

EEN-E3001, Fundamentals of Industrial Energy Engineering

Spring, 2019

Teaching personnel

Teacher in charge

Senior University Lecturer Henrik Holmberg

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Other teaching personnel

Senior Scientist Timo Laukkanen

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Dr. Ilkka Hannula

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Structure of the course

Duration: periods III-IV

Lectures: Period III

Tuesday 12-14 in lecture hall 215, Konetekniikka 1, Otakaari 4
Thursday 12-14 in lecture hall 202, Konetekniikka 1, Otakaari 4

Design assignment: Periods III-IV

Kickoff for the design assignment on January, 29 in lecture hall 215.

The design assignment focuses on energy and mass balance calculations of an integrated pulp and paper mill as well as power plant calculations at the same site.

The course may have a small assignment on metal industry, too. More about this later.

More information on the design assignment in the kickoff.

The course does not have any compulsory attendances.

Preliminary contents and dates of the lectures in 2019 (changes are possible)

Lecture 1, January 10, Henrik Holmberg (HH) 202

Introduction to the course and Overview on industrial energy generation and use

Lecture 2, January 15, Ilkka Hannula (IH) 215

Kraft pulping fiberline

Lecture 3, January 17, HH 202

Kraft recovery

Lecture 4, January 24, Timo Laukkanen (TL) 202

Mechanical pulping and paper mill

Lecture 5, January 29, HH 215

Introduction to the design assignment

Lecture 6, January 31, HH 202

Industrial steam power plant

Lecture 7, February 5, IH 215

Thermochemical biorefineries

Lecture 8, February 7, TL 202

Technology assessment

Lecture 9, February 12, IH 215

Low-carbon iron and steel

Lecture 10, February 14, TL/HH 202

Summary discussion and guidance workshop

Preliminary dates for guidance workshops in lecture hall 215

February 14

February, 26

March, 5

March, 12

March, 19

March, 26

Other dates can also be discussed if necessary.

Dead line for the submission of the report is 7th of April at 23.59.

There is a file on MyCourses on the course page where the final report will be submitted.

Passing the course

You must submit a report on the design assignment. Since the assignment has been accepted you have passed the course.

Grading of the assignment is based on the following criterion

- Content, i.e. how well have you solved design tasks
- Methods, i.e. how well you have formulated your calculation principles
- Language
- Look and layout

Grading scale: 0-5

If your report is not accepted, you have a chance to make corrections to improve the report. In this case, you don't have a chance to get highest grades (4 or 5).

If I get two (or more) identical final reports, I will pick up one name and this student gets the grade and the others will fail the course.

Course material

Additional material about the course topics can be found from the KnowPulp- and KnowPap-learning environments. The environments are accessed via the following links:

<http://www.knowpulp.com>

<http://www.knowpap.com>

You have to login into learning environments using the following username and password

Username: eneopis_hut

Password: pas3001s

Slides will be uploaded on MyCourses, too.