University of Gdańsk

Subject card

Subject name and code	Software Testing, PG_00178068		
Field of study	Informatics and Econometrics		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group 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	5.0
Learning profile	academic	Assessment form	credit
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	4.0	61.0	125

Subject objectives

- Familiarisation with application testing techniques, tools and processes
- Practical implementation of tests
- Ability to assess the selection of testing tools/techniques for specific needs and their appropriate application
- Practical learning of the test documentation creation process

Learning outcomes

Course outcome	Subject outcome	Method of verification
[IiEL3_W06] To an advanced degree, the student knows and understands the processes and methods of creating, developing, and providing appropriate conditions for using informatics or statistics tools, particularly those that improve human and organizational functioning.	Knows and understands: - individual testing levels, - individual testing types, - best practices for application testing.	[SW4] test/exam - oral or written
[IiEL3_U12] The student can design and implement IT systems to enhance business operations and effectively utilize modern ICT technologies for management and business communication.	The student is able to: -identify the testing objectives and needs for a selected application, -conduct an exploratory testing session, -conduct a usability testing session, -create test documentation, -plan individual elements of the testing process, -analyze specific test cases to select appropriate application testing activities.	[SU2] presentation/project/paper/ report

Subject contents	Lecture topics 1. Fundamentals of testing • Why testing is necessary • What is testing? • General principles of testing • Basic testing process • Psychology of testing 2. Testing in the software life cycle • Software development models • Test levels • Types of tests • Maintenance testing 3. Static testing techniques • Static techniques and the testing process • Review process • Static analysis using tools 4. 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 5. Test management • Test organisation • Test planning and estimation • Test progress monitoring and supervision • Configuration management • Risk and testing • Incident management 6. Tool-assisted testing • Types of testing tools • Effective use of tools, potential benefits and risks • Implementing tools in an organisation Issues covered in exercises / seminars / laboratories 1. Unit tests • Test-driven development • Manual tests • Testing costs • Test pyramid • Unit test frameworks • NUnit in Visual Studio • Characteristics of good unit tests • Test naming and organisation • Basic unit testing techniques • Creating reliable tests • Testing methods that return a value • Testing non-returning methods • Testing methods that return an exception • Testing methods that trigger events • Testing private methods 2. Integration tests • Dependency Injection • Ways to loosen code • DI frameworks • Dummies • Mock frameworks 3. Test process automation. • Selenium • Cypress 4. Creating test documentation. 5. Conducting exploratory testing sessions. 6. Conducting usability testing sessions. 7. Familiarisation with the work of a software tester in the following contexts: agile teams, security testing, automated test design.
Prerequisites and co-requisites	Basic knowledge of programming and computer software
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
written test	51.0%	40.0%
final project – solving a practical problem from a specific domain (e.g., business) using the software and methods covered during the course	51.0%	60.0%

Recommended reading	Basic literature	A.1. used during classes 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 A.2. studied independently by the student 1. Renu Rajani, Testowanie kodu w praktyce, Helion, 2018
	Supplementary literature	1. Roman A., Stapp L., Certyfikowany tester ISTQB. Poziom podstawowy, Helion, 2020 2. Axelrod A., Automatyzacja testów, Wydawnictwo Naukowe PWN, 2020. 3. Zmitrowicz K., Jakość projektów informatycznych. Rozwój i testowanie oprogramowania. Helion, 2015
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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