Linnæus University

Dnr: 2020/3081-3.1.2.2

Course syllabus

Faculty of Technology

Department of Built Environment and Energy Technology

4BT313 Avfall som resurs, 7,5 högskolepoäng
4BT313 Waste as a Resource, 7.5 credits

Main field of study
Bioenergy Technology

Subject Group
Energy Technology

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved 2018-03-12
Revised 2020-09-23 by Faculty of Technology. Examination and assessment methods are revised.
The course syllabus is valid from autumn semester 2021

Prerequisites
General entry requirements for second cycle studies and specific entry requirements:

- Bachelor of Science in Chemical Engineering, Energy Technology, Environmental Technology, Civil Engineering, Material Science or equivalent
- English B/ English 6 or equivalent

Objectives
After this course, the students should:

- critically explain the situation of waste generation locally, regionally and globally
- identify and analyze potentials of using waste as a resource for different purposes with respect to relevant scientific and social aspects
- describe and explain about several processes and technologies those are used for converting/transferring waste to energy and deepen knowledge in the area
- have capability of explaining and evaluating climate change effects of using waste to replace fossil fuels.

Content

The course contains of the following elements:
• overview of waste generation and recycling in Sweden, Europe, World
• forest residual and industrial wood waste
• municipal wastes: liquid and solid
• current waste treatment practices
• technologies and processes to convert waste to convenience final energy types and energy services

- direct combustion
- gasification and synthesis of biofuels
- composting
- anaerobic digestion

• environmental effects and sustainability of handling and using waste
• climate change effects of using waste to replace fossil fuels
• waste as a resource in integrated energy system and sustainable built environment

Type of Instruction
This course is given by lectures, seminars and site visits.

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).

Assessment of the student's performance is made through written exam, report and oral presentation. The assessment usually takes place during special exam periods through examinations. The seminar information is assessed on a regular basis during the course.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation
During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

Other
Certain course elements may entail costs that have to be defrayed by the students.

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

Recent publications from scientific journals, via the university library. Information will be given at course start.
The literature is about 200-300 pages.