

Schedule and practicalities

WAT-E2110 Design and Management of Water and Wastewater Networks

Period IV, Spring 2019

Expected learning outcomes

- Recognize the profound influence of water supply services and water quality on public health [identity]
- Understand and manage risks related to drinking water quality [knowledge, skill]
- Build and calibrate hydraulic simulation models of water distribution and wastewater collection systems [skill]
- Estimate, forecast and manage water demand [skill]
- Design and operate water distribution and wastewater collection systems [skill]
- Understand the multi-objective optimization problems related to system design and operation [knowledge, skill]

Schedule (1/2)

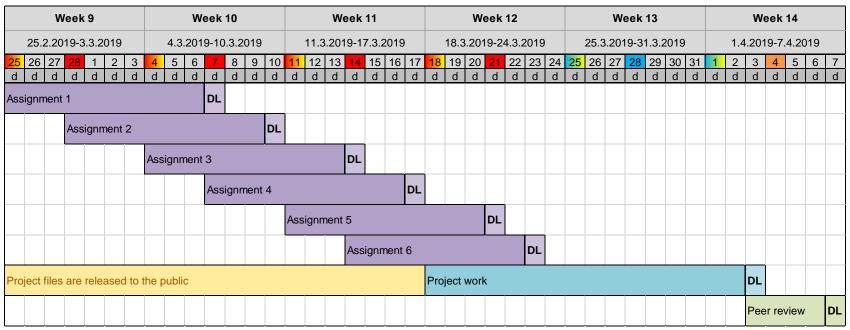
LEGEND

Lecture (Mon in U351; Thu in Maari-E)

Support session (Vesitalo)

Workshop for project

Feedback session



Support sessions are organised on Mondays at 13:00.

Schedule (2/2)

- 6 lectures, 6 modeling sessions
- 6 assignments related to lectures
- Project instead of final exam
 - It is recommended to do it in pairs
 - One out of two topics per pair
- Modelling software is provided by Fluidit Oy
 - Downloadable from MyCourses
 - Can be used at home (but requires 64-bit Java 8) or any Windows computer on campus

Lecture topics/Assignments

Lecture topics	Assignment topics*
Lecture 1: Hydraulic modelling of water and wastewater networks	Assignment 1: Sewer and water supply modeling
Lecture 2: Basics of Hydraulics, Management of pressure transients	Assignment 2: Hydraulics and management of pressure transients
Lecture 3: Water demand management, Leakage	Assignment 3: Modeling leakage
Lecture 4: Inflow and infiltration and sewer overflows	Assignment 4: RDII
Lecture 5: System optimization, Pump design	Assignment 5: Reducing energy use and leakage in water supply system
Lecture 6: Health and aesthetic aspects of water quality, Water quality control in the networks	Assignment 6: Water quality modeling

^{*}Assignments are not compulsory but they provide relevant knowledge and skills for project work

Project work

- Two topics to choose from:
 - Sewer and stormwater modeling
 - Water supply and water quality modeling
- One topic per pair
 - Choose your pair and pick a topic from Group choice in MyCourses
- Peer review of another pair's topic after submission
- Submit both project report and model file

Peer review

- Done after submitting the project report
- Review of *a different* topic
 - You review sewer/stormwater project report if you submitted water supply/quality project report
- Guidelines provided in MyCourses
- 10 points to the final grade is the submission is sensible (i.e. guidelines were followed)
- Topics are distributed before the project DL

Workload & grading

	Points	Maximum points
Assignments (x 6)	10 p / assignment	60 p
Project work	70 p / report 70 p / model	140 p
Total		200 p

Grade	Percent	Points
5	89 %	178
4	79 %	158
3	69 %	138
2	59 %	118
1	49 %	98

Workload is estimated to be approx. 135 hours

- Lectures ≈ 44 h
- Assignments ≈ 41 h
- Project work ≈ 47 h
- Peer review ≈ 3 h

Grading of the course:

- Assignments 30 %
- Project 70 %

Overview of contents

- Hydraulic modelling of water and wastewater networks
 - Supervisory control and data acquisition (SCADA), system optimization
- Basics of hydraulics, management of pressure transients
- Water demand management
 - Leakage and pressure control, innovative pricing, water policies, customer metering, etc.
- Inflow and infiltration assessment and sewer overflows
- System optimization, pump design
- Health and aesthetic aspects of water quality, water quality control in the networks
 - Biofilm, deposits, internal corrosion, odour control
 - Risk management (Water Safety Plan)

Teaching methods

- Contact sessions twice a week:
 - Mon 8:30-12:00 & Thu 13:00-16:30
- Support session with course assistant once a week
 - Check schedule and/or course announcements for changes
- Communication via MyCourses announcements and Email



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