



## Course syllabus

Faculty of Technology

Department of Built Environment and Energy Technology

1BT018 Uthållig energiförsörjning, 7,5 högskolepoäng

Sustainable energy supply, 7.5 credits

### Main field of study

Bioenergy Technology

### Subject Group

Environmental Care and Environmental Protection

### Level of classification

First Level

### Progression

G1N

### Date of Ratification

Approved 2014-10-02

Revised 2018-10-31 by Faculty of Technology. Change of contents.

The course syllabus is valid from autumn semester 2019

### Prerequisites

Physics A, Chemistry B. General entry requirements and Chemistry 1, Mathematics 3c, Physics 2 or Chemistry A, Physics B, Mathematics C (Field-specific entry requirements 8/A8). (Field-specific entry requirement 8 with exemption from the upper secondary course Mathematics D)

## Objectives

After the course, the student shall:

- Be familiar with and be able to use a correct terminology for the energy sector,
- Be able to calculate and simulate simple processes in the energy field,
- Be able to identify, describe and calculate some of the main components and processes in the transformation from energy source to energy carriers,
- Be able to identify, describe some simple routes from energy carrier to energy service,
- Describe and name energy services demanded not only in the rich countries but also elsewhere and explain which thermodynamical and other demands are posed to the supply system by these energy services,
- Identify energy sources and energy carriers and describe their fundamental thermodynamic and other properties,
- Exemplify and compare, from an environmental and sustainability perspective, different routes to produce and deliver energy services and/or –carriers,
- Exemplify and compare, from a societal and/or infrastructural perspective, different routes to produce and deliver energy services and/or –carriers.

## Content

The course comprises the following elements related to energy engineering and computer simulations:

- Energy supply to and use in Sweden and the EU
- Global energy resources
- Underlying physical laws and application examples concerning
- Solar energy (thermal as well as PV)
- Water-borne energy (hydropower, waves and tidal)
- Wind energy
- Geothermal energy
- Nuclear energy

## Type of Instruction

The course is delivered in the form of compendia, assignments, exercises and recorded lectures intended basically for self-studies. Teacher support is available via internet communication. The course contains no physical meetings.

## Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The assessment of student performances usually takes place during special examination periods and can be done through project work, assignments and written exam. Examination can be done both writing and orally.

## Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously.

## Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 1BT002 Sustainably energy supply, 7,5 hec and 1BT011 Sustainably energy and simulations, 7,5 hec.

## Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Some compulsory items in the course might cause costs eligible to the participating student. The course is normally given in Swedish. On request - i.e. by international or exchange students - the course language is English. The distance-learning course version is offered only in English.

## Required Reading and Additional Study Material

### Required reading

Boyle (Godfrey) Renewable Energy – power for a sustainable future, Oxford University Press 2004, 432 pages.

Lambrou/Laub Gender perspectives on the conventions on Biodiversity, Climate Change and Desertification, Report issued to the FAO 2004, 30 pages.

### Reference literature

Goldemberg & al. World Energy Assessment. Report issued to the general assembly of

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the United Nations 1999, 50 pages (560).

Goldemberg & al. World Energy Assessment Update, Report issued to the general assembly of the United Nations 2004, 20 pages (120).