Linnæus University

Dnr: LNU-2026/2128

Course syllabus

Faculty of Technology
Department of Built Environment and Energy Technology

1BT302 Uthållig energiförsörjning, 7,5 högskolepoäng
Sustainable energy supply, 7.5 credits

Main field of study
Bioenergy Technology

Subject
Environmental Care and Environmental Protection

Level
First cycle

Progression
G1N

Date of Ratification
Approved 2016-12-07.
Revised 2026-05-28. Literature list is revised

The course syllabus is valid from autumn semester 2026.

Prerequisites
General entry requirements + Physics 2, Chemistry 1 and Mathematics 3c.
Or: Physics level 2, Chemistry level 1, Mathematics further level 1c

Objectives

After the course, the student shall

- have a basic understanding of the principles of energy conversion
- have a basic knowledge of different renewable energy sources and be able to explain different technologies used for renewable energy production
- have general knowledge about the global energy system

- be able to perform basic energy engineering calculations linked to various renewable energy production techniques.

Content

The course covers general technology used to utilize the renewable energy sources solar, wind, water and biomass. Fossil energy and nuclear energy are also treated. The course includes a minor in-depth study of a chosen technique.
The role of energy sources in the global energy system is dealt with as well as basic environmental and economic issues.
Basic theory of energy conversion and thermodynamics is treated and applied in calculations linked to the different technologies.

Type of Instruction

Lectures, guest lectures, calculation tuition, practical exercises, laboratory work, study visits, projects and seminars. Compulsory parts will be specified at the course introductory.

Examination

The course is assessed with the grades A, B, C, D, E 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 carried out through project work, laboratory work, assignments and written examinations. Examinations can be both written and oral.
The theoretical aspects of technology for different energy sources and the global energy system comprise 2.5 credits and are examined in a written exam with the grades U, G.
The application of the knowledge is examined through a project assignment of 2.5 credits, which is assessed with the grades U, G.
Calculations in energy conversion and thermodynamics comprise 2.5 credits and are graded A-F.
The course as a whole is assessed with the grades A-F.
Resit examination is offered in accordance with Linnaeus University's Local regulations for courses and examinations at the first- and second-cycle levels.
In the event that a student with a disability is entitled to special study support, the examiner will decide on adapted or alternative examination arrangements.

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. The compiled report will be filed at the Faculty.

Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course:
1BT011 7.5 credits, 1BT002 7.5 credits

Other Information

Some compulsory items in the course might cause costs eligible to the participating student.
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.

Required Reading and Additional Study Material

Required reading

Celik, Serdar. 2023. *Sustainable Energy: Engineering Fundamentals and Applications*, Cambridge University Press, 444 pages. ISBN: 9781316517383

Reference Literature

Jenkins, Nick; Ekanayake, Janaka. 2024. *Renewable Energy Engineering*, Cambridge University Press, 550 pages. ISBN: 9781009295765