

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

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE: Dariusz Łydźba, Danuta Bryja

DEPARTMENT: Civil Engineering Department

SCIENTIFIC DISCIPLINE: Civil Engineering and Transport

COURSE CARD

Course name in Polish: Warsztat badacza

Course name in English: Research skills

Course language Polish / English

University-wide general course type*:

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: ILQ100183W

* delete as applicable

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

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. Lecture and group discussion. | 2 |
| Mix3 | Methodology of research work. Lecture and group discussion. | 2 |
| Mix4 | Presentation of research results. Lecture and group discussion. | 4 |
| Mix5 | Writing of scientific papers. Lecture and group discussion. | 4 |
| Mix6 | Preparation of applications (projects, grants) for research funding. Lecture and group discussion. | 2 |
| 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 in the field of planned PhD thesis. Self work. | |
| Mix11 | Review of reports documenting the implementation of tasks related to information retrieval in the field of planned PhD thesis. Group discussion. | 2 |
| 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] Robert E. Berger, "A Scientific Approach to Writing for Engineers and Scientists", Wiley-IEEE Press 2014
- [2] Joshua Schimel, "Writing Science: How to Write Papers That Get Cited and Proposals That Get Funded"
- [3] N. Patel, "Technical Presentations", IEEE Books

SECONDARY LITERATURE:

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

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

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Prof. of WUST Danuta Bryja, DSc, PhD, Eng. (Danuta.Bryjaa@pwr.edu.pl)