



## Course syllabus

Faculty Board of Science and Engineering  
School of Computer Science, Physics and Mathematics

1TG411 Undervisning och lärande i teknik, 15 högskolepoäng  
Teaching and learning in Technology, 15 credits

**Main field of study**

Technology

**Subject Group**

Educational Sciences/General Didactics

**Level of classification**

First Level

**Progression**

G1F

**Date of Ratification**

Approved by the Board of the School of Computer Science, Physics and Mathematics  
2011-12-10

The course syllabus is valid from autumn semester 2011

**Prerequisites**

Technology as occurrence and field of knowledge (1TG321), 7.5 credits or the equivalent.

## Expected learning outcomes

The general objective of the course is to offer students improved knowledge and skills regarding planning and execution of technology lessons in the compulsory school.

Having completed the course the student is expected to be able:

- to plan, implement and evaluate trials and experiments in order to create interest in and commitment to technology and by so doing reinforce the individual pupil's learning and development
- to design various teaching models and adjust teaching in accordance to the pupils' prerequisites
- to problematise the teaching of technology from gender- as well as ethical-, social-, economical- and global perspectives
- to design different development projects around learning in technology
- to follow up and assess the pupils' quality of knowledge and the development of knowledge as well as use and evaluate different methods for assessing the pupils' technological knowledge in relation to the objectives and official guidelines
- to identify important figures that work with and around the large technological systems and assess the risks in technological systems

- to use digital tools pedagogically.

## Content

The basis of this course is experience and realistic learning that favours the student's opportunity to develop and find connections between theory and practice. Another aim is to give the student a model to achieve learning, as well as awaken and nurture the pupils' curiosity, in their future profession. Teacher professionalism and the didactics of the subject of technology are discussed, exemplified and problematized continuously throughout the course. Field studies allow the student to understand how technology is applied in society.

A project oriented way of working makes it possible for the student to translate theoretical knowledge into practical experience, gain knowledge of and apply the different technology development work phases taken from different fields such as: technological systems, technology development, entrepreneurship, drawing technique, mechanisms, solid mechanics, material knowledge, control system, electronics and energy.

The course project comprises a problem that is addressed from both a theoretical and practical perspective. In the theoretical part the student should reflect on and draw conclusions based on the elements covered in this course and those studied in earlier technology courses. The didactic content will be clarified. The practical applications can be represented or visualised in models or computer simulations.

By acquiring knowledge about and understanding of how ordinary technological systems work and interact the students will see the links between technology and social development. The risks associated with different technological systems are also highlighted.

## Type of Instruction

The course is a distance tuition course via the Internet. The students are expected to work individually and in groups. At the start of the different modules of the course the course leader/teacher presents specific reading tasks, study assignments and presentation models. Work assignments may be presented collectively in the form of group conferences and commented on by the course leader/teacher. The work assignments may also be individually designed.

Attendance at examinations and seminars is obligatory.

## Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

A translation of the grade to the ECTS-scale may be obtained upon request. Such a request must reach the examiner before the grades are awarded.

Assessment takes place through oral and/or written tests and/or presentations of compulsory assignments, as well as through participation in web-based seminars. The main form of examination is decided at the start of the course.

Students who do not pass the regular examination are given the opportunity to do a reexamination shortly after the regular exam.

## Course Evaluation

A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

## Other

Upon request from the Graduation Office at the Division of Student Affairs, a Swedish University degree will be issued upon successful completion of the full demands for that

degree.

After having completed the course the student may download a course certificate through the University's website. Secondary they may request a course certificate from the secretary of the School of Computer Science, Physics and Mathematics.

## Required Reading and Additional Study Material

### Required reading

Bjurulf, V.. Teknikdidaktik. Norstedts, 2011. 224 p.

Klasander, Clas. Talet om tekniska system – förväntningar, traditioner och skolverklighet, Studies in Science and Technology Education, 2010. 174 (296) p. ISBN: 9789173933322

WITU AB. SketchUp7 Grundkurs. <http://www.witu.se/litteratur.html> 80 p  
Skolverket, Fler som kan. Hur kan vi underlätta för ungdomar att läsa naturvetenskap och teknik. 2011. 140 p. <http://www.skolverket.se/sb/d/790>

Skolverket, Läroplan för det obligatoriska skolväsendet, <http://www.skolverket.se/sb/d/4166/a/23894>. 19 p.

Skolverket, Kursplan och betygskriterier för ämnet Teknik, <http://www.skolverket.se/sb/d/4166/a/24751>. 7 p.

Skolverket, Kommentarmaterial till kursplanen i Teknik, <http://www.skolverket.se/sb/d/4371/a/23585>. 19 p.

Skolverket, Bedömningsstöd i teknik, <http://www.skolverket.se/sb/d/2927/a/16559>  
Published Fall 2011.

### Articles

Björkholm, E. 2010. Technology Education in Elementary School: Boys' and Girls' Interests and Attitudes. NorDiNa 1/10. 11 p.  
<http://www.naturfagscenteret.no/c1515377/tidsskrift/vis.html?tid=1489795>

Andersson, B. Svensson, M. Zetterqvist, A. Några uppgifter som belyser elevers uppfattningar om vad som är teknik. 2008. NorDiNa 2/08. 9 p.  
<http://www.naturfagscenteret.no/c1515377/tidsskrift/vis.html?tid=1489795>

Teaching material for the compulsory school as well as other relevant course literature selected together with the examiner. Approx. 400 pages.