GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Research Method in Informatics, PG_00064505		
Field of study	Informatics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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 inż. Jakub Miler dr Paweł Weichbroth dr hab. inż. Agnieszka Landowska dr Adam Przybyłek dr hab. inż. Julian Szymański	

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	6.0	14.0	50

Subject objectives	The subject "research method 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), surveys, experiments, action research, case studies, and more as well as various data collection techniques such as: interviews, questionnaires, focus groups.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	Student conducts scientific experiments. Student collects and analyses research data. Student develops research report.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K7_W10] knows and understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of study	Student explains various research methods. Student explains techniques of research data collection and analysis.	[SW3] Assessment of knowledge contained in written work and projects
[K7_W08] knows and understands, to an increased extent, the fundamental dilemmas of modern civilisation, the main development trends of scientific disciplines relevant to the field of education	Student knows the principles of research using vatious research methods. Student knows scientific rigor in research.	[SW1] Assessment of factual knowledge
[K7_K01] is ready to create and develop models of proper behaviour in the work and life environment; undertake initiatives; critically evaluate actions of their own, teams and organisations they are part of; lead a group and take responsibility for its actions; responsibly perform professional roles taking into account changing social needs, including: - developing the achievements of the profession, - observing and developing rules of professional ethics and acting to comply to these rules	Student plans and conducts research in a team. Student knows and applies the principles of scientific integrity and honesty in their professional work. Student critically analyzes data and scientific reports.	[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills

Subject contents

Lecture:

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

Project:

1. Plan and initial results of the Systmatic Literature Review
2. Research design and pilot study
3. Article draft or review

Prerequisites and co-requisites

Course is related to the Team Research Project course.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lecture	50.0%	37.5%
Project	50.0%	62.5%

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:
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	

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