

Introduction to Medicinal Chemistry – dr hab. Mykhaylo Potopnyk

Title	Introduction to Medicinal Chemistry
Lecturer	dr hab. Mykhaylo Potopnyk
Name of the unit	Institute of Organic Chemistry PAS
Number of ECTS credits assigned to the course	1 ECTS
Form	Lecture, 5 h/semester
Language	English
Learning outcomes for the subject in terms of: knowledge, skills and social competences	<p>Knowledge:</p> <ul style="list-style-type: none"> - Understanding the basic principles that govern medicinal chemistry, the process of designing drug-like small molecules to treat human diseases. <p>Abilities:</p> <ul style="list-style-type: none"> - application of the structure-activity principles in a variety of chemical structures for drug design. - ability for browsing textbooks, current literature and databases for necessary data and methods. - ability to critically analyze scientific literature related to drugs and disease to enhance clinical decision making. - ability to broaden the knowledge of medicinal chemistry beyond the scope of the course. <p>Competences:</p> <ul style="list-style-type: none"> - Critical thinking and discuss the rational development of a new drug and therapy.
Implementation method	Lecture using audiovisual techniques
Prerequisites and additional requirements	Basics of organic chemistry
Didactic methods used	Lectures and problem solving
Methods of checking and assessing the learning outcomes obtained by doctoral students	Discussion with students, written exam.
The form and conditions of passing the course	Positive evaluation of the exam
Course content	An overview of modern medicinal chemistry, from first principles of drug action to design and development of potential therapeutics, will be presented and discussed within the course. The action and behavior of pharmaceutical compounds and the relationship between their structure and their chemical and therapeutic properties, and therefore, the chemical considerations in drug design will be explored. The roles of virtual screening, molecular docking, and bioinformatics in drug discovery will be discussed. Structure-activity relationships will be explored through case studies. Methods of drug discovery will be studied, including the development of drugs from natural products, computer modeling and rational drug design. Conception of fragment-based drug discovery will be discussed.
List of basic and supplementary literature	<ol style="list-style-type: none"> 1. G. L. Patrick "An Introduction to Medicinal Chemistry" 2. "Burger's Medicinal Chemistry", Vol.1. Drug Discovery. – Ed. by D. J. Abraham. 3. "Textbook of Drug Design and Discovery" – Ed. by K. Strømgaard, P. Krosggaard-Larsen, U. Madsen. 4. "Fragment-based Drug Discovery: Lessons and Outlook" – Ed. by D. A. Erlanson, W. Jahnke