



RTU Course "Software Metrology and Planning Models"

12308 Programmatūras inženierijas katedra

General data

Code	DIP485
Course title	Software Metrology and Planning Models
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Post-graduate Studies
Course type	Academic
Field of study	Computer Science
Responsible instructor	Zaiceva Larisa
Academic staff	Bule Jekaterina
Volume of the course: parts and credits points	1 part, 4.0 Credit Points, 6.0 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Abstract	Software project management: development process models, task planning and assignment, project calendar, human resource management models, cost estimation models, software metrics, quality management models, testing and risk management. Management of "Mission Impossible" projects. Variety of software engineering. Tasks distribution. Tasks implementation graphic. Software cost estimation. Analytic, algorithmic, COCOMO models. Maintenance costs.
Goals and objectives of the course in terms of competences and skills	The aim of the subject is to prepare students for software project development. Students should be able to plan a project by using tools, to analyze and to estimate project cost using different models, to assign task to developers, to estimate costs, to measure deliveries of project stages, etc.
Structure and tasks of independent studies	Student should write a report on selected topics and should fulfil three laboratory works: 1) software project planning; 2) software cost estimation; 3) software project development in a group.
Recommended literature	<ol style="list-style-type: none"> 1. Pressman R.S. Software Engineering: A practitioner's Approach.– McGraw-Hill Comp., 2009. – 928 p. 2. Wysocki R.K. Effective Project Management: Traditional, Adaptive, Extreme. 4th Edition. – WILEY, 2006. – 672 p. 3. Pearlson K.E., Saunders C.S. Strategic Management of Information Systems. International Student Version. 4th Edition. – WILEY, 2009. – 416 p. 4. Marchewka J.T. Information technology project management. Providing measurable organizational value. – WILEY, 2003. – 318 p. 5. Fenton N.E., Pfleeger S.L. Software metrics: A Rigorous & Practical Approach. 2nd Edition. – PWS Pub. Comp, 1997. – 638 p. 6. Jalote P. Project Management in Practice. – Addison-Wesley, 2002. – 262 p. 7. Орлов С.А. Технологии разработки программного обеспечения : Разработка сложных программных систем. – СПб. : Питер, 2002. – 464 с. 8. Pfleeger S.L., Atlee J.M. Software Engineering: Theory and Practice. 4th Edition. – PRENTICE HALL, 2010. – 792 p. 9. Anderson D.J. Agile Management for Software Engineering. Applying the Theory of Constraints for Business Results. – PRENTICE HALL, 2005. 10. Craig R.D., Jaskiel S.P. Systematic Software Testing. – Boston-London : Artech House Pub., 2002. – 536 p.
Course prerequisites	According to Bachelor programme

Course outline

Theme	Hours
Software project management. Requirements for model of software project management.	4
Software project management models: delivery-oriented model, spiral model, WINWIN model.	2
Software project planning process. W5H2 principle. Project calendar. Software project management tools.	6
Risk management. Object-oriented project management. Software configuration management.	4
Human resource management models. Work organization. Requirements for project manager and manager of developing group.	4
Software cost estimation: Algorithmic and analytic models.	4
COCOMO models for cost estimation: basic model, intermediate model, detailed model.	8
Software cost estimation based on Function Point Analysis (FPA). COCOMO II.	4
Technical and economical parameter prediction models.	2
Software metrics for analysis model, specification, design, code, testing and maintenance.	8
Models of software quality management. Quality parameters and models, planning and control.	4
Software project reviews: management review, technical review, inspection, walkthrough and audit.	2
Software re-engineering. Forward engineering. Software reuse. "Cleanroom" approach.	4
Component-based software engineering and agile development.	2
Planning and documentation of testing. Tasks of testing group, work organization and management.	4

Learning outcomes and assessment

Learning outcomes	Assessment methods
Knows software development models and methods of their management, models of human work organization, quality management models, testing planning and risk management methods.	Positive assessment of final examination.
Is able to plan a software project, that is to appoint tasks for project development, to assign these tasks to developers, to create calendar using CASE-tools.	Positive assessment of fulfilled 1st laboratory work.
Knows different cost estimation models and is able to estimate cost of a project and its every stage using different models and tools.	Positive assessment of final examination and positive assessment of fulfilled 2nd laboratory work.
Is able to work in software developing team, perform functions of the manager and developer.	Positive assessment of fulfilled 3rd laboratory work.
Knows software measurement principles and metrics, as well as is able to calculate metrics of specification, design and program code.	Positive assessment of fulfilled e-learning course „Software metrics”.

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	4.0	6.0	2.0	0.0	2.0		*	