

**A COURSE SYLLABUS – DOCTORAL SCHOOL
REGARDING THE QUALIFICATION CYCLE FROM 2021 TO 2025**

GENERAL INFORMATION ABOUT COURSE				
Course title	Scientific Research Methodology			
Name of the unit running the course	Doctoral School at University of Rzeszów			
Type of course (<i>obligatory, optional</i>)	Obligatory			
Year and semester of studies	Year 1/ Winter semester			
Discipline	Agriculture and Horticulture			
Language of Course	Polish			
Name of Course coordinator	Dr hab. inż. Bogdan Wiśniowski, Prof. UR			
Name of Course lecturer	Dr hab. inż. Bogdan Wiśniowski, Prof. UR			
Prerequisites	Knowledge of the basic issues of information technology and statistics			
BRIEF DESCRIPTION OF COURSE (100-200 words)				
<p>The main goal of teaching the subject is to familiarize students with the basic concepts and assumptions of scientific research and to provide knowledge enabling the planning and implementation of scientific research projects. Classes include an overview of basic research methods and tools. During the course, the student becomes familiar with the research process, starting from the correct formulation of the research problem and hypotheses, through the creation of a research plan, appropriate sample selection, data collection, and ending with data analysis, correct inference and compliance with copyright. Additionally, classes include improving the ability to obtain materials from reliable sources (Web of Science, SCOPUS,). The student is prepared to conduct their own scientific research in the discipline of agriculture and horticulture and to independently develop and present their results.</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.)				
1. Knows and understands	To the extent enabling a revision of the existing paradigms - global achievements, covering theoretical foundations and general issues and selected specific issues - appropriate for the scientific discipline of agriculture and horticulture	P8S-WG/1	Lectures	Written exam
2. -//-	Main trends and directions of development of the discipline of agriculture and horticulture	P8S-WG/2	Lectures	Written exam
3. -//-	Scientific research methodology in the field of agricultural sciences	P8S-WG/3	Lectures	Written exam
4. -//-	Principles of disseminating the results of scientific activity, also in the mode of open access	P8S-WG/4	Lectures, classes	Written exam, Project

Skills (no.)						
1. Is able to	Use knowledge from various fields of science or art for the 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	Lectures, classes	Written exam, Project		
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	Lectures, classes	Written exam, Project		
3. -//-	Transfer the results of scientific activity to the economic and social sphere	P8S-UW/3	Classes	Project		
4. -//-	Communicate on specialist topics to a degree enabling active participation in the international scientific environment	P8S-UW/4	Lectures, classes	Written exam, Project		
Social competence (no.)						
1. Is ready to	Critical evaluation of the achievements within the scientific discipline of agriculture and horticulture	P8S-KK/1	Classes	Project		
2. -//-	Critical evaluation of one's own contribution to the development of the scientific discipline of agriculture and horticulture	P8S-KK/2	Classes	Project		
3. -//-	Conduct scientific activities in an independent manner, respecting the principles of intellectual property protection	P8S-KR	Classes	Project		
LEARNING FORMAT – NUMBER OF HOURS						
Semester (no.)	Lectures	Seminars	Lab classes	Internships	others	ECTS
1	10	20	0	0	0	-
METHODS OF INSTRUCTION						
E.G, LECTURE: A PROBLEM-SOLVING LECTURE/A LECTURE SUPPORTED BY A MULTIMEDIA PRESENTATION/ DISTANCE LEARNING CLASSES: TEXT ANALYSIS AND DISCUSSION/PROJECT WORK (RESEARCH PROJECT, IMPLEMENTATION PROJECT, PRACTICAL PROJECT)/ GROUP WORK (PROBLEM SOLVING, CASE STUDY, DISCUSSION)/DIDACTIC GAMES/ DISTANCE LEARNING LABORATORY CLASSES: DESIGNING AND CONDUCTING EXPERIMENTS)						

Lectures
 Multimedia presentation
 Text analysis and discussion

COURSE CONTENT

1. Lectures/ Seminars:

Introduction to the methodology of scientific research: methodology as a science, scientific method, general characteristics of scientific work, types of scientific works.
 Planning and conducting research: formulating research hypotheses, selecting research methods, techniques and tools. The structure of the research process, stages of the research procedure, formulation of research problems, scientific hypotheses, conditions for the correct formulation of hypotheses. Selection of the sample and research area.
 Research methods and techniques.
 Development and interpretation of research results (empirical and statistical analysis, quantitative and qualitative analysis).
 Inference in scientific research.
 Principles of writing and scientific literature. Methodology of writing scientific papers.
 Presentation of research results.

2. Seminars / Lab classes/ others:

Planning and conducting research: formulating research hypotheses, selecting research methods, techniques and tools.
 Development and interpretation of research results (empirical and statistical analysis, quantitative and qualitative analysis).
 Principles of writing and scientific literature. Methodology of writing scientific papers.
 Presentation of research results.

COURSE ASSESSMENT CRITERIA

Lectures - written test exam with open and closed questions. The pass mark is required to provide at least 50% correct answers.

Score: 51-60% dst; 61-70% + dst; 71-80% db; 81-90% + db; 91-100% bdb

Exercises - a credit with a grade which is the average of the grades obtained during the course. The following will be assessed:

- short tasks during the exercises concerning the ability to use the discussed methods (the ability to prepare literature for a given research topic, correctly prepare a list of references, use simple statistical analyses);
- two projects. The first one will consist in the preparation of the own research project; the evaluation will include the way of presenting the research problem (15%), justifying the problem (15%), formulating research hypotheses / hypotheses (15%), selection of research methods and their characteristics (20%), selection of appropriate literature (15%) and the format work - clarity, logic of argument, correct citation, independence (20%). The second is the preparation of a multimedia presentation for the own research project; the selection of the presented issues will be assessed in terms of their significance (35%), the consistency and clarity of the presentation (35%) and the technical and aesthetic side of the presentation (multimedia, formatting, graphics, transitions, smooth presentation) (30%).

Score: 51-60% dst; 61-70% + dst; 71-80% db; 81-90% + db; 91-100% bdb

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	30

Other contact hours involving the teacher (consultation hours, examinations)	5
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	20
Total number of hours	55
Total number of ECTS credits	
INSTRUCTIONAL MATERIALS	
Compulsory literature:	<p>Apanowicz J. 2005. Metodologiczne uwarunkowania pracy naukowej: prace doktorskie, prace habilitacyjne. Warszawa 2005.</p> <p>Creswell J. W. 2013. Projektowanie badań naukowych. Metody jakościowe, ilościowe i mieszane. Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków.</p> <p>Grużewska, A., Malicki L. 2002. Podstawy doświadczeń rolniczego. Wydawnictwo Akademii Podlaskiej, Siedlce.</p> <p>Łomnicki A. 1995. Wprowadzenie do statystyki dla przyrodników. Wydawnictwo Naukowe PWN, Warszawa.</p> <p>ZIELIŃSKI J. 2012. METODOLOGIA PRACY NAUKOWEJ. OFICyna WYDAWNICZA ASPRA-JR, WARSZAWA.</p>
Complementary literature:	Online databases: Web of Science, SCOPUS, COBORU, IUNG-PIB – methodology of conducting experiments with agricultural plants