

**DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND  
TECHNOLOGY**

TEAM/ DECLARING/CONDUCTING COURSE: dr hab. A. Wyłomańska,  
prof. W.A. Sokalski.

**DEPARTMENT:** Faculty of Mathematics

**SCIENTIFIC DISCIPLINE:** Mathematics

**COURSE CARD**

**Course name in Polish:** Warsztat badacza M

**Course name in English:** Research skills M

**Course language Polish**

**The course is intended for all PhD students: YES / NO**

- 1) ~~basic course~~
- 2) ~~specialist course~~
- 3) ~~seminar~~
- 4) ~~humanistic course~~
- 5) ~~language~~
- 6) research skills

**Subject code: MAQ100069W, MAQ100070L**

	Lecture	Foreign language course	Seminar	Mixed forms (Laboratory)
Number of hours of organized classes in university (ZZU)	15			15
Grading	Presentation			Report
Number of ECTS points	<b>0</b>			<b>0</b>

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Basic computer skills
2. Communication in English language
3. Knowledge of a given discipline at the second level of studies.
4. Pre-defined research topic of PhD.

**COURSE OBJECTIVES**

- C1 To gain basic knowledge on academic career.
- C2 To gain skills related to searching for, evaluating and organizing information from scientific databases.
- C3 To gain skills related to methodology of research work.
- C4 To gain skills required to prepare a presentation of a scientific work.
- C5 To gain skills required to write a scientific publication.
- C6 To gain skills required to prepare applications for research funding and scholarships from various sources of funding.
- C7 To gain skills of scientific cooperation in research teams, including international cooperation.
- C8 To gain basic knowledge on knowledge transfer and commercialization of research results.

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**PROGRAM CONTENTS**

<b>Form of classes – lecture (Lec)</b>		<b>Number of hours</b>
Lec1	Discussion of lecture goals and grading. Types of scientific publications and presentations	2
Lec2	Preparing scientific presentations and posters. Presentation elements (tables, plots, diagrams, photographs, etc)	3
Lec3	Preparing scientific publications and PhD Theses	3
Lec4	Research funding sources	3
Lec5	Preparing research grant application	2
Lec6	Graded PhD student presentations	2
Total hours:		<b>15</b>

<b>Form of classes – mixed forms (mix) Laboratory</b>		<b>Number of hours</b>
Mix1	Structure of scientific publications, preparing manuscript and correspondence with editors	2
Mix2	Systematic following and collecting scientific literature	2
Mix3	Literature, factographic, patent databases, scientometric analysis	2
Mix4	Review of domestic and foreign agencies funding research and fellowships. Searching relevant projects in domestic and foreign research grant databases	2
Mix5	Collecting job offers, writing CV's and cover letters, preparing for job interview	2
Mix6	Planning research career, postdoc training, arranging international cooperation	2
Mix7	Ethical problems in science and industry	2
Mix8	Report grading	1
Total hours		<b>15</b>

**TEACHING TOOLS USED**

- N1. Multimedia presentation  
 N2. Solving problems  
 N3. Discussion with course participants

**ACHIEVED SUBJECT LEARNING OUTCOMES**

<b>Type of learning outcome</b>	<b>Code of learning outcome</b>	<b>Assessment of learning outcome</b>
Knowledge	P8U_W	Report
Knowledge	P8S_WK	Report, Presentation
Skills	P8U_U	Report
Skills	P8S_UK	Report, Presentation
Skills	P8S_UO	Report

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Skills	P8S_UU	Report, Presentation
Social competence	P8S_K	Report
Social competence	P8S_KK	Report
Social competence	P8S_KR	Report, Presentation

**PRIMARY AND SECONDARY LITERATURE**

**PRIMARY LITERATURE:**

- [1] Dobre rady dla piszących teksty naukowe, Oficyna Wydawnicza PWr, 1995
- [2] M. Carter, Designing Science Presentations, Academic Press, 2013
- [3] On Being Scientist: A Guide to Responsible Conduct in Research: Third Edition,
- [4] National Academy of Sciences (2009)
- [5] Kodeks etyki pracownika naukowego, PAN 2016.
- [6] [https://instytucja.pan.pl/images/2016/komisja\\_etyki/Kodeks\\_etyki\\_pracownika\\_naukowego\\_-\\_wydanie\\_II\\_-\\_2016\\_r.pdf](https://instytucja.pan.pl/images/2016/komisja_etyki/Kodeks_etyki_pracownika_naukowego_-_wydanie_II_-_2016_r.pdf)

**SECONDARY LITERATURE:**

- [1] M. Heller, Jak być uczonym, Znak, 2013

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

**Dr hab. inż. Agnieszka Wylomańska, prof. PWr [Agnieszka.Wylomanska@pwr.edu.pl](mailto:Agnieszka.Wylomanska@pwr.edu.pl)  
Prof. dr hab.inż. W. Andrzej Sokalski, [sokalski@pwr.edu.pl](mailto:sokalski@pwr.edu.pl)**

**SHORT COURSE DESCRIPTION**

Course devoted to preparation of various forms of scientific communication: posters, manuscripts, theses, oral presentations, systematic collecting of scientific information and its critical analysis, constructing search queries in literature, patent and factographic databases. Introduction to research funding sources and preparing grant applications, starting research collaboration and planning research career and awareness of ethical problems in science and industry. Grading of laboratory is based on the quality of report containing critical evaluation of various kinds of information (reviews, books, experts, patents, grants, job offers, conferences, etc.) related to the topics of PhD thesis of each course participant. During the lecture the students will present the results of their research.