

<b>Course title</b> Monographic lecture – Research methods in supramolecular chemistry / Wykład monograficzny – Metody badań w chemii supramolekularnej		<b>ECTS code</b> 13.3.0430	
<b>Name of unit administrating study</b> Faculty of Chemistry			
<b>Studies</b>			
<b>Field of study</b>	<b>Type</b>	<b>Form</b>	
Chemistry	Master	Full-time studies	
<b>Teaching staff</b> Prof dr hab. Tadeusz Ossowski, dr Paweł Niedziałkowski, dr Dorota Zarzeczańska			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b> 3	
<b>A. Forms of classes, in accordance with the UG Rector's regulations</b> lecture		classes - 30 h tutorial classes – 10 h student's own work – 35 h	
<b>B. The realization of activities</b> In-class learning		Total: 75 h - 3 ECTS	
<b>C. Number of hours</b> 30 h lecture			
<b>The academic cycle</b> Second year, winter semester			
<b>Type of course</b> Obligatory		<b>Language of instruction</b> Polish	
<b>Teaching methods</b> - Problem-based lecture - Lecture with multimedia presentation		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
		<b>A. Final evaluation, in accordance with the UG study regulations</b> A credit for a mark	
		<b>B. Assessment methods</b> Written test exam	
		<b>C. The basic criteria for evaluation or exam requirements</b> A positive grade may be obtained when 51% of the total points are obtained from three interim tests conducted during the semester	
<b>Required courses and introductory requirements</b>			
A. Formal Requirements Completed course in analytical chemistry, organic chemistry, physical chemistry and instrumental analysis			
B. Prerequisites knowledge of the types of intermolecular interactions, knowledge of basic physicochemical methods, knowledge of basic types organic and inorganic compounds			
<b>Aims of education</b> The brief students with current issues in coordination chemistry and supramolecular chemistry, - to evaluate individual physicochemical methods in terms of molecular recognition, - to acquaint students with spectrophotometric and electrochemical methods used in the study of equilibria in solution, - to acquaint students with calculation methods and modeling of equilibria in solution, - to learn how to choose a research technique to characterize intermolecular interactions			
<b>Course contents</b> Supramolecular chemistry versus coordination chemistry. Methods for determining the stoichiometry of interactions and determining equilibrium constants. Review experimental methods, applicability analysis, measurement techniques. Calorimetric methods, thermodynamic aspects of aspects of supramolecular interactions. Extraction methods. Spectroscopic methods: NMR, IR, UV-Vis, MS (measurement and calculation techniques). Chromophoric systems in supramolecular chemistry. Graphical methods for equilibrium model determination versus computational methods (Henderson-Hasselbach, Rosse Drago and others). Electrochemical methods in equilibrium studies: conductometry, potentiometry, voltammetric methods. Methods of examination of modified surfaces. Nanotechnology and supramolecular methods.			

**Bibliography of literature****A. Literature required to pass the course**

- C. Schalley - Analytical Methods In Supramolecular Chemistry, Wiley-VCH, 2007
- J. Polster, H. Lachman - Spectroscopic Titration, VCH 1986

**B. Extracurricular readings****Knowledge**

1. Defines coordination and supramolecular systems.
2. Recognizes the relationship between the type of interactions and the thermodynamic and kinetic stability of supramolecular bonds.
3. Describes basic laws and principles of intermolecular interactions.
4. Describes the basic methods used in the characterization of physicochemical equilibria in coordination and supramolecular systems.

**Skills****Social competence**

1. Understands the need for independent search for information in the literature concerning the latest scientific reports.
2. Understands the connection of supramolecular interactions with the development of modern technologies and medicine.