Level: master

Course title: Experiments in electromagnetism and optics

Status: elective

ECTS: 9

Requirements: none

Learning objectives

To expand knowledge and update the previous courses of electromagnetism and optics, with emphasis on methods of characterization of certain electrical and optical properties and measurement of specific values of certain physical quantities. In addition, emphasis is put on determination of measurement errors and implementation of application software for finding them.

Learning outcomes

Students are expected to be:
- Familiar with the basics of experimental devices, the physical principles underlying the work, meeting with individual groups of measuring instruments used in the experiment;
- Familiar with basic experimental methods to determine the main characteristics and the analysis of certain electrical and optical size;
- Familiar with the method of analysis taking into account the measurements of the main influences on the course of the experiment that contribute to error, the correct interpretation of the obtained sizes, familiar with the software by which it is possible to process the measurement results in a quick and efficient manner.

Syllabus

Theoretical instruction

Compensation method of measurement. Contact phenomena. Thermo power. Magnetic properties of materials. Methods of determining the magnetic properties of materials. Guy method. Resistors, capacitors and inductors in an AC circuit. RLC circuit. Resonance. Consumer power in an AC circuit. Phase shift. Power factor. Diffraction of Light. Diffraction grating. Light emitters. Types of spectra. Methods for determining the wavelength lines. Basic photometric parameters. Polarization.

Practical instruction

Selected experimental exercises.

Weekly teaching load				Other:
Lectures: 3	Exercises: 1	Other forms of teaching: 1	Student research:	