

**A COURSE SYLLABUS – DOCTORAL SCHOOL**  
REGARDING THE QUALIFICATION CYCLE FROM 2022 TO 2026

<b>GENERAL INFORMATION ABOUT COURSE</b>				
Course title	<b>Doctoral laboratory</b>			
Name of the unit running the course	Doctoral School at the University of Rzeszów			
Type of course ( <i>obligatory, optional</i> )	obligatory			
Year and semester of studies	Year I-IV, Semester I, II, III, IV, V, IV, VII, VIII			
Discipline	Health Sciences, medical sciences			
Language of Course	polish			
Name of Course coordinator	Dr hab n. o. zdr. Edyta Barnaś, Prof UR Dr hab. n. med. Inż. Dorota Bartusik-Aebisher, Prof UR			
Name of Course lecturer	Dr hab n. o. zdr. Edyta Barnaś, Prof UR Dr hab. n. med. Inż. Dorota Bartusik-Aebisher, Prof UR			
Prerequisites	Health Sciences, Medical Biology and Medicinal Chemistry at the Master's level			
<b>BRIEF DESCRIPTION OF COURSE</b> (100-200 words)				
<p>The subject of diagnostics and therapeutic possibilities in various types of cancer in terms of the use of photosensitizers in vitro will be carried out by examining damage to cancer cells leading to permanent damage and destruction of the tumor.</p> <p>Photodynamic therapy (PDT) affects cancer cells through an inflammatory response that stimulates shedding of dead cells, restoration of tissue homeostasis, and even systemic immunity. This method of therapy does not affect the extracellular matrix, therefore the process of tissue fusion carries a minimal risk of scarring.</p> <p>The research aims to demonstrate the PDT technique as a method that improves the quality of life during therapy and diagnostics. At the laboratory level, the work will show the impact of the choice of a photosensitizer on the effects of therapy.</p>				
<b>COURSE LEARNING OUTCOMES AND METHODS OF EVALUATING LEARNING OUTCOMES</b>				
Learning outcome	The description of the learning outcome defined for the course	Relation to the degree programme outcomes (symbol)	Learning Format (Lectures, classes,...)	Method of assessment of learning outcomes (e.g. test, oral exam, written exam, project,...)
<b>Knowledge (no.)</b>	<b>(Knows and understands)</b>			
1	The doctoral student knows and understands the selection of a selected the study group of women, patients with endometrial cancer and other related	P8S_WG1 P8S_WG2 P8S_WG3 P8S_WG4	classes	project
2	The PhD student knows and understands diagnostic methods cancer disease with using photosensitizers	P8S_WG1 P8S_WG2 P8S_WG3 P8S_WG4	classes	project
3	The doctoral student knows and understands therapeutic possibilities in various types of	P8S_WG1 P8S_WG2	classes	project

	cancer	P8S_WG3 P8S_WG4				
<b>Skills (no.)</b>	<b>(Able to)</b>					
1	The doctoral student is able to analyze data in the study group	P8S_UW1 P8S_UW2 P8S_UW3	classes	project		
2	The PhD student is able to use scientific literature for the assumed research problems	P8S_UW1 P8S_UW2 P8S_UW3	classes	project		
3	The doctoral student is able to perform and analyze diagnostic and therapeutic data resulting from in vitro photodynamic diagnostics	P8S_UW1 P8S_UW2 P8S_UW3	classes	project		
<b>Social competence (no.)</b>	<b>(Ready to)</b>					
1	The PhD student is ready to critically evaluate achievements in the field of diagnosis, therapy and quality of life of women with cancer	P8S_KK1	classes	project		
2	The PhD student is ready to plan photodynamic diagnostics	P8S_KK1	classes	project		
3	The PhD student is ready to perform effective generation of singlet oxygen in vitro and correlate data with the research group	P8S_KK1	classes	project		
4	The PhD student is ready to choose the most effective photosensitizer	P8S_KK1	classes	project		
<b>LEARNING FORMAT – NUMBER OF HOURS</b>						
Semester (no.)	Lectures	Seminars	Lab classes	Internships	others	ECTS
I-VIII			yes			24
<b>METHODS OF INSTRUCTION</b>						
Laboratory work, discussion						
<b>COURSE CONTENT</b>						
Year I: 2022/2023, semester I and II 1. Selection of the study group 2. Statistical estimation of the study group 3. Literature research on diagnostics Year II: 2023/2024, semester III and IV 1. The selected model of singlet oxygen generation in the diagnosis of photodynamic therapy 3. Selection of photosensitizers and their comparison 4. Preparation of articles presenting research results Year III: 2024/2025, semester V and VI 1. Correlation of the research group with the results 2. Quality of life women with cancer						

3. Preparation of articles presenting research results  
 Year IV: 2025/2026, semester VII and VIII

1. Analysis of the applied diagnostics and therapeutic possibilities in various types of cancer in terms of the use of photosensitizers in vitro
2. Preparation of articles presenting research results

**COURSE ASSESSMENT CRITERIA**

The pass mark is an active participation in the seminar consisting in asking questions and conducting a substantive discussion on the presentation of the research results presented during the seminar

**TOTAL PhD STUDENT WORKLOAD REQUIRED TO ACHIEVE THE INTENDED LEARNING OUTCOMES – NUMBER OF HOURS AND ECTS CREDITS**

Activity	Number of hours
Scheduled course contact hours	240h
Other contact hours involving the teacher (consultation hours, examinations)	120h
Non-contact hours – student’s own work (preparation for classes or examinations, project, etc.)	120h
<b>Total number of hours</b>	<b>480h</b>
<b>Total number of ECTS credits</b>	<b>24</b>

**INSTRUCTIONAL MATERIALS**

Compulsory literature:	1. Photodynamic Therapy Ed. T. Patrice RSC, Cambridge (2003), pp. 384, ISBN 0-85404-306-3 2. Articles related to the use of EORTC questionnaires <a href="https://www.eortc.org/">/https://www.eortc.org/</a>
Complementary literature:	Prebiotic Photochemistry: From Urey–Miller-like Experiments to Recent Findings Ed. Franz Saija, Giuseppe Cassone RSC, Cambridge (2021), pp.308, ISBN 978-1-83916-177-3

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 Date and signature of the Course lecturer

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 Approved by the Head of the Department or an authorised person