

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCAE35 E	Semantic web	3	1	--	3	1	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes	Background in HTML and XML	
Course Outcomes	CO1	understand and discuss fundamental concepts, advantages and limits of the semantic web
	CO2	model and query domain knowledge as ontologies defined using standards such as RDF and OWL
	CO3	apply the principles of ontological engineering to modelling exercises
	CO4	understand the applications of semantic web to web services and Web 2.0

Module No.	Unit No.	Topics	Ref.	Hrs.
1		Introduction to the Semantic Web	1	4
	1.1	The revolution of semantic web, Evolution of web, Need for semantic web		
	1.2	Web 2.0 approach, semantic web approach, benefits of semantic web, Characteristics of SW, SW Vs AI, building blocks of SW		
2		Introduction to Ontologies	1	4
	2.1	Introduction, transfer from DB to ontology, difference between ontology and taxonomy		
	2.2	Types of ontology, why to develop ontology, Ontology development life cycle, advantages, limitation of ontology		
3		Ontology Languages for the Semantic Web	2	6
	3.1	Resource Description Framework (RDF) – Lightweight ontologies Introduction, RDF: Basic Ideas, RDF: XML-Based Syntax RDF Schema: Basic Ideas		
	3.2	RDF Schema: The Language RDF and RDF Schema in RDF Schema, An Axiomatic Semantics for RDF and RDF Schema A Direct Inference System for RDF and RDFS, Querying in SPARQL		
4		Web Ontology Language: OWL	2	6
	4.1	Introduction , OWL and RDF/RDFS , Three Sublanguages of OWL, Description of the OWL Language		
	4.2	Layering of OWL Examples, OWL in OWL ,Future Extensions 150		
5		Ontology Engineering	1, 2	6
	5.1	Introduction, Constructing Ontologies Manually, Reusing Existing Ontologies		

	5.2	Semiautomatic Ontology Acquisition, Ontology Mapping , On-To-Knowledge Semantic Web Architecture		
6		Logic and Inference: Rules	2	4
	6.1	Introduction, Example of Monotonic Rules: Family Relationships Monotonic Rules: Syntax , Monotonic Rules: Semantics		
	6.2	Description Logic Programs (DLP) , Semantic Web Rules Language (SWRL)		
	6.3	Nonmonotonic Rules: Motivation and Syntax , Example of Nonmonotonic Rules: Brokered Trade		
	6.4	Rule Markup Language (RuleML)		
7		Semantic web and Web 2.0	2	6
	7.1	Social and technological development that led to web 2.0, Features of web 2.0 applications		
	7.2	Architecture of web 2.0, Modelling web 2.0		
8		Applications of Semantic Web	2,3	6
	8.1	Introduction, Horizontal Information Products at Elsevier		
	8.2	Openacademia: Distributed Publication Management		
	8.3	Bibster: Data Exchange in a Peer-to-Peer System		
	8.4	Data Integration at Audi		
	8.5	Skill Finding at Swiss Life		
	8.6	Think Tank Portal at EnerSearch		
	8.7	e-Learning, Web Services, Other Scenarios		
			Total	42

Instruction for Assignments and Tutorials:

The Term Work Should consist of two tests, One Presentation/Case Study and six assignments based on the recommended syllabus

References:

- [1] Dhana Nandini Semantic Web And Ontology ISBN: 978-87-403-0827-3 1 edition
Pages : 107
- [2] Grigoris Antoniou, Frank van Harmelen A Semantic Web Primer, 2nd Edition The MIT Press; 2 edition (March 31, 2008)
- [3] John Domingue, Dieter Fensel, James A. Hendler Handbook of Semantic Web Technologies
- [4] Gary B. Shelly, Mark Frydenberg Web 2.0: Concepts and Applications
- [5] Pascal Hitzler, Markus Krotzsch, Sebastian Rudolph, Foundations of Semantic Web Technologies, CRC Press, 2009.
- [6] Dean Allemang, James Hendler, Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL, Morgan Kauffmann, ISBN-10: 0-12-373556-4.
- [7] Geroimenko, Vladimir; Chen, Chaomei (Eds.) 2nd ed., 2006, XIV, 248 p. 108 illus., Hardcover ISBN: 978- 1-85233-976-0, Visualizing the Semantic Web XML-based Internet and Information Visualization, SpringerVerlag London Ltd; 2Rev Ed edition (Oct 2005).
- [8] Michael C. Daconta, Leo J. Obrst, Kevin T. Smith, The Semantic Web: A Guide to the Future of XML, Web Services, and Knowledge Management: A Guide to the Future of XML, Web Services and Knowledge Management, John Wiley & Sons (20 Jun 2003).