LL222U Technology for Teachers, upper secondary school. Part of Lärarlyftet II 90.0 credits

Teknik för lärare i gymnasieskolan. Ingår i Lärarlyftet II/Uppdrag.../

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for LL222U valid from Autumn 2016

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Technology and Learning

Specific prerequisites

Swedish teaching qualification as well as experience of teaching of the subject technology in the upper-secondary school or in school year 7-9 in the primary and lower-secondary school.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

On completion of the course, the student should be able to

â€¢ be able to plan and evaluate technology instruction in the upper-secondary school in accordance with the requirements of the curricula

â€¢ have good knowledge of formative and summative assessment in the technology subject in accordance with the requirements of the curriculum and the special character of the technology subject

â€¢ have good knowledge of the technology subjects of the primary and lower-secondary school and the upper-secondary school- their aims, traditions, approach to knowledge and types of instruction

â€¢ be able to reflect on the influence of the technology on social progress, sciences and working life in consideration of aspects as gender, health, culture and material prosperity

â€¢ be familiar with the importance of experiment and modelling in technological sciences and technology instruction, as well as be able to design, carry out and evaluate experiments in their own teaching

â€¢ be able to use engineering methods in technical design and problem-solving as well as be able to develop, carry out and evaluate exercises for pupils with similar contents

â€¢ be familiar with common construction materials and manufacturing processes- their fields of use, advantages and disadvantages

be familiar with basic mechanical relationships and use them in simple analyses

â€¢ be able to carry out simple calculations in solid mechanics

â€¢be familiar with common electric and electronic components and their use

â€¢ be able to write computer programs and create dynamic web pages by means of modern high level language

â€¢ be able to analyse and discuss environmental problems and methods to mitigate and/or solve them

â€¢ be able to identify and describe technical systems in industry and society

â€¢ be able to teach about above-mentioned fields of technology in the upper-secondary school

â€¢ have good knowledge of current technology didactics research

These are the intended learning outcomes for the course in its entirety. They are deconstructed to goals in their respective modules.

Course contents

The course gives an overview of the technical subject content and the subject didactics that are required to teach in the subject technology in the upper secondary school according to current control documents.

The course consists of the following block:

â€¢ Technology didactics- the history, approach to knowledge, assessment and research of the school subject

â€¢ Design and product realisation

â€¢ Technology, man, society and environment from a historical perspective

â€¢ Experiment, models and simulation in technology and technology instruction

â€¢ programming

â€¢ Electrical Engineering

â€¢ Environmental Technology

â€¢ Industrial Systems

â€¢ Material Technology

â€¢ Mechanics and Solid Mechanics

â€¢ The Built Environment

â€¢ Information and Communication Technology

Disposition

The course is given as contract education in the project for continuing education for teachers, the government CPD initiative for teachers II, that is administrated by The Swedish National Agency for Education.

Course literature

Be stated no later than three weeks before start of the course.

Examination

- LAB4 - Laboratory exercises, ICT, object oriented programming, 1.5 credits, grading scale: P, F

- LAB3 - Laboratory exercises, mechanics and strenght of materials, 1.0 credits, grading scale: P, F
- LAB2 - Laboratory exercises, materials and manufacturing technology, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory exercises, electrical engineering, 2.0 credits, grading scale: P, F
- LAB6 - Laboratory exercises, ICT, computer security, 1.5 credits, grading scale: P, F
- LAB5 - Laboratory exercises, ICT, web programming, 1.5 credits, grading scale: P, F
- PRO2 - Project on ecological systems, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Product development project, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO4 - Project on environmental assessment, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO3 - Project on sustainable infrastructure, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- INL1 - Written assignment, technology education, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- INL2 - Written assignment, design, 3.0 credits, grading scale: P, F
- PRO9 - Project, information and communication technology (ICT), 3.0 credits, grading scale: A, B, C, D, E, FX, F
- INL5 - Written assignment, programming, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO6 - Project, the built environment:urban development & transport, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- INL6 - Written assignment, electrical engineering, 2.0 credits, grading scale: P, F
- PRO5 - Project, industrial systems, 5.5 credits, grading scale: A, B, C, D, E, FX, F
- INL3 - Written assignment history of technology, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO8 - Project, the built environment: constructional engineering, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO7 - Project, the built environment: property development, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- INL4 - Written assignment, experiments and modelling, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- INL9 - Written assignment, technology education, advanced level, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM1 - Seminars, introduction to technology education, 2.5 credits, grading scale: P, F
- SEM2 - Seminars, history of technology, 3.5 credits, grading scale: P, F
- TEN2 - Examination, mechanics and strength of materials, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- INL7 - Written assignment, material and manufacturing technology, 1.5 credits, grading scale: P, F
- INL8 - Written assignment, mechanics and strenght of materials, 1.5 credits, grading scale: P, F

- TEN1 - Examination, materials and manufacturing technology, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- SEM7 - Seminars, technology education, advanced level, 2.5 credits, grading scale: P, F
- SEM5 - Seminars, industrial systems, 2.0 credits, grading scale: P, F
- SEM6 - Seminars, the built environment, 1.5 credits, grading scale: P, F
- SEM3 - Seminars, experiments and modelling, 2.5 credits, grading scale: P, F
- SEM4 - Seminars on environmental engineering, 1.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

The course is examined through active participation in seminars and laboratory sessions as well as passed written assignments, examinations and project work.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.