

**SYLLABUS**

# **Modern Experimental Metrology 7.5 credits F7037T**

**Modern experimentell mätteknik**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE  
2021-02-17**

# Modern Experimental Metrology 7.5 credits F7037T

## Modern experimentell mätteknik

### Second cycle, F7037T

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	U G#	Experimentell mekanik	Engineering Physics

## Entry requirements

Bachelor or equivalent degree with the subject physics and/or Electrical Engineering, Mechanical Engineering, Electronics, Microcomputer Systems and Control Engineering, Computational Science and Engineering Physics, including the course E7021E Measurement Technology and Uncertainty Analysis, or corresponding courses.

## Selection

The selection is based on 30-285 credits

## Course Aim

### Knowledge and understanding

After completion of the course the student will have acquired:

- the ability to plan and perform experimental work through the experience and the knowledge given by the experimental methods treated and experienced in the course
- knowledge to adapt similar experimental methods outside of the scope of this course

### Skill and ability

After accomplishing this course the student should be able to

- choose an appropriate experimental method for a given measurement challenge
- plan, design and perform an experiment
- evaluate the quality of the experimental result
- evaluate experimental results in relation to physics
- present the results orally to an audience

## Contents

The course will treat basic measurement techniques and applications in experimental methods with focus on:

- Philosophical and applied questions regarding experimental work
- measurement error
- digital sampling of data
- measurements on electric, thermal, optical, mechanical and chemical entities
- imaging methods
- analysis and design of measurement systems

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures and laboratory tasks will treat how experiments should be planned, how data is acquired, registered and treated with special focus on optical methods and mechanical entities. Lectures and compulsory laboratory tasks, planning of laboratory tasks, analysis and evaluation of experimental data and laboratory reports written in a scientific journal style and oral presentation of the laboratory tasks.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

Compulsory laboratory tasks, planning and oral presentations and group work hand-ins in form of reports written in a scientific journal style.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Course offered by

Department of Engineering Sciences and Mathematics

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0003	Report/Oral Presentation	U G#	4	Mandatory	S20	
0004	Laboratory work	U G#	3.5	Mandatory	S20	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Head Faculty Programme Director Niklas Lehto 2021-02-17

## Syllabus established

by Department of Engineering Sciences and Mathematics 2011-02-07