of sediment accumulation and erosion
- Design and maintain water resources management systems for sustainability

Course Contents:

- Fundamentals of surface water hydrology
- Water withdrawals and uses (water for energy production, water for agriculture, water supply/withdrawals, water demand, drought management, analysis of surface water supply)
- Water distribution (system components, system configuration and operation, network hydraulics, pump system analysis, network simulation and modeling)
- Water for hydroelectric generation
- Rainfall-runoff modeling
- Flood control
- Storm water control:
 - Storm sewers and detention
 - Street and highway drainage and culverts
- Sedimentation and erosion of hydraulics
- Water resources management for sustainability

Learning Activities and Teaching Methods:

Lectures, in-class examples and exercises, discussion, projects.

Assessment Methods:

Homework, exams, final exam, project reports.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
L. W. Mays	Water Resources Engineering, 2 nd Edition	Wiley	2010	978-0470460641

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
D. A. Chin	Water-Resources Engineering, 3 rd Edition	Prentice Hall	2012	978-0132833219