A COURSE SYLLABUS – DOCTORAL SCHOOL

REGARDING THE QUALIFICATION CYCLE FROM 2022 TO 2026

GENERAL INFORMATION ABOUT COURSE	
Course title	**PhD Laboratories**
Name of the unit running the course	**Doctoral School at University of Rzeszów**
Type of course *(obligatory, optional)*	obligatory
Year and semester of studies	semestr I-VIII
Discipline	nutrition and food technology
Language of Course	polish/english
Name of Course coordinator	Prof. dr hab. Izabela Sadowska-Bartosz
Name of Course lecturer	Prof. dr hab. Izabela Sadowska-Bartosz
Prerequisites	Basic knowledge of food biochemistry, biophysics, food technology

BRIEF DESCRIPTION OF COURSE
(100-200 words)

The doctoral laboratory aims to prepare the doctoral student (under the substantive supervision of the supervisor) to conduct independent research. What is more, it should also prepare the doctoral student to formulate research hypotheses, optimize research methodology, perceive and verbalize scientific problems. The specific objective is: to perform laboratory tests as part of the doctorate, statistical analysis and preparation of the results of these tests. The aim of the doctoral studio is also:
- broadening the knowledge about the methods of obtaining scientific information as well as preparing and writing a scientific work with respect for copyrights and intellectual property,
- drawing the doctoral student's attention to the need for further education and systematic familiarization with the current one, scientific literature.

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	To the extent enabling the revision of the existing paradigms-a global achievement, including theoretical foundations and issues general and selected specific issues - appropriate for a scientific or artistic discipline	**P8S-WG/1**	Lab.	Project - implementation of the plan research
2	Main development trends in scientific or artistic disciplines in which education takes place	**P8S-WG/2**	Lab.	Project - implementation of the plan research
3	Scientific research methodology	**P8S-WG/3**	Lab.	Project - implementation of the plan research
4	Principles of disseminating the results of scientific activity, also in the mode of open access	**P8S-WG/4**	Lab.	Project - implementation of the plan research
5	Basic principles of knowledge	**P8S-WK/3**	Lab.	Project -

	transfer to the economic and social sphere as well as commercialization of the results of scientific activity and know - how related to these results			implementation of the plan research
Skills (no.)	**(Able to)**			
1	Use knowledge from various fields of science or art for creative identification and innovative solving of complex problems or performing research tasks, in particular: - define the purpose and subject of research, formulate a research hypothesis, - develop methods, techniques and research tools and use them creatively, - make conclusions on the basis of scientific research	**P8S -UW/1**	Lab.	Project - implementation of the plan research
2	Perform a critical analysis and evaluation of the results of scientific research, expert activities and other creative works and their contribution to the development of knowledge	**P8S-UW/2**	Lab.	Project - implementation of the plan research
3	Transfer the results of scientific activity to the economic and social sphere	**P8S-UW/3**	Lab.	Project - implementation of the plan research
4	Communicate on specialist topics to a degree enabling active participation in the international scientific environment	**P8S-UK/1**	Lab.	Project - implementation of the plan research, publications scientific
5	Communicate on specialist topics to a degree enabling active participation in the international scientific environment	**P8S-UK/2**	Lab.	Project - implementation of the plan research
6	Initiate a debate	**P8S-UK/3**	Lab.	Project - implementation of the plan research
7	Participate in the scientific discourse	**P8S-UK/4**	Lab.	Project - implementation of the plan research
8	Plan and implement individual and team research projects, also in an international environment	**P8S-UO**	Lab.	Project - implementation of the plan research
9	Plan and act for your own development as well as inspire	**P8S-UU/1**	Lab.	Project - implementation

	and organize the development of other people			of the plan research
Social competence (no.)	**(Ready to)**			
1	Critical evaluation of the achievements within a given scientific or artistic discipline	**P8S-KK/1**	Lab.	Project - implementation of the plan research
2	Critical evaluation of one's own contribution to the development of a given scientific or artistic discipline	**P8S-KK/2**	Lab.	Project - implementation of the plan research
3	Recognize the importance of knowledge in solving cognitive and practical problems	**P8S-KK/3**	Lab.	Project - implementation of the plan research
4	Maintaining and developing the ethos of research and creative communities, including: - independently conducting research activities - respecting the principle of public ownership of the results of scientific activity, taking into account the principles of intellectual property protection	**P8S-KR**	Lab.	Project - implementation of the plan research

LEARNING FORMAT – NUMBER OF HOURS

Semester (no.)	Lectures	Seminars	Lab classes	Internships	others	ECTS
I-VIII	-	-	240	-	-	24

METHODS OF INSTRUCTION

Discussion, solving research problems, working in a laboratory, analysis and presentation of research results, analysis and interpretation of professional scientific literature.
Discussion with the promoter about good manners in science; methodology for preparing a doctoral dissertation in the field of food and nutrition technology, work plan and methods of its implementation, and respect for copyright; interpretation of results (30 hours/semester).

COURSE CONTENT

The program content is closely related to the area of the doctoral student's research work.
1. Principles of the research laboratory operation.
2. The specificity of scientific work, research techniques in the field of a selected specialization.
3. Development of a concept and work plan, definition of the purpose and methods of research.
4. Obtaining food products/dietary supplements, carrying out scientific research appropriate for a selected research problem.
5. Development and interpretation of research results. Formulating conclusions.
6. Searching for scientific literature in the field of the research problem presented in the doctoral dissertation.
7. Editing manuscripts respecting the intellectual property of the authors of the scientific literature used.

COURSE ASSESSMENT CRITERIA

Observation during the laboratory work, discussion, analysis of the progress of research carried out in connection with the doctoral dissertation being prepared

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	240/8 semesters
Other contact hours involving the teacher (consultation hours, examinations)	240/8 semesters
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	240/8 semesters
Total number of hours	720/8 semesters
Total number of ECTS credits	24/8 semesters

INSTRUCTIONAL MATERIALS	
Compulsory literature:	- Food Oxidants and Antioxidants: Chemical Biological and Functional Properties. Edited by G. Bartosz. Taylor & Francis Group, 2016 - January Weiner: Technika pisania i prezentowania przyrodniczych prac naukowych. Wydawnictwo Naukowe PWN, 2018 - Seals DR, Tanaka H. Manuscript peer review: a helpful checklist for students and novice referees. Adv Physiol Educ. 2000 Jun; 23(1):52-8. PubMed PMID: 10902527 - Blackwell, J. 2011. A Scientific Approach to Scientific Writing, Springer, New York [electronic resource]. Unpublished materials - protocols by the supervisor.
Complementary literature:	Scientific journals in Polish and a foreign language in the field of food technology and human nutrition, food analysis and biotechnology. Detailed literature on the ongoing doctoral dissertation.

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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