University of Gdańsk

Subject card

Subject name and code	Cancers and other scourges. From etiology to therapy, PG_00179540		
Field of study	Chemistry		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Master's studies	Subject group	Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Elżbieta Jankowska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	10.0	15.0	55

Subject objectives

To familiarize students with the causes of diseases that are considered plagues of the 21st century, such as cancer, diabetes, amyloid diseases, hypercholesterolemia and atherosclerosis, as well as viral epidemics. The course also aims to present possible therapeutic approaches to treating these diseases, with particular emphasis on the role of various chemical compounds.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEMMU2_U08] Prepares and presents oral presentations in various fields of chemistry in Polish and English, using acquired knowledge and skills as well as basic sources of scientific information.	The student prepares and delivers oral presentations in Polish and/or English on selected topics related to the course content, using appropriate chemical and biomedical terminology.	[SU2] presentation/project/paper/ report
[CHEMMU2_K05] Understands the need for independent search of information in scientific literature and popular science magazines.	The student demonstrates independence and responsibility in preparing presentations and adheres to the principles of citation ethics and copyright law.	[SK2] presentation/project/paper/ report
[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	The student effectively communicates complex chemical and biomedical issues in an understandable manner.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[CHEMMU2_U03] Finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry.	The student is able to search for, select, and critically analyze scientific literature in the field of chemistry and related disciplines concerning civilization diseases	[SU2] presentation/project/paper/ report

<table>
<tr><td>Subject contents</td><td>1. Cancer - molecular and chemical mechanisms: oncogenes, tumor suppressors, environmental carcinogens, mechanisms of carcinogenesis. Chemical strategies in cancer therapy: cytostatics, targeted therapies, platinum-based drugs, resistance mechanisms.

2. Diabetes - biochemical and pathophysiological basis: type 1 and 2 diabetes, insulin resistance, amylin aggregation influence on diabetes development. Antidiabetic agents: natural and synthetic compounds used in diabetes treatment.

3. Amyloid Diseases - protein misfolding and aggregation. Alzheimers, Parkinsons, prion diseases chemical basis and therapeutic approaches.

4. Hypercholesterolemia and atherosclerosis. Lipid metabolism, LDL/HDL balance, oxidative modification of lipids. Chemical compounds in the treatment of cardiovascular diseases: statins, fibrates, PCSK9 inhibitors mechanisms of action and development.

5. Viral Epidemics - chemical and biological aspects. Mechanisms of viral infection, notable outbreaks (HIV, SARS, COVID-19), role of antivirals and vaccines.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>single/multiple choice test</td><td>51.0%</td><td>50.0%</td></tr>
<tr><td>presentation</td><td>51.0%</td><td>50.0%</td></tr>
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<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>- selected chapters from Harper's Biochemistry

- related to the topic of the lecture articles from scientific journals</td></tr>
<tr><td>Supplementary literature</td><td>S. Mukherjee, The Emperor of All Maladies: A Biography of Cancer</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>not applicable</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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