Level: PhD

Course title: Physical Methods in Organic Chemistry (DSH-610)

Status: Elective

ECTS: 15

Requirements: None

Learning objectives

The goal of this course is to enable students to analyze the structure of complex organic compounds using modern physical methods.

Learning outcomes

Students will be skilled to determine the structure of organic compounds on the basis of combined instrumental methods of analysis.

Syllabus

Theoretical instruction

Ultraviolet spectroscopy. Absorption of chromophores. Interpretations of UV-visible spectra. Infrared spectroscopy. Interpretations of infrared spectra. Raman spectroscopy. Introduction to nuclear magnetic resonance. Experimental methods in NMR. Proton NMR. Dynamic NMR. Carbon -13 NMR spectroscopy. Edited carbon spectra. The nuclear Overhauser effect. Multipulse methods. Correlation NMR spectroscopy. Mass spectrometry. Ionization methods. Interpretation of mass spectra. Mass analyzers. Fragmentations in mass spectrometry. Interpretations of mass spectra. Structure determination strategies with combined spectra.

Practical instruction

Interpretation of the recorded IR, UV-visible, H-1, C-13 NMR, 2D-NMR, and Mass spectra.

Weekly teaching load				Other:
Lectures: 5	Exercises:	Other forms of teaching:	Student research: 5	