COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Software testing	

Lecturer(s)	Department where the course unit is delivered
Coordinator: Vytautas Valaitis **Other lecturers:**	Department of Software Engineering Faculty of Mathematics and Informatics Vilnius University

Cycle	Type of the course unit
First	Compulsory

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Face-to-face	5 semester	Lithuanian

Prerequisites
Prerequisites: Procedural programming, Object-Oriented Programming, Software Engineering I and II.

Number of credits allocated	Student's workload	Contact hours	Individual work
5	136	68	68

Purpose of the course unit: programme competences to be developed

Purpose of the course unit – to acquire knowledge of software systems testing theory as well as its application expertise, get acquaintance with methods and tools used in software systems testing, understand the role of software systems testing in software systems development process.

Generic competences:

- Communication and collaboration *(GK1).*
- Social responsibility *(GK3).*

Specific competences:

- Knowledge and skills of underlying conceptual basis *(SK4).*
- Software development knowledge and skills *(SK5).*
- Technological and methodological knowledge and skills, professional competence *(SK6).*

Learning outcomes of the course unit: students will be able to	Teaching and learning methods	Assessment methods
Master principles, methods and tools of systems testing.	Problem-oriented teaching, coursework reports, case studies, individual literature reading, information search.	Written examination, coursework and result reasoning, presentation on a chosen topic.
Understand the role of systems testing in the development process and think of testing as a process.		
Write testing plans, test cases, defect reports and relevant documentation.		
Gather information, produce reports and reason on actual topics.		

Course content: breakdown of the topics	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Practice	Laboratory work (LW)	*Tutorial during LW*	**Contact hours**	**Individual work**	**Assignments**
General testing principles. Exhaustive testing. Risk based testing. Testing place in life cycle.	4						**4**	4	1st laboratory work - unit tests and defects. 2nd laboratory work - test plan. Presentation on chosen topic.
Scope of testing. Levels of testing. Goal of testing.	2						**2**	**4**	
Testing strategies and methods. Static, dynamic testing. Black box, white box testing. Manual, automatic testing.	2				2		**4**	**6**	
Unit tests. Unit test planning and strategies. Test cases.	2				8		**10**	**8**	
Defect analysis and prevention. Defect sources, classes and life cycle.	2				8		**10**	**6**	
The test organization. Defect reports. Testing and progress reports.	2				2		**4**	**4**	
Measurement and metrics. Software reliability metrics.	2						**2**	**4**	
Reviews. Types of reviews, roles.	2						**2**	**4**	
Documentation. Test cases and defect reports. Vision, strategy and plan.	2				8		**10**	**6**	
The testers' workbench. Testing tools. Unit testing and defect reporting tools. Automatic testing tools. Test case generators.	2				2		**4**	**4**	
Testing team. Roles. Organization structure.	2						**2**	**4**	
Testing control. Planning. Progress control.	2				2		**4**	**4**	
Testing process control, maturity. TMM and TPI, relation to CMM.	4						**4**	**6**	
Quality assurance. Quality cost.	2						**2**	**4**	
Preparation for exam. Exam.		2					**4**		2 hours for tutorial, 2 hours for exam
Total	**32**	**2**			**32**		**68**	**68**	

Assessment strategy	Weight %	Deadline	Assessment criteria
1st laboratory work (unit tests and defects)	10	7th week of semester	Test case strategies used; unit test structure and contents; requirement coverage by test cases; count and impact of found defects; defect documentation structure and contents. Late submission is subject to a 0.2 penalty per every week from the submission deadline.
2nd laboratory work (test plan)	10	14th week of semester	Test plan structure and content. Late submission is subject to a 0.2 penalty per every week from the submission deadline.
Presentation on chosen topic.	20	During semester	Fluency, critical thinking, pro activity (in class), understanding the topic and ability to reason about it.
Exam	60	During exams session	Ability to demonstrate and apply knowledge in the exam. Exam consists of 6 open-ended questions. Max points – 6. Questions formulated from the course material.

Author	Publishing year	Title	Number or volume	Publisher or URL
Required reading				
Hambling B., Morgan P., Samaroo A., Thompson G., Williams P.	2010	Software Testing An ISTQB–ISEB Foundation Guide, Second Edition		British Informatics Society Limited
Burnstein I	2003	Practical Software Testing		Springer
Craig R. D., Jaskiel S. P.	2002	Systematic Software Testing		Artech House
Recommended reading				
Jorgensen P.C.	1995	Jorgensen, P.C., Software Testing A Craftman's		CRC Press
Beizer B.	1990	Software Testing Techniques, 2nd Edition		Van Nostrand Reihold
Kaner C., Falk J., Nguyen H. Q.	1999	Testing Computer Software, 2nd Edition		Wiley
Perry W.	1995	Effective Methods for Software Testing		Wiley