

Selected topics in stereochemistry

SYLLABUS

Topic of the course	Selected topics in stereochemistry
Institution where the course will take place	Institute of Bioorganic Chemistry Polish Academy of Sciences, Poznań
Language	Polish
Learning objectives	Ph.D. student: 1. Gains advanced subject and methodological knowledge regarding stereochemistry. 2. Learns scientific approaches and techniques used in contemporary stereochemistry. 3. Upon finishing the course the student should: (i) use fluently stereochemical nomenclature, (ii) knows techniques for identification and separation of stereoisomers, (iii) use NMR spectroscopy for stereochemical analysis, (v) to read with understanding scientific papers concerning stereochemistry, particularly in the area of chemistry of nucleotides, amino acids and sugars.
Learning outcomes, according to Attachment 2 to the Programme of the Study (valid from October 1st 2026)	P8S_WG (pkt.1, 2, and 4), P8S_UW (pkt. 1 i 2), P8S_UK (pkt.3), P8S_KK (pkt.1), P8S_UU / P8_UO (pkt. 1., 2), P8S_KR (pkt.1)
Type of the course	Facultative
Semester/Year	Autumn/winter semester 2026
Name of the lecturer	dr hab. Michał Sobkowski
Name of the examiner	dr hab. Michał Sobkowski
Teaching methods	Lectures with audiovisual techniques
Attendance requirements	Working knowledge of English language and organic chemistry at the university level.
Number of ECTS points	2 ECTS
Number of lectures	12-15 h
Didactic methods	Lectures and discussions.
Methods of verification and assessment of learning outcomes	Written and/or oral exam.
Conditions of a positive evaluation	A passing grade of the exam.
Course content	Stereochemistry is integrally related to the chemistry of natural products, such as sugars, nucleic acids and proteins (and their components), alkaloids, or various metabolites. The lectures will cover, i.a., the following topics: (i) history of stereochemistry and stereochemical nomenclature, (ii) conformational isomerism of acyclic and cyclic compounds, (iii) prochirality, chemical and magnetic nonequivalence, (iv) use of NMR spectroscopy for stereochemical analysis, (v) stereochemistry of organophosphorus compounds, (vi) nucleoside and nucleotide stereochemistry, (vii) chiral internucleotide bond.
Literature of the course materials	1. Organic chemistry handbooks (e.g., J. McMurry, <i>Chemia organiczna</i>; R.T. Morrison, R.N. Boyd, <i>Chemia organiczna</i>). 2. Lecture hand-outs.