

RTU Course "Applied System Software"

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General data

Code	DIP392
Course title	Applied System Software
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Academic
Field of study	Computer Science
Responsible instructor	Aleksejs Jurenoks
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN
Annotation	The issues of Applied Software development and practical application are considered. Concepts of building different AS are discussed: transport information systems, banks and insurance information systems, etc. Special attention is paid to the use of design patterns, components and semantic web in AS development process
Goals and objectives of the course in terms of competences and skills	The course is aimed at strengthening the competence in the field of Applied Software development. To form basic skills in practical application of applied software in different fields: transport and logistics, banking and insurance, etc. To form basic skills in development of AS using re-usable design patterns, components and semantic web.
Structure and tasks of independent studies	Students have to execute several (4-5) practical assignments. Topics: the use of design patterns and semantic web. Developed prototypes are demonstrated to a teacher who evaluates their quality. "Weights" applied in evaluation process : examination - 60%, practical assignments - 30%, taking part in the discussions - 10%.
Recommended literature	1. Managing and Controlling Growing Harbour Terminals: Application of Modern Concepts in the Automated Information Management in Harbours by Using Advanced IT-solutions/E. Bluemel(ed), 1997, 3-7 p. 2. Sommerville I. Software Engineering. 7th edition, Prentice Hall, 2006 3. Gamma E., Helm R., Johnson R., Vlissides J. Design Patterns Elements of Reusable Object Oriented Software. - Addison Wesley, 2008 4. Mili H., Mili A., Yacoub S., Addy E. Reuse-based Software Engineering Techniques, Organisation, and Measurement. - John Wiley & Sons, 2008 5. Nirenburg S., Raskin V. Ontological Semantics. Cambridge, MIT Press, 2004 6. Berners-Lee T., Hendler J., Lassila O. The Semantic Web. Scientific American 2001// sk. Internetā http://www.sciam.com/article.cfm?articleID=00048144-10D2-1C70-84A9809EC588EF21
Course prerequisites	Object-oriented programming, basics of network technology

Course outline

Theme	Hours
1. Introduction to Applied Computer Systems Software	2
2. Survey of Applied Software (AS) Technologies and Development Tools	2
3. Re-usable engineering in AS Development. Use of Design Patterns	4
4. Applied Software successful development principles (OCP, LSP, DIP, ISP, SRP)	2
5. Implementation of design patterns using AOP	2
6. Component-based AS development. Enterprise Java Bean Component model	6
7. Semantic web in Applied Intelligent Systems Development	4
8. Introduction to Resource Description Framework (RDF). RDF definition and samples	4
9. Taxonomy. Ontologies. OWL language. Samples	4
10. Major tendencies of applied computer systems software development	2

Learning outcomes and assessment

Learning outcomes	Assessment methods
Be able to formulate basic principles of AS development, be able to discuss advantages of different AS development technologies	Successfully passed examination (written form)
Be able to develop AS demonstration prototype based on design patterns and components	Successfully executed practical assignments.
Be able to use in practice semantic web for AS development	Successfully executed practical assignments.
Be able to adopt and apply different e-solutions from several application domains (e-logistics, e-insurance etc.)	Successfully executed practical assignments.

Study subject structure

Part	CP	Hours per Week			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	2.0	1.0	1.0	0.0		*	