



Course syllabus

Faculty of Technology

Department of Built Environment and Energy Technology

1BT019 Förbränningsteknik I, 7,5 högskolepoäng

Combustion Technology I, 7.5 credits

Main field of study

Bioenergy Technology

Subject Group

Energy Technology

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved by Faculty of Technology 2014-10-02

The course syllabus is valid from autumn semester 2015

Prerequisites

General entry requirements and Chemistry 1, Mathematics 3c, Physics 2 or Chemistry A, Mathematics D, Physics B (Field-specific entry requirements 8/A8).

Objectives

After completing the course the student is expected to be able to:

- carry out simple calculations of air requirements and flue gas volumes for different fuels - solid, liquid and gaseous
- estimate realistic combustion temperatures for different fuels under different conditions
- estimate expected contents of different emissions and present them in different units
- carry out a total heat and mass balance calculation for a plant
- read relevant data for a combustion technology calculation on the basis of drawings and process schedules
- assess the advantages and disadvantages of different types of combustion plants based on fuel property
- assess the suitability of different types of combustion equipment and emission reduction techniques for different applications

Content

Course contents:

- Combustion and gasification stoichiometry
- Basic pollution chemistry
- Heat and mass balance

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- Burners, grate firing and fluid beds
- Radiation and convection heat exchangers
- Scrubbers and fuel gas condensers
- Cyclones and filters

Type of Instruction

Lectures, calculation exercises, laboratory work and study visits.
Information on compulsory elements is given at the course start.

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 may take the form of laboratory work, written assignments and written examinations. Examination may be both written and oral.

Course Evaluation

A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed.

Credit 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: BTK853/BT9072, 1BT004 Combustion Technology, 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 course elements may entail costs defrayed by the course participant.

The course is offered in English, if there are international participants.

On request, a Swedish University course certificate will be awarded upon successful completion of the course.

Required Reading and Additional Study Material

Alvarez H. Energiteknik del 1

Materials provided by the department.