MODULE DESCRIPTION

Module title	Module code
Software Process	

Lecturer(s)	Department where the module is delivered
Coordinator: Andrius Adamonis	Department of Computer Science
	Faculty of Mathematics and Informatics
Other lecturers:	Vilnius University

Cycle	Type of the module
First	Compulsory

Mode of delivery	Semester or period when the module is delivered	Language of instruction
Face-to-face	7 semester	Lithuanian

Prerequisites
Prerequisites: Software engineering I and II

Number of credits allocated	Student's workload	Contact hours	Self-study hours
5	136	68	68

Purpose of the module: programme competences to be developed
Purpose of the module – develop knowledge on disciplined software process as a measure to implement software development and services projects on-time, on-budget and within defined scope, to increase skills of selecting software lifecycle model, project management, quality assurance, process improvement methods and tools, taking into account effect of the suggested improvements upon software development and maintenance organization.

Generic competences:
- Communication and collaboration *(GK1)*.
- Life-long learning *(GK2)*.
- 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 module: students will be able to	Teaching and learning methods	Assessment methods
Select and use appropriate current software process models, methods, and tools necessary for mature software development and maintenance process.	Problem-oriented teaching, case studies, information retrieval, literary reading, individual work, tutorials, group project	Group project and results presentation, written exam (open-ended questions and tasks)
Will have awareness of project management, quality assurance, and process improvement practices and abilities to apply them.		
Critically assess and analyse software process practices and methods by collecting and analyzing sources of information.	Information retrieval, literary readings, report preparation	Essay on individually assigned software process improvement topic

Select the software life cycle, project management, quality assurance, process improvement methods and tools, taking into consideration financial and organizational factors. Present, information, ideas, problems, and suggested solutions convincingly in official and second (foreign) language for specialists and non-specialists in written and verbal form.	Group project, case studies, group project and results presentation, group discussion	Group project and results report, answers to oral questions

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Practice	Laboratory work (LW)	Tutorial during LW	Contact hours	Self-study hours	Assignments
1. Modeling of software process	1		8				9	10	Group project, part 1: define and describe process of the modeled software organization using selected notation. Present and discuss at the seminar.
2. Software lifecycle process model	1						1	2	Self-study of literature.
3. Software acquisition and supply processes	2						2	2	
4. Software development process	2						2	2	
5. Software maintenance process	2						2	2	
6. Software operations process	2						2	4	
7. Support and organizational processes of software lifecycle	4						4	4	
8. Software process capability and maturity. Software process capability and maturity assessment models	4					*8*	4	5	
9. Assessment of software process capability	2		8				10	8	Group project, part 2: perform capability assessment of the process defined in part 1 according to "Branda" or ISO/IEC 15504-5 capability assessment model. Present and discuss at the seminar. Self-study of literature.
10. Rational unified process	2						2	2	Self-study of literature.
11. Agile software development methodologies (XP, Scrum, Kanban, LEAN)	6		6				12	9	

12. Improvement of software process	4		8				**12**	**8**	Group project, part 3: analyze findings in part 2 and prepare software process improvement plan with suggested process improvement measures, schedule and financial justification. Self-study of literature.
13. Challenges and practical aspects of software process improvement			2				**2**	**10**	Individual task: analyse software process improvement problems and possible solutions in the given software process area; prepare an essay of about 1000 words length.
Exam (written)		2					**4**		2 hours tutorial and 2 hours for exam.
Total	**32**	**2**	**32**			*8*	**68**	**68**	

Assessment strategy	Weight %	Deadline	Assessment criteria
3 part group project	45	During the semester	For each part delivered max 1.5 points. The following aspects of each of the reports are assessed: - Completeness, consistency, accuracy of the process model and capability assessment report, appropriateness of the notation/format chosen, accuracy of the assessment evidence, adequacy of the suggested process improvement plan. For the satisfying report – 1.5 points; if the report fails to satisfy some of the criteria, 0.75 points is given; in case of major mistakes and/or deficiencies, the report would be rejected and should be submitted again.
Written essay	15	During the semester	The following aspects of the essay are assessed: - The essay structure, size and style: the structure is clear and logical, contains all necessary components (introduction, explanation, conclusions), the text is of a required volume; the material is delivered before the deadline – up to 0.5 points. - Completeness, recommendations and conclusions: The material presented in detail and in comparison to others methods/tools, recommendations and conclusions are grounded – up to 1 point.
Quick tests	±10	During the semester in the beginning of each lecture	Students evaluate and approve or disapprove statement given by the lecturer. For each correct answer positive points are given, for each incorrect – negative. All answers totaled to ±1 point in the final grade.
Exam (written)	40	Exam session	The exam consists of 3 open-ended questions and tasks of different complexity. One question verifies understanding of the concepts presented during lectures; other two questions require to apply knowledge acquired during the course in described practical situation or to compare several different practical methods discussed during lectures and seminars. Textbooks and computers are allowed during the exam. The assessment of the exam: - For each answer to one of 3 questions: 4 points: excellent knowledge and skills; comprehensive answer, concepts are used appropriately, concepts and terminology explained,

			argument given for suggestions and decisions in the answer; - 3 points: good knowledge and skills; proper arguments and proper concepts and terminology are used in the answers; - 2 points: average knowledge and skills; proper concepts and terminology are used and the right conclusions drawn, but the argument is not given; - 1 points: knowledge and skills are less than average; concepts are inconsistently, obvious errors in the answer; - 0 points: answer in not given. The final score for the exam is total of points for each answer divided by 3.	

Author	Publis hing year	Title	Number or volume	Publisher or URL
Required reading				
A.Mitašiūnas et al.	2005	Methodology of mature software process implementation (in Lithuanian)		Vilnius university, http://www.mif.vu.lt/se/Branda/ http://proin.ktu.lt/pkp/pkbm/
A.Mitašiūnas	1998	Software process models (in Lithuanian)		Vilnius university
	2011	ISO/IEC 12207 Information technology – Software life cyc-le processes		ISO/IEC
H.Kniberg	2007	Scrum and XP from the Trenches		http://www.infoq.com/miniboo ks/scrum-xp-from-the-trenches
OMG	2011	Business Process Model And Notation (BPMN) Version 2.0		http://www.omg.org/spec/BPM N/2.0/
Recommended reading				
W.S. Humphrey	1989	Managing the software process		Addison-Wesley
	2010	ISO/IEC 15504 Information technology – Software process assessment, Parts 1–9		ISO/IEC
Poppendieck M., et al.	2003	Lean Software Development: An Agile Toolkit		Addison-Wesley
	2010	MSF for Agile Software Development v5.0		http://msdn.microsoft.com/en-us/library/dd380647(VS.100).a spx
Kroll P., et al.	2003	The Rational Unified Process Made Easy: A Practitioner's Guide to the RUP: A Practitioner's Guide to the RUP		Addison-Wesley
	2007	ITIL 3 Lifecycle Publication Suite: Core Publications Collection		The Office of Government & Commerce