CIVIL-466

Water resources management

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Cursus	Sem.	Type
Civil Engineering	MA2, MA4	Opt.
Environmental Sciences and Engineering	MA2, MA4	Opt.

Language of teaching	English
Credits	3
Session	Summer
Semester	Spring
Exam	Oral
Workload	90h
Weeks	14
Hours	**3 weekly**
Courses	2 weekly
Exercises	1 weekly
Number of positions	

Summary

Water is one of the fundamental earth resources that sustains all life forms. Despite being abundant as chemical compound, its accessibility and use depend on its physical status and quality. The analysis of resources availability, user needs and optimal allocation will be taught and discussed.

Content

1 Concepts and Definitions
1.1 Introduction
1.2 Context of water resources management (natural, environmental, social)
1.3 Definition of Integrated Management
1.4 Presentation of the course project

6.2 Optimization techniques
6.3 Decision making
6.4 Case study
7 Round table
7.1 Presentations and discussion

Keywords

Water cycle, water resources, water use, water allocation, optimization, management, sustainability

Learning Outcomes

By the end of the course, the student must be able to:

- Assess / Evaluate and model water resources a vailability at different scales
- Calculate different water needs
- Formulate an integrated and sustainable water management concept
- Perform a basic economic analysis and assess the economic value of water projects
- Distinguish between project development with or without profitability goal
- Assess / Evaluate the internal rate of return and the net present value - Optimise the regulation of a watercourse
- Assess / Evaluate he water issue in the current economic context

Teaching methods

Ex cathedra, with audiovisual means and board integrative explanations/derivations

Expected student activities

The students will be divided in small groups and perform a course project, which will be presented to the students at the end of the first block of lectures. The methodology and tool for advancing with the project will be provided in parallel with the lecture blocks (i.e., 1, 2, 3,â#Š,7). Students will thus have the time to allocate the time they need to accomplish the required calculations and refer to the instructors for suggestions. In block 7, each group will present their project and discuss the results together with the instructors.

Assessment methods

30% project course
70% oral exam

Supervision

Others	Dr Paolo Perona, Wed 13:00-15:00 or upon appointment Dr Matin Buerum Dr Marcelo Leite Ribeiro

Resources

Moodle Link

- https://go.epfl.ch/CIVIL-466