

Course title in English	Organic reactions mechanisms
Course title in Polish	Mechanizmy reakcji w chemii organicznej
Course code	
Type of course	Lecture
Level of course	PhD
Year of study	1-4
Semester/trimester	1/3/5/7
Number of hours/credits allocated	30/2
Name of lecturer	Beata Liberek
Objective of the course (expected learning outcomes and competences to be acquired)	<p><u>Knowledge:</u></p> <p>Defines general types of mechanisms in organic chemistry and possible intermediates; explains the differences between ionic, nucleophilic and electrophilic, radical and pericyclic reactions; associates the compound's structure and reaction conditions with the possible mechanisms.</p> <p><u>Skills:</u></p> <p>Orders reactions intermediates in term of their stability; ascribes the specific substrates to the specific mechanism of reaction; using schemes describes particular stages of known mechanisms; proposes mechanism for described in literature reactions; predicts products of the reactions, based on the mechanism; discuss ability of the reaction occurrence.</p> <p><u>Social competence:</u></p> <p>Understands the need of a comprehensive view of a problem, discuss different aspects of a problem, keep criticism, appreciate the particular components of the newly gained knowledge.</p>
Prerequisites	Completed classes of Organic Chemistry and Physical Chemistry within master studies.

Course contents	Types of the organic reactions mechanisms; reactions intermediates; nucleophilic substitution at the sp^3 hybridized carbon: S_N2 , S_N1 , S_{Ni} , S_N2' , S_N1' , mixed mechanisms, the neighboring-group mechanism; nucleophilic substitution at the sp^2 hybridized carbon: at a carbonyl group, at a vinylic carbon, aromatic nucleophilic substitution; aromatic electrophilic substitution; aliphatic electrophilic substitution: S_{E2} , S_{Ei} , S_{E1} , accompanied by double-bond shifts; free-radical substitution; electrophilic addition: to carbon-carbon multiple bonds, to conjugated systems; nucleophilic addition: to carbon-heteroatom multiple bonds, to the C=C double bond in the conjugated systems; free-radical addition to carbon-carbon multiple bonds; eliminations; rearrangements: nucleophilic, electrophilic, free-radical, through a ring intermediate, rearrangements with a change of a ring size; pericyclic reactions: electrocyclic, cycloaddition, sigmatropic rearrangements.
Recommended reading	M. B. Smith, J. March <i>March's Advanced Organic Chemistry</i> J. Clayden, N. Greeves, S. Warren, P. Wothers <i>Organic Chemistry</i> P. Y. Bruice <i>Organic Chemistry</i>
Teaching methods	Multimedia presentation combined with discussion of the problems; individual or group consultations, depending on the needs.
Assessment methods	Achievement of at least 51% of the total number of points from the final test. The percentage result of the test is correlated with the mark in the way indicated in "Study Regulations of University of Gdansk".
Language of instruction	Polish