



## 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 / AUQ100435W	
Course leader:	Prof. Ewa Łuzyniecka	
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, habilitation with a monograph, habilitation as a collection of articles, grants).	2	lecture



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 (I <sub>f</sub> ), impact factor (i <sub>f</sub> ), 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.*

The course participant should specify the subject of the future 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	
--------	------------------	--



<i>KNOWLEDGE. Doctoral student knows and understands:</i>		
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"/>
<i>SKILLS. Doctoral student is able to:</i>		
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"/>
<i>SOCIAL COMPETENCES. Doctoral student is ready to:</i>		
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.*

Presentation of analyses of scientific papers - doctorates and articles by other authors on topics similar to the future doctorate of the course participant.

## 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.*

Polemical lecture, multimedia presentation, discussion, literature studies, own work.

## 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 pisania 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)*

Course can be conducted in Polish