

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

<b>GENERAL ITEM INFORMATION</b>				
Course title		Doctoral Laboratory		
Name of the unit running the course		Doctoral School at the University of Rzeszów		
Type of course ( <i>obligatory, optional</i> )		obligatory		
Year/semester of studies		I - IV / I-VIII		
Discipline		Sciences		
Language of course		Polish		
Name of the course coordinator		Prof. dr hab. Andriy Sybirnyy		
Name of the course lecturer		Prof. dr hab. Andriy Sybirnyy  Dr hab. Justyna Ruchała, prof. UR		
Prerequisites		The scope of knowledge resulting from the study program in the field of biological sciences, knowledge of English to the extent that allows the use of sources of knowledge, scientific information, skills and competences at level 7 of the Polish Qualifications Framework		
<b>BRIEF DESCRIPTION OF COURSE (100-200 words)</b>				
<p>The aim of the doctoral dissertation is:</p> <ul style="list-style-type: none"> <li>• preparation of the doctoral student to conduct scientific work in the subject of the doctoral project, which is carried out by shaping knowledge, skills and competences in the field of: <ul style="list-style-type: none"> <li>• planning scientific research in the subject of the doctoral thesis carried out by the doctoral student,</li> <li>• conducting scientific research,</li> <li>• elaboration of research results, including with the use of statistical analyses,</li> <li>• confronting the results of own research with literature data,</li> <li>• critical analysis of literature in the field of doctoral dissertation,</li> <li>• preparation of a doctoral dissertation</li> </ul> </li> </ul>				
<b>LEARNING OUTCOMES FOR THE SUBJECT AND ASSESSMENT METHODS</b>				
Learning outcome outcome	Learning outcome outcome	Learning outcome outcome	Learning outcome outcome	Learning outcome outcome
<b>Knowledge: Knows and understands</b>				
EK_1	The theoretical assumption of the doctoral thesis, as well as understands the purposefulness of the topic and follows the latest achievements in the subject of the doctoral thesis on the production of high-value	P8S_WG1	exercise	Research project

	substances by unconventional yeast			
EK_2	Directions of development in the subject of the doctoral thesis, and is also able to compare their research results with the latest research results published in the scientific literature on lactate production	P8S_WG2	exercise	Research project
EK_3	Polish and English-language terminology used in the discipline of biological sciences and can use it correctly in the field of unconventional yeast biotechnology	P8S_WG3	exercise	Research project
EK_4	Tools, methods and techniques appropriate for the implementation of planned research goals and understands the need for their proper selection, especially in the field of molecular yeast genetics	P8S_WG4	exercise	Research project
<b>Skills: Able to</b>				
EK_5	Critically analyze the results of their own scientific research, as well as evaluate them based on the available scientific literature on the biotechnology of unconventional yeast	P8S_UW1	exercise	Research project  Analysis of scientific literature
EK_6	Assess the impact of own research on the development of the discipline	P8S_UW2	seminar	Research project  Analysis of scientific literature  Preparation of manuscripts of scientific articles

EK_7	Critically analyze the results of own research based on the available literature on the production of fine substances in yeast	P8S_UW3	seminar	Research project Analysis of scientific literature Preparation of manuscripts of scientific articles		
<b>Social competence: Ready to</b>						
EK_8	Critical analysis of their research achievements as well as scientific achievements	P8S_KK1	seminar	Research project Analysis of scientific literature Preparation of manuscripts of scientific articles		
<b>LEARNING FORMAT – NUMBER OF HOURS</b>						
Semester (no.)	Lectures	Seminars	Lab classes	Internships	Other	<b>ECTS</b>
I-VIII	-	-	240	-	-	<b>24</b>
<b>METHODS OF INSTRUCTION</b>						
<ul style="list-style-type: none"> <li>• research project - performing scientific research, analysis of research results, preparation of a doctoral dissertation</li> <li>• analysis of scientific literature</li> <li>• preparation of manuscripts of scientific articles</li> </ul>						
<b>COURSE CONTENT</b>						
Principles of reliability and specificity of scientific research in the field of biological sciences. <ol style="list-style-type: none"> <li>1. Analysis of available literature on the subject of the doctoral thesis</li> <li>2. Determination of the purpose of research and hypotheses in the subject of the doctoral dissertation, including the general research plan</li> <li>3. Development of concepts, methodologies and research plans</li> <li>4. Statistical analysis of own research results</li> </ol>						

5. Interpretation of the obtained research results based on the literature on the subject
6. Preparation of manuscripts of scientific articles
7. Preparation of the doctoral dissertation

**COURSE ASSESSMENT CRITERIA**

The condition for passing is observation during laboratory work, analysis of the progress of research work in the subject of the future doctoral dissertation.

**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	<b>240</b>
Other contact hours involving the teacher (consultation hours, examinations)	60
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	300
<b>TOTAL NUMBER OF HOURS</b>	<b>600</b>
<b>TOTAL NUMBER OF ECTS CREDITS</b>	<b>24</b>

**INSTRUCTIONAL MATERIALS**

Compulsory literature:	1. Databases of scientific publications
Complementary literature:	1. Databases of scientific publications