



COURSE CARD

1. Basic information

Course name in English:	Research skills	
Course name in Polish:	Warsztat badacza	
Number of hours:	30	
Type of course:	Research skills	
Form of course:	mixed forms (combination of lecture, seminar and laboratory)	
Code of course:	W01ARU-SD0115W	
Course leader:	Prof. dr hab. inż. arch. Ewa Łużyńska	
Faculty of the course leader:	W1 Faculty of Architecture	
Email address of the course leader:	ewa.luzyniecka@pwr.edu.pl	
Scientific discipline(s) assigned to the course (doctoral students representing the marked disciplines can participate in the course):	Architecture and urban planning	<input checked="" type="checkbox"/>
	Automation, electronic, electrical engineering and space technologies	<input checked="" type="checkbox"/>
	Information and communication technology	<input checked="" type="checkbox"/>
	Biomedical engineering	<input checked="" type="checkbox"/>
	Chemical engineering	<input checked="" type="checkbox"/>
	Civil engineering, geodesy and transport	<input checked="" type="checkbox"/>
	Materials engineering	<input checked="" type="checkbox"/>
	Mechanical engineering	<input checked="" type="checkbox"/>
	Environmental engineering, mining, and energy	<input checked="" type="checkbox"/>
	Mathematics	<input checked="" type="checkbox"/>
	Chemical sciences	<input checked="" type="checkbox"/>
	Physical sciences	<input checked="" type="checkbox"/>
	Management and quality studies	<input checked="" type="checkbox"/>

2. Objectives

The subject of the course is to learn the basic principles of developing a text of a scientific work with an appropriate scientific apparatus. The rules are discussed on the basis of the analysis of articles and dissertations written by other authors

3. Content

Detailed information about the course content, including topics and form of classes.

No.	Topic	Number of hours	Form of classes
1	Planning and elements of the young scientist's research development (articles, doctoral monograph,	2	lecture



	habilitation with a monograph, habilitation as a collection of articles, grants).		
2	Motives for taking up a topic, choosing a topic, research problem. Table of contents - work structure.	2	lecture
3	Correctness of determining the title and scope of work (analysis of the selected article and dissertation).	2	seminar
4	Principles of determining the aim of the work and hypotheses.	2	lecture
5	Assessment of the presentation of the goal and hypotheses (analysis of the selected article and dissertation).	2	seminar
6	Objective, temporal and territorial scope of the work. Paying attention to the development of the state of research.	2	lecture
7	Development of the scope of the study and the state of research (analysis of the selected article and dissertation).	2	seminar
8	Methods, techniques and research tools.	2	lecture
9	Evaluation of the selection of research methods (analysis of the selected article and dissertation).	2	seminar
10	Introduction and completion of work.	2	lecture
11	Analysis of ending writing skills (analysis of selected article and dissertation).	2	seminar
12	Selection of bibliographic system depending on the type of work: Oxford system, APA, MLA, according to the Polish Standard.	2	lecture
13	Analysis of the bibliographic system in the selected article and dissertation (analysis of selected article and dissertation).	2	seminar
14	Development of the state of research and methods of reaching literature databases. Ability to use traditional databases and online resources - benefits and threats.	2	lecture
15	Discussion of the classification of scientific publications, including scientific journals according to accepted rules: Philadelphia list (If), impact factor (if), scoring according to the Ministry of Science and Higher Education list, citations, Hirsch index, i10 index	2	lecture

4. Prerequisites

List of prerequisites relating to knowledge, skills and other competences for course participants.

Specified research topics related to the development of a doctorate

5. Learning outcomes

List of learning outcomes at level 8 of the Polish Qualifications Framework assigned to the course (mark the learning outcomes in the last column).



