Linnæus University

Course syllabus

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

1NT111 Barns naturvetenskapliga och tekniska omvärld, kurs A, 7,5 högskolepoäng

Children's Scientific and Technological Surrounding, Course A, 7.5 credits

Main field of study
Biology, Physics, Chemistry, Technology

Subject Group
Educational Sciences/Theoretical Subjects

Level of classification
First Level

Progression
G1N

Date of Ratification
Approved by the Board of the School of Computer Science, Physics and Mathematics 2010-08-20

The course syllabus is valid from spring semester 2011

Prerequisites
NO VALUE DEFINED

Expected learning outcomes

Upon completion of the course, the students should be able to:

- utilize basic scientific explanation models concerning air, water and heat in learning situations so that all children and pupils learn and develop
- use technical concepts and principles in order to be able to show the connection and processes in a technical construction or a technical system
- plan, execute and evaluate activities in pre-school and the early school years that encourage children to develop an interest for science and technology
- work on practical problem solving, including problem identification, construction and assessment
- deal with scientific and technological items associated with, among other things, gender, environment, ethics and global prospects
- place scientific and technological items in current and historical contexts
- make conscious didactic choices from the starting points of national and local policy
- initiate, execute and evaluate local development projects associated with the process of learning in these subjects.

Content

The course deals with questions concerning the identity of science and technology.

Scientific/technological problem solving, including problem identification, solution, construction and assessment are included in the course. Theoretical and practical aspects and items are integrated.

The scientific/technological interaction between the individualsociety and the environment. The needs, driving forces and conditions that characterise the growth of science and technology make up the elements. In this way weight is given to gender, environment, ethics and global prospects.

Important events and happenings in the history of science and technology and their significance for mankind and the development of society are highlighted.

The didactics of the subjects, biology, physics, chemistry and technology, as well as the study of current policy documents are fundamental for the entire course.

The course includes the following items:

- basic scientific concepts and practical applications concerning air water and heat
- different teaching strategies in order to execute and develop the pedagogical activities in science and technology
- elementary technological concepts and principles
- thematic projects linked to the work situation
- examination of the world of experience of the child.

Type of Instruction

The course is a distance course via the Internet. The students are expected to work both independently and in groups. Before each part of the course, information of precise literature, study tasks and presentation models, will be given to the students.

The presentation of the tasks may be made collectively through base group conferences and receive a commentary from the course leader/teacher. Tasks may also be individual.

Attendence at meetings is mandatory.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

Assessment of the student´s performance is made through the presentation of obligatory tasks as well as participation in seminars via a web based conference system. The primary form of the examination will be determined at the beginning of the course.

Students who do not pass the regular examination will be given the opportunity to do a resit examination shortly after the regularexamination.

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.

Required Reading and Additional Study Material

Required reading

Harlen, Wynne, *Våga språnget*, Almqvist & Wiksell, 2000. Pages 135 (135).

Persson, Hans, *Nyfiken på naturvetenskap*, Almqvist & Wiksell, 1999. Pages 37 (183).
Persson Hans, *Boken om Fysik och Kemi*, Almqvist & Wiksell, 2004. Pages 46 (159).
Persson Gode, Karin, *Upptäck Naturvetenskap i förskolan*, Natur & Kultur, 2008. Pages 43 (80).
Skolverket, Läroplan för grundskolan, förskoleklassen och fritidshemmet. Kursplan och betygskriterier för fysik. 17 p. www.skolverket
Skolverket, Läroplan för grundskolan, förskoleklassen och fritidshemmet. Kursplan och betygskriterier för teknik 11 p. www.skolverket
Skolverket, kommentarmaterial till kursplanen i teknik. 27 p. www.skolverket
Skolverket, kommentarmaterial till kursplanen i fysik. 40 p. www.skolverket
Skolverket, Läroplan för förskolan Lpfö 98. 16 p. www.skolverket
Temaserie från tidningen Förskolan, *Naturvetenskap och miljö i förskola och förskoleklass*, 2008. Pages 143 (143).
DFM, *Distributed material*, current year. App. 30 pages.
Optional literature relevant to the course is chosen in consultation with the lecturer, app. 50 pages.

Reference Literature
Persson, Hans,*Försök med Fysik*, Almqvist & Wiksell, 1996.Pages 93 (220).
Norkvist, Hans, Powell, David, *100 (218).*
Persson, Hans, Försök med Kemi, *Almqvist & Wiksell, 1997. Pages 50 (176).*
Persson, Hans, Russinhissen//, Hands on Science, 2009. Pages 157(157).