



FMJ3336 Educational Aspects in Energy Technology 7.5 credits

Kunskapsaspekter inom energiteknik

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

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

Establishment

Course syllabus for FMJ3336 valid from Autumn 2018

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Basic Communication & Teaching (courses LH200V/FHL3000)

Language of instruction

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

Intended learning outcomes

The overall goal of the course is to make graduate students act as an educational entrepreneur in a global context, with the aim to bring education outside the traditional approach. The course participants will gain experience by actively joining course seminars, by performing assigned individual readings followed by group discussions, and by supervising students/planning & assisting a course.

After the end of this course, the participants will be able to:

- Implement pedagogical approach within a course in line with student centered learning approach and constructive alignment concept
- Develop interactive learning material and on-line exam/exercise suitable for e-learning
- Give lecture/ presentation/ seminar with modern audio-visual interactive tools, such as video showing, live software demonstration, online video conferencing, use of multimedia among others in line with integrating technologies in education and one of the following
- Acquire methods in supervising BSc/MSc thesis students to be independent researcher/scientist, or
- Act as course assistant by applying new thinking into the respective courses

Course contents

The course participants will receive detailed instructions towards using the highly sophisticated audio visual equipment/communication in the two “Energy Learning Theatres” at EGI.

Seminars will be given to address the issues in teaching and in supervising project work students. Training will be provided to build up highly qualified course assistants (and future teachers). Experienced lecturers and testimonials from course assistants will show and discuss the qualities and challenges present in course assistance.

One part of the course will be the establishment of an e-teaching material in the student’s research area. The student should adapt the educational material into an e-learning chapter with the use of modern educational computerized multi-media tools (to be selected together with the examiner) and preferably with a high degree of interactivity. Technical, pedagogical and multi-media aspects and skills shall be considered. During the development of the educational material, students will evaluate the learning material, and give suggestions for modifications.

The topic of study is selected together with the examiner. It should consist of one or two chapter(s) (corresponding to a 2-3 hours lecture or more) of the undergraduate curriculum given at a university within the EXPLORE Energy platform. The student should study the existing material in detail, and read related materials.

The course will treat the general philosophy regarding interactive and computerized education. Individual readings and summary reports are part of the course. As part of the discussions, an evaluation will be presented regarding what students so far have considered to be the pros and cons of the present interactive learning material developed by different teachers at EGI, including remote lab exercises, pod-casts of lectures, Explore Energy and E-learning platforms, etc.

Disposition

Seminar Overview:

Session 1 Introduction

- Interactive learning philosophy in a global perspective
- Presentation of learning platforms: Canvas, Compedu, Udacity, Udamy, Edx, Learnify and others.

Session 2 E-learning and Lecture Material Development

- E-learning material presentation from previous course participants
- What we do wrong in developing course materials
- Discussion on chapter 1 of “Distance and E-Learning in Transition”

Session 3 Course Assistantship

- How to act as a course assistant
- Tutorial on lecture recording, podcasting
- Administrative guide on taking in MSc thesis students
- Presentation of e-learning materials reviews and improvement proposals

Session 4 Canvas Platform

- Training session on Canvas
- Presentation of Automatically Corrected Exercises, MCQ, online exams, and others
- Presentation of the to-be-developed material outlines and structures
- Presentation of remote lab

Session 5 Life Long Learning

- Discussion on the prospect of lifelong learning and Community of Inquiry.
- Walkthrough of technical equipment and learning theater
- Presentation of educational MSc and PhD programmes at EGI

Session 6 Peer Review

- Peer review and defense on the newly developed learning materials
- Group discussion on the book chapters

Session 7 Final Project Presentation

Course literature

"Distance and E-learning in Transition – Learning Innovation, Technology and Social Challenges"

Publisher: Jointly by ISTE and Wiley

Editors: Ulrich Bernath, András Szűcs, Alan Tait, Martine-Vidal

ISBN: 9781848211322

Available online through KTH online Library

<http://onlinelibrary.wiley.com/book/10.1002/9781118557686>

“Teaching in a Digital Age- Guidelines for Designing Teaching and Learning”

Authors: A.W. (Tony) Bates and Bates, A.W.

Creative Commons Attribution NonCommercial

Available online: <https://opentextbc.ca/teachinginadigitalage/>

“Teaching in Blended Learning Environments: Creating and Sustaining Communities of Inquiry”

Authors: Norman D. Vaughan, Martha Cleveland-Innes, and D. Randy Garrison

ISBN: 9781927356487

Available online: <http://www.aupress.ca/index.php/books/120229>

Examination

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.

Other requirements for final grade

The assessment criteria in the appendix are to be fulfilled to at the minimum C grade to pass the course.

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.