

Module Specification

Module Summary Information

1	Module Title	Semantic Web and Knowledge Engineering
2	Module Credits	20
3	Module Level	7
4	Module Code	CMP7173

5	Module Overview
The Web, as it stands today, primarily depends on human understanding and the interpretation of the vast information space it encompasses. However the Web was originally designed with a goal to support not only human interaction, but also automated machine processing of data with minimal human intervention. At the heart of Semantic Web is semantic representation and reasoning of data using ontologies and knowledge engineering. This module is about investigating the next generation of the Web, whose key distinguishing characteristics will be the support for and use of semantics in new, more effective, more intelligent, ways of managing information and supporting applications. The module will look into different aspects of Ontology representation, creation, design, reasoning, programming and applications. The course is focused on ontological engineering, which represents an important part of Semantic Web development. Semantic web technologies can be applied to many diverse application domains and has a philosophical flavour that goes beyond just application development. You will develop new skills in web ontology engineering which will significantly increase your chances for employability. Also, using the knowledge gained from this module will help you to pursue research career paths in both the private and public sectors. This module will be delivered through lectures and practical teaching sessions that will enable you to develop an understanding of the fundamentals and to critically assess the impact of Semantic Web technologies. You will learn how to represent knowledge and to access and benefit from semantic data on the Web.	

6	Indicative Content
This module will cover the following topics: • Introduction to Semantic Web • Ontology Design and Management using the Protégé editor • Ontology Languages: RDF, RDFS • Querying of RDF/RDFS documents using SPARQL • Web Ontology Language OWL • Understanding and Implementing semantics for Ontologies	

7	Module Learning Outcomes	
	On successful completion of the module, students will be able to:	
	1	Assess and be able to discuss fundamental concepts, critically evaluating the limitations of the current Web as opposed to a Semantic Web approach.
	2	Explain and be able to demonstrate the ability to use ontologies in the context of knowledge engineering and the Semantic Web.
	3	Develop ontologies using the Ontology Web Language (OWL) and associated technologies such as the Resource Description Framework (RDF) and Semantic Web Rule Language (SWRL)
	4	Evaluate and programmatically manipulate OWL files using Description Logic (DL) queries and SPAQL.

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
2-4	X		
1			X

9	Breakdown Learning and Teaching Activities	
Learning Activities		Hours
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable		48
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE		70
Private Study (PS) includes preparation for exams		82
Total Study Hours:		200