University of Gdańsk

Subject card

Subject name and code	Chemistry of pharmaceutical compounds, PG_00080734						
Field of study	Chemia leków (Wykład)						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	6		ECTS credits	1.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Laboratory of Medical Chemistry -> Department of Biomedical Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Marta Spodzieja				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	15		2.0		8.0	25
Subject objectives	• Introduction students into fundamental terms used in medicinal chemistry, as e.g. therapeutic index, lead compound (structure), drug target, farmacokinetics and also with a basic studies performed during drug elaboration. • Introduction students with fundamental knowledge concerning the way from lead structure to medicine used in clinical practice, sources of lead compounds and its typical modifications used for elaboration of new, clinically useful compound.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_K04] Demonstrates responsibility for the safety of her/ his own and others' work.	Student retains care during work with substances with putative biological/phamacological activity	[SK4] test/egzamin - ustny lub pisemny
[BCHINŻ_U09] Using the acquired knowledge, skills and various sources of scientific information independently prepares written papers and oral presentations.	student designs paths for distinguishing individual medicinal substances in a series of several compounds belonging to different structural groups	[SU4] test/egzamin - ustny lub pisemny
[BCHINŻ_U06] Proposes and makes simple devices, operations or unit processes related to the implementation of the technological process used in the chemical industry, taking into account material and energy balances.	student carries out a complex synthesis of an organic compound with properties medicinal products using the Polish-language literature procedure	[SU4] test/egzamin - ustny lub pisemny
[BCHINŻ_U05] Evaluates the usefulness and functioning of existing engineering and technical solutions as well as research and measurement methods in the chemical industry.	student carries out a complex synthesis of an organic compound with properties medicinal products using the Polish-language literature procedure	[SU4] test/egzamin - ustny lub pisemny
[BCHINŻ_K03] Independently sets or implements a set action plan specifying priorities for its implementation; critically assesses its progress.	student designs paths for distinguishing individual medicinal substances in a series of several compounds belonging to different structural groups	[SK4] test/egzamin - ustny lub pisemny
[BCHINŻ_W06] Enumerates basic unit processes and describes issues in the field of technology and chemical engineering.	student argues judgments based on the collected experimental results and draws conclusions through logical reasoning	[SW4] test/egzamin - ustny lub pisemny
[BCHINŻ_W05] Describes the life cycle of devices, facilities and technical systems as well as modern environment-friendly technical solutions.	student argues judgments based on the collected experimental results and draws conclusions through logical reasoning	[SW4] test/egzamin - ustny lub pisemny
[BCHINŻ_U02] Uses basic methods, techniques and tools in formulating and solving engineering tasks in the field of chemistry.	student carries out a complex synthesis of an organic compound with properties medicinal products using the Polish-language literature procedure	[SU4] test/egzamin - ustny lub pisemny

Subject contents

- Biological activity, therapeutical index.
- Fundamental drug targets: proteins, nucleic acids, lipids.
- Receptors and enzymes as a drug target.
- Peptides and proteins as a drugs.
- Antibodies as a drugs.
- Nucleic acids and their interactions with drugs.
- Drugs from idea to their implementation into the clinical practice.
- Lead structures. Sources of lead compounds, Modifications of lead compound.
- Structure-activity relationship.
- Quantitative methods of structure-activity relationship (QSAR) studies and their application id drug design.
- Farmacokinetics. Chemical stability of drug and its metabolic resistance, biological barriers overcoming. Drug excretion.
- Pro-drugs and their practical applications.

Prerequisites and co-requisites

Finished Organic Chemistry, General Chemistry and Analytical Chemistry courses.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written exam ((a necessary condition for taking the exam is obtaining a positive grade in laboratory exercises)	51.0%	100.0%

Recommended reading	Basic literature	• Graham L. Patrick. Chemia medyczna. Podstawowe zagadnienia, wyd. WNT, Warszawa, 2003 • Graham L. Patrick Krótkie wykłady. Chemia leków, wyd. PWN, Warszawa 2004. • R.B. Silverman, Chemia organiczna w projektowaniu leków, wyd. WNT, Warszawa, 2004 • Praca zbiorowa pod red. K. Kieć-Kononowicz, Wybrane zagadnienia z metod poszukiwania i otrzymywania środków leczniczych, WSydawnictwo UJ, Kraków 2006
	Supplementary literature	• Zdzisław Markiewicz, Zbigniew A. Kwiatkowski Bakterie antybiotyki lekooporność, wyd. PWN, Warszawa 2001. • Alojzy Zgirski, Roman Gondko Obliczenia biochemiczne, wyd. PWN, Warszawa 1998. • Marianna Zając, Ewaryst Pawełczyk Chemia leków, Wydawnictwo Akademii Medycznej im. Karola Marcinkowskiego, Poznań 2000. • Alfred Zejca, Maria Gorczyca Chemia leków, wyd. PZWL, Warszawa 2004
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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