

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

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE: Krzysztof Jamroziak
DEPARTMENT: Mechanical Department
SCIENTIFIC DISCIPLINE: Mechanical Engineering

COURSE CARD

Course name in Polish: Warsztat badacza IM
Course name in English: Research skills
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: MEQ100062W

* delete as applicable

	Lecture	Foreign language course	Seminar	Mixed forms
Number of hours of organized classes in university (ZZU)	30			
Grading	Presentation, report, activity			
Number of ECTS points	0			

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of a given discipline at the second level of studies.
2. 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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Form of classes – mixed forms (mix)		Number of hours
Mix1	Academic career (doctoral school principles, legal acts, academic career path, promotion rules). Lecture and group discussion.	2
Mix2	Searching for, evaluating and organizing information from scientific databases. Methodology of research work. Lecture and group discussion.	2
Mix3	Experiment planning and basics of dimensional analysis. Lecture and group discussion.	4
Mix4	Presentation of research results. Lecture and group discussion.	2
Mix5	How to prepare a good scientific article? Stages of creating an article in the light of the results obtained. Analysis of selected publishing platforms and review templates. Lecture and group discussion.	4
Mix6	Preparation of applications (projects, grants) for research funding. Lecture and group discussion.	4
Mix7	Scientific cooperation. Lecture and group discussion.	2
Mix8	Knowledge transfer and commercialization of research results. Lecture and group discussion.	2
Mix9	Presentation on a selected topic related to the planned PhD thesis. Seminar.	8
Mix10	Preparation of a report documenting the implementation of tasks related to: information retrieval, methodology and planning of scientific research, writing scientific papers, writing grant applications, scientific cooperation, knowledge transfer and commercialization of research results. Self work.	
Total hours		30

TEACHING TOOLS USED
N1. Lecture N2. Presentation N3. Discussion N4. Self work

ACHIEVED SUBJECT LEARNING OUTCOMES		
Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	P8S_WK	Presentation, participation in discussion
Skills	P8S_UK	Presentation, participation in discussion
Skills	P8S_UO	Report, participation in discussion
Social competence	P8S_KK	Presentation, report, participation in discussion
Social competence	P8S_KO	Report, participation in discussion

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PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Berger R.E., A scientific approach to writing for engineers and scientists. Wiley-IEEE Press, 2014.
- [2] Patel N.K., Technical Presentations. IEEE-USA, E- Books, 2012.
- [3] Paul O., The student's guide to research ethics. Open University Press, McGraw-Hill Education, 2010.
- [4] Schimel J., Writing Science: How to write papers that get cited and proposals that get funded. Oxford University Press, 2012.

SECONDARY LITERATURE:

- [5] Legal acts
- [6] Search tools, e.g., scholar.google, ieeexplore.com
- [7] Literature related to a particular scientific discipline
- [8] Regulations of research funding institutions (NCN, NCBR, FNP)

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

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