COURSE DESCRIPTION

COURSE NAME	**WEB APPLICATIONS DEVELOPMENT**	CODE: MCG2101

STUDY YEAR	MASTER II	SEMESTER	1	COURSE STATUS (**C**-compulsory/**OP**-optional/**F**-facultative)	C

HOURS PER WEEK				TOTAL HOURS PER SEMESTER	TOTAL HOURS INDIVIDUAL ACTIVITY	CREDITS	EVALUATION (**P**-during the semester, **C**-oral examination, **E**-written examination, **M**-mixed)	TEACHING LANGUAGE
C	S	L	Pr.					
2	-	2	-	56	124	8	M	English

COURSE TEACHER	TEACHING AND SCIENTIFIC DEGREE, FIRST NAME, LAST NAME	DEPARTMENT
	CONF. DR. SABIN-CORNELIU BURAGA	Computer Science

PREVIOUS COURSES REQUESTED	Web Technologies

OBJECTIVES	Giving a general view regarding knowledge modeling in the context of evolution towards semantic Web. Students will achieve understanding about the development of knowledge management Web applications on the basis of the present Web technologies: metadata, microformats, taxonomies, thesauri, and ontologies.
GENERAL DESCRIPTION	Important concepts. Terminology. Revisiting Web architecture. Web application architecture. Knowledge modeling in the context of social and semantic Web. Architecture of the semantic Web-based applications. Specification of metadata and relations between resources. RDF (Resource Description Framework). Characteristics. Conceptual model. Alternative syntaxes. SPARQL. Examples and applications. Ontologies. Definitions and characteristics. Types. Specification techniques. Taxonomies. RDF Schema. Examples. Thesauri. SKOS (Simple Knowledge Organizational System). Other conceptual models. OWL (Web Ontology Language). Examples. Formal specification of ontologies. Introduction to description logic. Ontological engineering. Methodologies and case studies. Specification of rules. Support for automatic reasoning. Examples. Software agents. General overview. Multi-agent systems. Case studies. Semantic Web services. Advanced aspects concerning SOA (Service Oriented Architecture). Ontologies for Web services (OWL-S. WSMO). Semantic mash-ups. Semantic grid services. Grid application architecture. Using semantic Web services and agents in the context of grid computing.
DESCRIPTION OF SEMINARY / LABORATORY WORKS	Conceptual modeling of XML data. Native XML databases. XQuery. Attaching metadata to Web resources. RDF. Microformats. RDFa. SPARQL. Specification of taxonomies and thesauri. Expressing ontologies via OWL. Case studies.
TEACHING METHODS	Interactive presentations. Direct interaction. Online access to additional resources via the Website course.

BIBLIOGRAPHY (SELECTION)	1. D. Allemang, J. Hendler, Semantic Web for the Working Ontologist, Morgan Kaufmann, 2008. 2. H. P. Alesso, C. F. Smith, Thinking on the Web, John Wiley & Sons, 2006. 3. G. Antoniou, F. van Harmelen, A Semantic Web Primer (2nd Edition), MIT Press, 2008. 4. S. Buraga, Tehnologii XML (in Romanian), Polirom, Iaşi, 2006. 5. S. Buraga, Semantic Web (in Romanian), Matrix Rom, 2004. 6. M. Daconta, L. Obrst, K. Smith, The Semantic Web, John Wiley & Sons, 2003. 7. N. Josuttis, SOA in Practice, O'Reilly, 2007. 8. R. Yee, Pro Web 2.0 Mashups: Remixing Data and Web Services, Apress, 2008. 9. * * *, Semantic Web: http://www.semanticweb.org/ 10. * * *, World Wide Web Consortium: http://www.w3.org/TR/

EVALUATION	conditions	project (P), 1 test and/or several assignments during semester (T)
	criteria	P>=5, T>=5
	evaluation methods	project (P), 1 test and/or several assignments during semester (T)
	final result - formula	$0.5 P + 0.4 T + 1$