Subject code	Credits
INF3027	4

Title

SEMANTINIO ŽINIATINKLIO TECHNOLOGIJOS

Title in English

SEMANTIC WEB TECHNOLOGIES

Subject goal and annotation

The course presents the vision and main technologies of the Semantic Web, enabling computers to understand and interpret Web information. Students learn to use technologies and tools for semantic annotation and reasoning, and to use the acquired knowledge for the design of Web sites and services.

Prerequisites

Internet technologies

Relationship between the learning outcomes of the study programme and the learning outcomes of the study subject

Learning outcomes of the study programme	Learning outcomes of the study subject	Methods for assessing the achievement of learning outcomes
6.Knowledge of Internet and multimedia products development, their commercial and social impact.	Understand the value of semantics for the Web, the concept of linked data	Written test
	Have knowledge about Semantic Web markup languages . RDF, RDFs, OWL, and corresponding query and reasoning methods	Written test
8. Perform interdisciplinary research and development in Internet systems area, apply results in practical applications. 16. Project managing and collaborating in distributed multinational teams.	Have knowledge about information classification schemes using taxonomies, ontologies, folksonomies	Written test
	Be able to build ontologies, describing a specific topical area	Presentation of group project results
10. Analysis, design and development of advanced Internet systems. 18. Critical analysis of Internet and multimedia projects context and their influence to business, culture and society.	Be able to select and apply basic language technolgy tools for automated ontology building and information markup	Test; Presentation of individual project results
	Be able to query ontologies using SPARQL query building techniques	Presentation of individual project results
	Be able to implement the linked data approach in website development	Presentation of individual project results
		Presentation of individual project results

Subject content

1. Semantic Web vision. Linked data concept.	2 h
2. Semantic Web objects and their description using metadata.	2 h
3. Semantic Web languages . RDF/RDFs	4 h
4. Information classification schemes . taxonomies, folksonomies, ontologies.	2 h
5. Ontology design principles. Web ontology modelling language OWL	4 h
6. Ontologijy design metodics and tools.	2 h
7. Language technology methods and tools for ontology building and semantic markup	4 h
8. Reasoning and querying techniques.	4 h
9. Website development using linked data	4 h
10. Semantic search.	2 h
Total:	**30 h**

Practical work contents

Practical tasks, combining individual and group work: 1. Topical area analysis and corpus building for ontology data extraction.   2. Ontology building using automated language technology tools and Protégé software.   3. Query building for ontology data.   4. Project of ontology use in an internet website..

Evaluation of study results

Final written exam (50%), mid-term written exam (15%), assessment of practical work (35%).

Distribution of subject study hours

Lectures	30
Laboratory work	30
Individual studies (including studies in groups, preparation for the mid-term and final exams)	44
Total	**104**

Recommended literature

No.	Author, Title	Number of copies available		
		University library	Department reading rooms	Other libraries
Main literature				
1.	Semantic Web / The Vision. http://en.wikibooks.org/wiki/Semantic_Web/The_Vision#The_Vision_of_the_Semantic_Web. Wikibooks, 2009.	*Free access*		
2.	Grigoris Antoniou and Frank van Harmelen. A Semantic Web Primer, 2nd edition ISBN 978-0-262-01242-3. MIT Press, 2008.		2	
3.	M.Horridge et al. A Practical Guide To Building OWL Ontologies Using The Protege-OWL Plugin and CO-ODE Tools Edition 1.0. http://www.co-ode.org/resources/tutorials/ProtegeOWLTutorial.pdf. University of Manchestre, 2004	*Free access*		

	Additional readings	
1.	Lee Feigenbaum et al. The Semantic Web in Action. http://thefigtrees.net/lee/sw/sciam/semantic-web-in-action#page1. By Scientific American, 2007.	*Free access*
2.	Natalya F. Noy and Deborah L. McGuinness.Ontologies 101.http://protege.stanford.edu/publications/ontology_development/ontology101-noy-mcguinness.html Stanford University, 2004.	*Free access*

Subject prepared and coordinated by

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