

Subject card

Subject name and code	Monographic lecture - Radiosensitizers - in the service of oncology, PG_00082344						
Field of study	Chemical Business						
Date of commencement of studies	February 2026		Academic year of realisation of subject			2026/2027	
Education level	Master's studies		Subject group			Obligatory subject group in the field of study 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			3.0	
Learning profile	academic		Assessment form			credit	
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Lidia Chomicz-Mańka				
	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		0.0		0.0	30
Subject objectives	The aims are: to acquaint students with the basics of cancer treatment, with particular emphasis on radiotherapy and the role of radiosensitizers to develop the ability to describe the processes and reactions taking place in cancer cells during irradiation with high-energy radiation to develop skills to describe the mechanisms of action of basic types of radiosensitizers						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BCHMU2_U02] Is able to define her/his interests, develop them within the chosen direction and in connection with the subject of her/his master's thesis by implementing the process of self-education and planning her/his professional career.	The student knows the basics of anticancer treatment, identifies the basic classes of radiosensitizers and characterizes the mechanisms of their action.	[SU4] test/exam - oral or written
	[BCHMU2_W01] Knows and understands complex physicochemical processes and is able to analyse their course in connection with other fields of science.	The student understands the role of high-energy radiation in radiotherapy	[SW4] test/exam - oral or written
	[BCHMU2_U01] Is able to, on the basis of her/his knowledge, propose a solution to problems in chemistry, taking into account the economic aspect by using advanced measurement techniques.	Knows the methods of research on the mechanisms of drug action. Understands the basics of pharmacoeconomics in oncology.	[SU4] test/exam - oral or written
	[BCHMU2_W05] Knows and understands the main trends in the development of chemistry combined with economics as two interpenetrating scientific disciplines.	Knows the directions of development of new methods in oncology and understands the complexity of procedures for introducing new drugs into clinical practice.	[SW1] oral statement/conversation/discussion
	[BCHMU2_K04] Is willing to properly assess the acquired knowledge, respect and disseminate it in order to solve specific cognitive and practical issues.	Is able to use the proposed English literature in the process of self-education and verify information in reliable sources of knowledge. The student works independently, is careful and critical in expressing opinions, and argues his/her opinion using verified data.	[SK2] presentation/project/paper/report
Subject contents	Carcinogens, basics of tumor biology, cancer cell hypoxia, survival of patients with malignant tumors, tumor markers and selected laboratory indicators, cancer treatment methods, chemotherapy, hormonal therapy, photodynamic therapy, targeted therapy, radiotherapy, combination therapy (including chemoradiotherapy), side effects of radiotherapy, radioprotectors and radiosensitizers, direct and indirect effects of irradiation with ionizing radiation, water radiolysis products, radiation-induced DNA damage, hydroxyl radical, hydrated electrons, types of radiosensitizers, uracil derivatives as radiosensitizers, oxygen mimetics, novel anticancer drugs and treatments as well as official procedures for their introduction into clinical practice, unconventional activities in oncology.		
Prerequisites and co-requisites	Required courses: Physical and Organic Chemistry Introductory requirements: - knowledge of the structure and biosynthesis of DNA - knowledge of the types and role of electromagnetic radiation - the ability to present the mechanisms of simple radical reactions.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	graded credit	51.0%	100.0%
Recommended reading	Basic literature	1. Onkologia. Podręcznik dla studentów i lekarzy red. Radziszław Kordek; Via Medica, Gdańsk 2007. 2. Chemical Radiosensitizers for Use in Radiotherapy P. Wardman, Clinical Oncology (2007) 19: 397-417. 3. Basic Clinical Radiobiology ed. Michael Joiner, Albert van der Kogel; Hodder Arnold, Londyn 2009. 4. Free-Radical-Induced DNA Damage and its Repair. A Chemical Perspective Clemens von Sonntag; Springer, Berlin 2006.	
	Supplementary literature	Druga twarz tlenu Grzegorz Bartosz; Wydawnictwo Naukowe PWN, Warszawa 2003	
	eResources addresses		

Example issues/ example questions/ tasks being completed	1. Anticancer treatment methods 2. Radiosensitizers in anticancer treatment 3. Impact of high energy irradiation on the living cell 4. Types of radiosensitizers 5. Carcinogens 5. Radioprotectors vs. radiosensitizers 6. Anti-cancer prevention - addictions, diet, lifestyle. 7. BRCA1 syndrome - what is it, what does it mean for the patient? 8. Oncological screening in Poland.9. Biological therapies - oncological immunotherapy and gene therapy. 10. Uracil derivatives as radiosensitizers - idea of action, examples, directions of research.24. Oxygen mimetics as radiosensitizers - idea of action, examples, directions of research.25. The role of solvated electrons in radiosensitization using uracil derivatives.
Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.