Symbol	Learning outcome	
	KNOWLEDGE. Doctoral student knows and understands:	
SzD_W3	the main trends in the development of the scientific or artistic disciplines covered in the curricula;	<input type="checkbox"/>
SzD_W4	research methodology;	<input checked="" type="checkbox"/>
SzD_W5	the rules for the dissemination of scientific results, including in open access mode;	<input checked="" type="checkbox"/>
SzD_W6	the fundamental dilemmas of modern civilization;	<input checked="" type="checkbox"/>
SzD_W7	the legal and ethical conditions of scientific activity;	<input type="checkbox"/>
SzD_W8	the economic and other relevant conditions of scientific activity;	<input checked="" type="checkbox"/>
SzD_W9	basic principles of knowledge transfer to the economic and social spheres and commercialisation of results of scientific activity and know-how related to these results.	<input checked="" type="checkbox"/>
	SKILLS. Doctoral student is able to:	
SzD_U2	use knowledge from different fields of science or art to creatively identify, formulate and innovatively solve complex problems or perform research tasks, in particular: - define the purpose and subject of scientific research, formulate a research hypothesis, - develop research methods, techniques and tools, and use them creatively, - draw conclusions on the basis of scientific research; critically analyse and evaluate the results of scientific research, expertise and other creative work and their contribution to knowledge development; transfer the results of scientific activities to the economic and social spheres;	<input checked="" type="checkbox"/>
SzD_U3	communicate on specialised topics to the extent that they enable an active participation in the international scientific community;	<input type="checkbox"/>
SzD_U4	disseminate research results, including in popular forms;	<input checked="" type="checkbox"/>
SzD_U5	initiate debates and participate in a scientific discourse;	<input type="checkbox"/>
SzD_U6	be able to speak a foreign language at B2 level of the Common European Framework of Reference for Languages to a level that enables them to participate in the international scientific and professional environment;	<input type="checkbox"/>
SzD_U7	plan and implement an individual or collective research or creative activity, including in an international environment;	<input checked="" type="checkbox"/>
SzD_U8	independently plan and act for one's own development and inspire and organize the development of others;	<input type="checkbox"/>
SzD_U9	plan classes or groups of classes and implement them using modern methods and tools.	<input type="checkbox"/>
	SOCIAL COMPETENCES. Doctoral student is ready to:	
SzD_K3	fulfilling the social obligations of researchers and creators, initiate public interest activities, thinking and acting in an entrepreneurial way;	<input checked="" type="checkbox"/>
SzD_K4	maintaining and developing the ethos of research and creative environments, including: - carrying out scientific activities in an independent manner, - respecting the principle of public ownership of research results, taking into account the principles of intellectual property protection.	<input checked="" type="checkbox"/>



6. Evaluation

Short description of the method(s) used to evaluate the learning outcomes assigned to the course, e.g., exam, test, report, presentation, etc.

Specified research topics related to the development of a doctorate.

7. Teaching methods

Short description of the teaching methods used during the course, e.g., multimedia presentation, discussion, literature studies, developing written documents, own work, etc.

Specified research topics related to the development of a doctorate

8. Literature

List of primary and secondary literature used to prepare the course and including additional knowledge for participants, e.g., books, textbooks, research papers, standards, web pages, etc.

PRIMARY LITERATURE:

- [1] J. Jura, *Przygotowanie rozprawy doktorskiej*, Warszawa 1994.
- [2] G. Gambarelli, Z. Łucki, *Jak przygotować pracę dyplomową lub doktorską*, Kraków 1996.
- [3] U. Eco, *Jak napisać pracę dyplomową. Poradnik dla humanistów*, Warszawa 2007.
- [4] J. Weiner, *Technika pisanie i prezentowania prac naukowych. Publikacja naukowa, praca seminaryjna, praca magisterska, referat, poster*, Kraków 1992.
- [5] J. Orczyk, *Zarys pracy umysłowej*, Warszawa 1984.

SECONDARY LITERATURE

- [1] D. Lindsay, *Dobre rady dla piszących teksty naukowe*, Wrocław 1995.
- [2] J. Peter, *Zarys metodologii pracy naukowej*, Warszawa 1975.
- [3] M.M. Grzybowski, D. Gurzyńska-Bociek, *Technika sporządzania przypisów i bibliografii*, Bydgoszcz-Łowicz 1997
- [4] J. Rudniański, *Nauka: Twórczość i organizacja*, Warszawa 1976
- [5] J. Such, *Wstęp do metodologii ogólnej nauk*, Poznań 1973

9. Other remarks

Additional remarks, comments, (e.g., language of the course)

Language of the course - Polish