

COURSE DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/13-Mgr-A/26	Course title: Metallodrugs and Nanoparticles as Modern Pharmaceuticals
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning	
Number of credits: 2	
Recommended semester: 6.	
Educational level: I.II.	
Prerequisites:	
Course requirements: Final evaluation: examination in the form of a written comprehensive test. A: 92,00 % – 100,00 %; B: 84,00 % – 91,99 %; C: 76,00 % – 83,99 %; D: 68,00 % – 75,99 %; E: 60,00 % – 67,99 %; Fx: 0,00 - 59,99 %. Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The aim of the course is to apply basic knowledge and skills in bioinorganic/biocoordination chemistry, as well as nanotechnology, in the field of pharmacy.	
Class syllabus: The lectures focus on modern research directions in the development of new medicines with the aid of bioinorganic chemistry. Besides bioactive metal complexes, the current research on applications of nanoparticles in diagnostics and therapy (nanomedicine) is covered as well. Metal complexes as well as nanoparticles offer new possibilities for the development of bioactive compounds with mechanism of pharmacological action different from purely organic compounds, thus providing medicines with extended spectrum of activity. The first part of the lectures deals with pharmacologically active metal complexes. After a brief historic introduction, main features of current usage of these compounds are presented, especially in antimicrobial and anticancer therapies. Subsequently, new directions and perspectives in the development of metal-based drugs are outlined. The second part of the lectures deals with the modern research area of nanomedicine. Along with the basic physico-chemical properties of nanoparticles, fundamental methods for their synthesis and characterization are described. The lectures conclude with the discussion of various types of bioactivity of nanoparticles and their prospective application in pharmacology.	
Recommended literature: Kaim W., Schwederski B., Klein A. Bioinorganic chemistry: inorganic elements in the chemistry of life. Chichester: John Wiley & Sons Ltd 2013. Dabrowiak J.C. Metals in Medicine (2nd ed.) Chichester: John Wiley & Sons Ltd 2017. Lawrance G.A. Introduction to Coordination Chemistry. Chichester: John Wiley & Sons Ltd 2010.	

Burgess R. Understanding Nanomedicine – An Introductory Textbook. Boca Raton: CRC Press 2012.
P. Prasher, M. Sharma: Silver Nanoparticles: Synthesis, Functionalisation and Applications, Bentham, 2022.

Languages necessary to complete the course:
english

Notes:
The course is held only in summer semester.

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. Ing. Ladislav Habala, Dr.rer.nat., doc. Ing. Martin Pisárčik, CSc.

Last change: 11.06.2026

Approved by: prof. PharmDr. Ján Klimas, PhD., MPH