

Subject card

Subject name and code	Testing of IT Applications, PG_00136749						
Field of study	Information Science and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	undergraduate 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		6.0		
Learning profile	academic		Assessment form				
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Dariusz Kralewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	0.0	0.0	60
	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	60		20.0		70.0	150
Subject objectives	- Familiarization with application testing techniques, tools and process. - Practical implementation of testing - The ability to evaluate the selection of testing tools / techniques for specific needs and their adequate application. - Practical learning of the process of creating test documentation.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEL3_U04] The student can plan, design and program information systems to support the functioning of economic entities.	can identify the goals and testing needs for a selected application, is able to conduct an exploratory testing session, is able to conduct a usability testing session, is able to create test documentation, plans the elements of the testing process, analyzes individual test cases to select appropriate actions in the area of application testing	[SU6] demonstration of practical skills
	[liEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	distinguishes between the different levels of testing, characterizes the different types of testing, learns about good application testing practices.	[SW5] implementation of a problem task
	[liEL3_K02] The student can communicate with the public on computer science and econometrics topics in and outside the workplace, communicate his knowledge and share his skills through various media.	deepens his knowledge of the application testing process appreciates the role of testing in relation to the overall application development process demonstrates responsibility for the effectiveness of the application testing process willingly undertakes the role of an application tester	[SK6] demonstration of practical skills
	[liEL3_U02] The student is able to acquire basic information about economic processes and phenomena by direct observation, planned experiment or database queries, and collect and process it using modern information technology tools.	can identify the goals and testing needs for a selected application, is able to conduct an exploratory testing session, is able to conduct a usability testing session, is able to create test documentation, plans the elements of the testing process, analyzes individual test cases to select appropriate actions in the area of application testing	[SU6] demonstration of practical skills
	[liEL3_K01] The student understands the need to constantly supplement and deepen acquired knowledge; is open to new ideas and teaching methods.	deepens his knowledge of the application testing process appreciates the role of testing in relation to the overall application development process demonstrates responsibility for the effectiveness of the application testing process willingly undertakes the role of an application tester	[SK6] demonstration of practical skills
	[liEL3_W07] The student has advanced knowledge of ethical norms applicable to business, good practices for its conduct and legal regulations for the protection of intellectual property. Has knowledge of the risks and responsibilities associated with the informatization of business processes, knows the principles of netiquette.	distinguishes between the different levels of testing, characterizes the different types of testing, learns about good application testing practices.	[SW5] implementation of a problem task

Subject contents

A. Problems of the lecture

- Basics of testing
- Why testing is essential
- What is testing
- General principles of testing
- Basic testing process
- Psychology of testing

Testing in the software development life cycle

- Software development models
- Levels of testing
- Types of testing
- Nurturing testing

Static testing techniques

- Static techniques versus the testing process
- Review process
- Static analysis using tools

Test design techniques

- Test development process
- Categories of test design techniques
- Specification-based or black-box techniques
- Structure-based or white-box techniques
- Experience-based techniques
- Selection of testing techniques

Test management

- Organization of testing
- Test planning and estimation
- Test progress monitoring and supervision
- Configuration management
- Risk vs. testing
- Incident management

Tool-supported testing

- Types of test tools
- Effective use of tools, potential benefits and risks
- Implementation of tools in the organization

B. Problems of exercises / seminar / laboratoryUnit testingTest Driven Development

- Manual tests
- Costs of testing
- Pyramid of tests
- Unit test frameworks
- NUnit in Visual Studio
- Characteristics of good unit tests
- Nomenclature and organization of tests
- Basic unit testing techniques
- Creating reliable tests
- Testing methods that return value
- Testing non-return methods
- Testing methods that return an exception
- Testing methods that call events
- Testing private methods

Integration testing

- Dependency Injection
- Ways to relax code
- DI frameworks
- Attributes
- Mock frameworks

Automating the testing process.

- Selenium
- Cypress

Creating test documentation.Conducting exploratory testing sessions.Conducting usability testing

	sessions. Getting familiar with the work of a software tester in the contexts of: agile teams, security testing, automated test design. Translated with www.DeepL.com/Translator (free version)		
Prerequisites and co-requisites	Basic knowledge of computer programming and software		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	51.0%	100.0%
Recommended reading	Basic literature	1. Wrycza S., Maślankowski J. (red.), Informatyka ekonomiczna. Teoria i zastosowania, PWN Warszawa 2019 2. Smilgin R., Praktyka testowania, Zeszyt ćwiczeń, Wydawnictwo Naukowe PWN, 2020 3. Roman A., Testowanie i jakość oprogramowania. Modele, techniki, narzędzia. Wydawnictwo Naukowe PWN, 2015 4. Rafał Pawlak, Testowanie oprogramowania. Podręcznik dla początkujących, Helion, 2014	
	Supplementary literature	1. Renu Rajani, Testowanie kodu w praktyce, Helion, 2018	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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