2021 Course memo
SK2350 Optical Measurement Techniques

Contents and learning outcome
Course contents 2021

The course will broadly cover optical measurement techniques, with an emphasis on optical fiber based sensors (OFS). The lectures will be mixed with guest lecturers from industry describing optical measurement techniques in related areas.

The course starts with introduction to glass science, followed by optical fiber fabrication and a general overview of OFS, including fiber Bragg gratings. Handling and processing of optical fibers will also be discussed and is also a part of the laboratory experiments. Topics included in the course include interferometers, distance and rotation measurements, light detection and detection systems.

Intended learning outcomes *
With the previous courses in optics and waves as a background, the goal in this course is to specialize within chosen parts in modern optical physics, with consideration of the special aspects in metrological applications within industry and research.

After the course, the student should be able to:
- Identify physical measurement problems where optics can be applied
- Estimate forced metrological compromises and also be able to carry out some basic measurement tasks.

Furthermore, the goal is to establish a personal contact between students and industry, and to gain insight into current and future applications of optical fiber sensors and other optical measurement techniques in industry.

Language of instruction
- English

Literature and preparations
Specific prerequisites
Basic knowledge in classical optics SK1120 (Waves, 6 credits) and SK2300 (Optical physics, 6 credits) or equivalent.

Course literature
Compendiums and hand-outs.

Examination
The examination is in the form of group presentations on laboratory experiments. Each student will perform two laboratory experiments, which both will be presented. To get the final mark the laboratory experiments have to be completed, presented and approved.

Grading scale *
P, F

Other requirements for final grade *
Attendance at lectures (via Zoom)
Examinator
Michael Fokine (fokine@kth.se)

Ethical approach
All members of a lab 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.

Additional information

Learning Management System
Canvas

Course is given by
SCI/Applied undergraduate Physics

Teachers
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Communication with teachers
Communication either through Canvas or directly by email, in urgent matters by phone.

Course evaluation and course analysis
At the end of the course students are requested to fill out a course evaluation form, as well as take part in discussions and course analysis during the last lecture.