Level: bachelor

Course title: Methods of measurement and data processing

Status: elective

ECTS: 5

Requirements: none

Learning objectives

Advanced introduction to the development and implementation of an international system of units in science and technology.
- Mastering the estimation errors;
- Acquisition of knowledge and skills required in the processing of the results of physical experiments, as well as in the evaluation of the data;
- Acquiring knowledge if processing and presentation of results;
- Students learn to use the computer processing of the experimental data.

Learning outcomes

Knowledge of the proper ways to display the measurement results. Mastering the basis of analysis of physical experiments. Ability of initial independent and successful implementation of statistically processed (collection and delivery) data in the experimental work. Training to independently assess and perform the necessary calculations in experiment planning.

Syllabus

Theoretical instruction

Measurement. The role of the experiments in physical research. Principles performing physical experiments. Systems of physical quantities. Relation between physical quantities. History of measures and units. International system of units. Dimensional analysis. Uncertainty in experimental results. Accuracy and precision. Reporting measurement results. Graphical presentation of the experimental data. Measurements and statistics. Probability distribution. Propagation of uncertainties. Sampling in data analysis of physical experiments. Method of least squares. The application of computers in data processing.

Practical instruction

Computational exercises follow a program of lectures.

Weekly teaching load				Other:
Lectures: 2	Exercises: 1	Other forms of teaching: 0	Student research:	