



Subject card

Subject name and code	Research Method in Informatics, PG_00055228						
Field of study	Informatics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	2	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Jakub Miler					
	Teachers	dr hab. inż. Julian Szymański dr inż. Jakub Miler dr Paweł Weichbroth dr hab. inż. Agnieszka Landowska dr Adam Przybytek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		3.0		17.0	50
Subject objectives	The subject "research methods in informatics" teaches what research is, how to conduct it, how to collect research data, analyze data, process results and report research. It covers many research methods such as: Systematic Literature Review (SLR), interviews, surveys, focus groups, experiments, action research and more.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions	Student conducts scientific experiments. Student collects and analyses research data.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information
	[K7_W06] Knows and understands, to an increased extent, the basic processes taking place in the life cycle of devices, facilities and technical systems.	Student describes the principles of scientific research. Student lists scientific methods.	[SW3] Assessment of knowledge contained in written work and projects
	[K7_U06] can analyse the operation of components, circuits and systems related to the field of study; measure their parameters; examine technical specifications; interpret obtained results and draw conclusions	Student collects and analyses research data. Student develops research report.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information
	[K7_U42] can solve engineering and research problems including design, assessment and maintenance of information systems and applications, using experimental methods and management techniques	Student designs research using various research methods. Student designs experiments while maintaining scientific rigor.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K7_W05] Knows and understands, to an increased extent, methods of process and function support, specific to the field of study.	Student explains various research methods. Student explains methods of research data analysis.	[SW3] Assessment of knowledge contained in written work and projects	
Subject contents	<p>Lecture:</p> <ol style="list-style-type: none"> 1. Science, research, introduction to research methods 2. Systematic Literature Review (SLR) 3. Experiments 4. Action research, case studies, validity threats 5. Interviews, surveys, focus groups 6. Structural equation modeling 7. Research data analysis, statistics, charts 8. Research reporting and publishing <p>Project:</p> <ol style="list-style-type: none"> 1. Plan and initial results of the Systematic Literature Review 2. Research design and pilot study 3. Article draft or review 		
Prerequisites and co-requisites	Course is related to the Research Project course.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	50.0%	50.0%
	Project	50.0%	50.0%

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. U. Flick, <i>Introducing Research Methodology: Thinking Your Way Through Your Research Project</i>, SAGE Publications Ltd; Third edition, 2020 2. W. Tan, <i>Research Methods: A Practical Guide For Students And Researchers</i>, WSPC; 1st edition, 2017 3. B.A. Kitchenham, <i>Procedures for Undertaking Systematic Reviews</i>, Computer Science Department, Keele University (TR/SE-0401) and National ICT Australia Ltd. (0400011T.1), 2004. 4. T. Dyba, B.A. Kitchenham, M. Jorgensen, Evidence-based software engineering for practitioners, <i>IEEE Softw.</i> 22 (2005) 5865. https://doi.org/10.1109/MS.2005.6. 5. S. Easterbrook, J. Singer, M.-A. Storey, D. Damian, Selecting empirical methods for software engineering research, in: F. Shull, J. Singer, D.I.K. Sjøberg (Eds.), <i>Guid. to Adv. Empir. Softw. Eng.</i>, Springer, 2008. https://doi.org/10.1007/978-1-84800-044-5_11. 6. S.E. Hove, B. Anda, Experiences from conducting semi-structured interviews in empirical software engineering research, in: <i>Proc. - Int. Softw. Metrics Symp.</i>, 2005: pp. 203212. https://doi.org/10.1109/METRICS.2005.24. 7. T. Punter, M. Ciolkowski, B. Freimut, I. John, Conducting on-line surveys in software engineering, <i>Proc. - 2003 Int. Symp. Empir. Softw. Eng. ISESE 2003.</i> (2003) 8088. https://doi.org/10.1109/ISESE.2003.1237967. 8. C. Wohlin, P. Runeson, M. Höst, M.C. Ohlsson, B. Regnell, A. Wesslén, <i>Experimentation in Software Engineering</i>, Springer Science+Business Media, 2012. https://doi.org/10.1007/978-3-642-29044-2.
	Supplementary literature	<ol style="list-style-type: none"> 1. A. Awal, 10 Best Research Methodology Books, https://www.campuscareerclub.com/best-research-methodology-books/
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Metody badawcze w informatyce 2023/2024 - Moodle ID: 36228 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36228</p>
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Plan and initial results of the Systematic Literature Review 2. Research design and pilot study 3. Article draft or review 	
Work placement	Not applicable	