



Course Syllabus

Course Code	Course Title	ECTS Credits
CEE-443	Water Resources Engineering	5
Prerequisites	Department	Semester
None	Engineering	Fall, Spring
Type of Course	Field	Language of Instruction
Elective	Civil & Environmental Engineering	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Dr Paris Pittakaras	4 th
Mode of Delivery	Work Placement	Corequisites
Face-to-face	N/A	None

Course Objectives:

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;
- 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 be able 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 modelling 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 Content:

- 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 modelling.
- 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, projects and homework assignments.

Assessment Methods:

Homework assignments, projects, mid-term exam, and final exam.

Required Textbooks / Readings:

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

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Water-Resources Engineering, 3 rd Edition	David A. Chin	Pearson	2012	978-0132833219