

STUDY GUIDE

MANAGING RESEARCH PROJECTS

organized by Poznan University of Technology

1. IDENTIFYING DATA	
Course name	MANAGING RESEARCH PROJECTS
Coordinating university	Poznan University of Technology
Course discipline	Not applicable
Study level	PhD

Number of ECTS credits allocated	1 ECTS
Mode of delivery	self-study (recorded sessions)
Language of instruction	English
Delivery period	summer semester, 2023/2024
Course dates	from March 04 to June 14
Precise schedule of the lecturers	Recorded sessions will be available from March 04 to June 14. Consultation meetings will be held on the Zoom platform (link will be sent to PhD students) on the following days: <ul style="list-style-type: none"> • April 8, 2024 (Monday), 17:00 – 18:00 • May 27, 2024 (Monday), 17:00 – 18:00 Total workload is 25 hrs: <ul style="list-style-type: none"> • 4hrs of recorded lectures • 2hrs of consultation meetings • 19hrs of PhD student's own work
Keywords	SMART goals, Technology Readiness Levels, Structured abstract, Agile, Scrum, Systematic Mapping Study, Systematic Literature Review, Snowballing, Experiment design, Goal-Question-Metric, Threats to validity

Prerequisites and corequisites	<ol style="list-style-type: none"> 1. Ability to prepare presentations in PowerPoint (or similar tools). 2. English B2 3. Willingness to improve their research skills.
Number of PhD students that can attend the Course	30 (10 per university)
Course inscription procedure(s)	Application Portal

2. CONTACT DETAILS	
Department	Faculty of Computing and Telecommunications Poznan University of Technology
Name of lecturer	Professor Jerzy Nawrocki, Ph.D., D.Sc.
e-mail	jerzy.nawrocki@put.poznan.pl
Short biography of lecturer (optional)	Jerzy Nawrocki earned his M.S., Ph.D., D.Sc. from the Poznan University of Technology in 1980, 1984, and 1994 respectively. In 2020 he was conferred the title of Professor from the President of the Republic of Poland. His research area is Software Engineering, including methodologies of software project management. He was advisor to 7 PhDs and reviewer

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to a dozen others. In the past he was, among others, a dean of the Faculty of Computing (PUT), and Councilor of the International Federation for Information Processing. In 2020 he was elected Vice Chair of the Committee of Informatics of the Polish Academy of Sciences (term 2020-2023).

3. COURSE CONTENT

1. Setting goals (Paper-based PhD thesis, Structured Abstract; Elevator pitch, Goal-Question-Metrics).
2. Research project planning and execution – an agile approach (Scrum methodology in the research context).
3. Literature review as a research method (Systematic Literature Review – Protocol preparation).
4. Experimentation & validity threats (Cook & Campbell approach to analysis of threats to validity of experiments).

4. LEARNING OUTCOMES

A PhD student knows and understands:

1. scientific research methodology in disciplines related to engineering, natural sciences, and social sciences.

A PhD student can:

1. define the aim and subject of scientific research, form a research hypothesis,
2. critically analyze and assess scientific research results, work of experts and other creative activities together with their contribution into knowledge development,
3. communicate on specialist issues on the level that allows active participation in the international scientific community,
4. plan and implement individual and team research projects.

A PhD student is ready to:

1. critically assess the achievements within a given scientific discipline.

5. OBJECTIVES

The course aims at helping PhD students to better manage their PhD project. The PhD students will learn various techniques of formulating research goals (Structured Abstract, Elevator Pitch, GQM), managing their PhD projects within the agile framework (Scrum), performing Systematic Literature Reviews, and planning their experiments with validity threats in mind.

6. COURSE ORGANISATION

LEARNING RESOURCES AND TOOLS

Moodle – documents, videos and consultations

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Students are expected to watch the lectures available via Moodle. They can meet the lecturer to ask questions via Zoom (two Q&A sessions have been planned). Finally, they should prepare their protocols of Systematic Literature Review and present them via Zoom.

7. ASSESSMENT METHODS, CRITERIA AND PERIOD

Formative assessment: A self-assessment test available via Moodle.

Summative assessment: Presentation of protocol of Systematic Literature Review.

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8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

1. The Scrum Guide, <https://www.scrum.org/resources/scrum-guide>.
2. Guidelines for performing Systematic Literature Reviews in Software Engineering, EBSE Tech. Rep. EBSE-2007-01, Univ. of Durham, https://www.elsevier.com/_data/promis_misc/525444systematicreviewsguide.pdf

ADDITIONAL

1. Claes Wohlin et al., Experimentation in Software Engineering, Springer, 2012, Chapter 8: Planning, 89-116.