



MJ2440 Measurement Techniques 3.0 credits

Mätteknik

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for MJ2440 valid from Autumn 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

Master of Science in Engineering/engineer with Degree of Bachelor/3 year engineering degree, or the equivalent education as well as prior knowledge equivalent to MJ1112 Thermodynamics 9 credits, MJ1401 Heat transfer 6 credits and SG1220 Fluid Mechanics for Engineers 6 credits or a combination of these courses totalling at least 15 credits.

Documented knowledge in English B or the equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the students should be able to:

1. Apply experimental design techniques for collecting required measurement data, in a resource efficient way, to answer a scientific question
2. Apply measuring techniques to be able to carry out common assignments with sensors and measurement systems, for measurement of flow, temperature and pressure
3. Analyse and estimate uncertainty in a measurement result in accordance with GUM (Guide to the expression of Uncertainty in Measurement)
4. Apply statistical methods to compare the outcomes of one or more processes with known values (standards) or with each other
5. Use some of the transducers that have been discussed in the class and carry out an experiment

Course contents

1. Experimental design
2. Sensor technique. Mainly for pressure, temperature and flow measurement.
3. Uncertainty analysis based on GUM (Guide to the expression of Uncertainty in Measurement)
4. Hypothesis test in metrology
5. Use some of the transducers that have been discussed in the class and carry out an experiment.

Disposition

The course consists of lectures (18 hours), two labs (~10 hours including preparation) and two assignments (~10 hours).

Course literature

Huvudsakligen online-textkällor från NIST och BIPM

Examination

- INL1 - Assignments, 0.5 credits, grading scale: P, F
- LAB1 - Laboratory Work, 0.5 credits, grading scale: P, F

- TEN1 - Written exam, 2.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.