# DOCTORAL SCHOOL OF WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE: Krzysztof Walkowiak
**DEPARTMENT:** Faculty of Electronics W4
**SCIENTIFIC DISCIPLINE:** Technical information and telecommunications

## COURSE CARD

**Course name in Polish:** Warsztat badacza ITT
**Course name in English:** Research skills ITT
**Course language English**
**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:** ITQ100232W

\* delete as applicable

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| | 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.

| | 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. | 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:**<br><br>[1] Robert E. Berger, "A Scientific Approach to Writing for Engineers and Scientists", Wiley-IEEE Press 2014<br>[2] Joshua Schimel, "Writing Science: How to Write Papers That Get Cited and Proposals That Get Funded"<br>[3] N. Patel, "Technical Presentations", IEEE Books<br><br>**SECONDARY LITERATURE:**<br><br>[4] Legal acts<br>[5] Search tools, e.g., scholar.google, ieeexplore.com<br>[6] Literature related to a particular scientific discipline<br>[7] Regulations of research funding institutions (NCN, NCBR, FNP) |
| **SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)** |
| **Krzysztof Walkowiak (Krzysztof.walkowiak@pwr.edu.pl)** |