

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

GENERAL INFORMATION ABOUT COURSE				
Course title	Doctoral Seminar			
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-II, Semester I, II, III, IV,			
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			
BRIEF DESCRIPTION OF COURSE (100-200 words)				
<p>The aim of the research is to assess the diagnostic and therapeutic possibilities in various types of cancer in terms of the use of photosensitizers.</p> <p>One of the assumptions in the presented project is to assess the effectiveness and use of fluorescent photosensitizer stimulation in order to expand the clinical use of photosensitizers already approved for photodynamic therapy in deep tissue.</p> <p>A study group of women, patients with endometrial cancer and other related diseases will be selected to carry out the research, and then the surgical tissues collected in vitro will be treated with commercial and synthetic photosensitizers. In addition, we will use in vitro MRI in postoperative tissues before and after photodynamic therapy (PDT). We expect that the selected photosensitizer will cause changes in cancer cells, which in turn will be assessed histopathologically.</p>				
COURSE LEARNING OUTCOMES AND METHODS OF EVALUATING LEARNING OUTCOMES				
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,...)
Knowledge (no.)	(Knows and understands)			
1	The PhD student knows and understands the principles of the photodynamic reaction phenomenon	P8S_WG1 P8S_WG2 P8S_WG3	classes	project
2	The PhD student knows and understands the concepts of diagnostic methods using photosensitizers	P8S_WG1 P8S_WG2 P8S_WG3	classes	project
Skills (no.)	(Able to)			
1	The PhD student is able to analyze measurement data during the in vitro photodynamic	P8S_UW1 P8S_UW2 P8S_UW3	classes	project

	reaction	P8S_UK6				
2	The PhD student is able to perform and statistically evaluate a study group	P8S_UW1 P8S_UW2 P8S_UW3 P8S_UK6	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 P8S_UK6	classes	project		
Social competence (no.)	(Ready to)					
1	The PhD student is ready to carry out the photodynamic reaction in vitro	P8S_KK1 P8S_KK3	classes	project		
2	The PhD student is ready to report therapeutic efficiency in vitro	P8S_KK1 P8S_KK3	classes	project		
3	The PhD student is ready to perform effective generation of singlet oxygen in vitro and change the reaction system in order to obtain the best result	P8S_KK1 P8S_KK3	classes	project		
LEARNING FORMAT – NUMBER OF HOURS						
Semester (no.)	Lectures	Seminars	Lab classes	Internships	others	ECTS
I-IV			yes			8
METHODS OF INSTRUCTION						
seminar,presentation, discussion						
COURSE CONTENT						
<p>Year I: 2022/2023, semester I and II</p> <ol style="list-style-type: none"> 1. Methodology of diagnostic tests in the aspect of health sciences 2. Literature review on quality of life, diagnostics and therapeutic possibilities in various types of cancer in terms of the use of photosensitizers in vitro 3. Review of laboratory methods for generating a photodynamic reaction 4. Physical basis of photodynamic therapy 5. Analysis of measurement data and measurement errors using statistical and graphical computer programs 6. Preparation of an article presenting the obtained results <p>Year II: 2023/2024, semester III and IV</p> <ol style="list-style-type: none"> 1. Efficiency of the in vitro process 2. Analysis of the selected singlet oxygen generation model in the diagnosis of photodynamic therapy 3. Properties of photosensitizers and their comparison 4. Preparation of articles presenting research results 						
COURSE ASSESSMENT CRITERIA						
The condition for passing is active participation in the seminar consisting in conducting a substantive discussion on research, literature base and presentation of 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	60h
Other contact hours involving the teacher (consultation hours, examinations)	60h
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	60h
Total number of hours	180h
Total number of ECTS credits	8
INSTRUCTIONAL MATERIALS	
Compulsory literature:	<ol style="list-style-type: none"> 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 /https://www.eortc.org/
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