



P000087, Thermodynamic modelling of water and wastewater systems using OLI Stream Analyser, 4.0 Hp

Syllabus

Finalized by: Finalized by: Styrgrupp av SSFEB forskarskola, 2024-04-11, 2024-04-11

Valid from: 2024V

Level within study regulation:

Third cycle

Grading scale:

Pass / Failed

Course language:

Swedish

Entry requirements:

No prior knowledge apart from background in basic chemistry and physics is necessary to participate in this course.

Objectives:

Upon completing this course, students will be able to:

1. Evaluate thermodynamics and chemical equilibria as applied to water and wastewater systems.
2. Skilfully navigate the software OLI Stream Analyzer to calculate equilibrium compositions, phase diagrams, and thermodynamic and transport properties of chemical compounds.

3. Design real experiments and processes using thermodynamic models as a guide.
4. Simulate real-world problems in water and wastewater treatment, and other areas of environmental science, using thermodynamic modelling.
5. Critically evaluate assumptions and limitations of thermodynamic modelling using OLI Stream Analyser
6. Identify and solve common challenges and errors encountered during thermodynamic modelling
7. Interpret and visualize simulation results through graphical representation and data analysis

Content:

The course will be conducted on campus during five full days including:

- Basic thermodynamics, chemical speciation, and water analysis.
- Working with the OLI user interface and models.
- Practical exercises on chemical speciation modelling.
- Work on a given modelling problem.
- Project presentations
- Best practices for modelling.

Self-study work prior to the on-campus meeting in the form of literature reading and home assignment will be required. Following the lectures and on-campus exercises, students will conduct an independent modelling project, preferably using experimental data that they have already gathered during their PhD studies.

Modes of assessment:

Pass/Fail. Pass when course assignments and physical presence are fulfilled. - If a student has failed an examination, the examiner has the right to issue supplementary assignments. This applies if it is possible and there are grounds to do so.

- The examiner can provide an adapted assessment to students entitled to study support for students with disabilities following a decision by the university. Examiners may

also issue an adapted examination or provide an alternative way for the students to take the exam.

- If this syllabus is withdrawn, SLU may introduce transitional provisions for examining students admitted based on this syllabus and who have not yet passed the course.
- For the assessment of an independent project (degree project), the examiner may also allow a student to add supplemental information after the deadline for submission. Read more in the Education Planning and Administration Handbook.

Organisation:

Department of Energy and Technology

Supplementary information

Other information:

- The right to participate in teaching and/or supervision only applies for the course instance the student was admitted to and registered on.
- If there are special reasons, students are entitled to participate in components with compulsory attendance when the course is given again. Read more in the Education Planning and Administration Handbook.