



Subject card

Subject name and code	Cancer Cell Biology, PG_00058248						
Field of study	Biotechnology						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
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			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Ewa Augustin					
	Teachers	dr hab. Ewa Augustin dr inż. Monika Pawłowska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
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	45	5.0		50.0	100	
Subject objectives	The aim of the course is to teach students with the molecular mechanisms of the carcinogenesis.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W05] knows the basis of civilization diseases, including cancer, and chemical structures and properties of various groups of active substances, including anticancer drugs	The student is able to state the causes of cancer and knows the biological properties of various anticancer substances and drugs.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K7_U02] has practical skills in commonly used biochemical methods including enzyme activity and kinetics assays, electrophoresis, western blotting, ELISA assays, fluorescence microscopy, flow cytometry	The student understands and knows the basic methods of studying the biology of cancer cells.			[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K7_K04] is aware of the need to solve problems and perform tasks, independently formulate questions to solve a given problem or task; is able to plan the execution of a larger task by dividing it into partial tasks and draw up an appropriate schedule	The student is able to demonstrate how to independently design an experiment to demonstrate the anticancer properties of chemotherapeutics.			[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	<p>Cancer development phases.</p> <p>Factors causing cancer, epidemiology of cancer in Poland and in the world.</p> <p>Oncogenes and suppressor genes.</p> <p>Metastasis and angiogenesis. Telomeres and telomerase. Disorders of cell cycle control.</p> <p>Cell death. Cellular senescence.</p> <p>Cancer stem cells.</p> <p>Cancer biomarkers.</p>		
Prerequisites and co-requisites	Knowledge in the field of cell biology, biochemistry, molecular biology, the basics of genetics and genetic engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture	60.0%	60.0%
	laboratory	60.0%	40.0%
Recommended reading	Basic literature		<p>R.A. Weinberg. The biology of cancer. 2014.</p> <p>G. Drewa. Genetyka medyczna. Podręcznik dla studentów. 2011.</p> <p>J. Bał. Biologia molekularna w medycynie. Elementy genetyki klinicznej. PWN 2011.</p>
	Supplementary literature		L. Peccorino. Molecular biology of cancer. Mechanisms, targets and therapeutics. 2008.
	eResources addresses		<p>Adresy na platformie eNauczanie:</p> <p>Biologia komórki nowotworowej - wykład 2023/2024 - Moodle ID: 32601 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32601</p> <p>Biologia komórki nowotworowej - wykład 2023/2024 - Moodle ID: 32601 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32601</p>
Example issues/ example questions/ tasks being completed	<p>The role of oncogenes and suppressor genes in cancer transformation.</p> <p>Molecular basis of angiogenesis.</p> <p>Telomerase as a target for anti-cancer therapy.</p>		
Work placement	Not applicable		