GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Research Method in Informatics, PG_00054178						
Field of study	Informatics						
Date of commencement of studies	February 2024		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		Polish		
Semester of study	1		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 inż. Jakub Miler				
			dr inż. Grzegorz Gołaszewski				
			dr Paweł Weichbroth				
			dr hab. inż. Agnieszka Landowska				
			dr Adam Przybyłek				

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		2.0	18.0	50

Subject objectives	The subject "research methods in computer science" 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_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.	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
		[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_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
		[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 vatious research methods. Student designs experiments while maintaining scientific rigor.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
		[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.	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents	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
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
	Project	50.0%	62.5%
	Lecture final	50.0%	37.5%

Recommended reading	Basic literature	1. U. Flick, Introducing Research Methodology: Thinking Your Way Through Your Research Project, SAGE Publications Ltd; Third edition, 2020 2. W. Tan, Research Methods: A Practical Guide For Students And Researchers, WSPC; 1st edition, 2017 3. B.A. Kitchenham, Procedures for Undertaking Systematic Reviews, 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, IEEE Softw. 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.), Guid. to Adv. Empir. Softw. Eng., 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: Proc. - Int. Softw. Metrics Symp., 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, Proc. - 2003 Int. Symp. Empir. Softw. Eng. ISESE 2003. (2003) 8088. https://doi.org/10.1109/ISESE.2003.1237967. 8. C. Wohlin, P. Runeson, M. Höst, M.C. Ohlsson, B. Regnell, A. Wesslén, Experimentation in Software Engineering, Springer Science+Business Media, 2012. https://doi.org/10.1007/978-3-642-29044-2.
	Supplementary literature	1. A. Awal, 10 Best Research Methodology Books, https://www.campuscareerclub.com/best-research-methodology-books/
	eResources addresses	Adresy na platformie eNauczanie: Metody badawcze w informatyce 2023/2024 - Moodle ID: 36228 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36228

Example issues/ example questions/ tasks being completed	1. Plan and initial results of the Systmatic Literature Review 2. Research design and pilot study 3. Article draft or review
Work placement	Not applicable