University: *Fayoum University*
Faculty: *Computers and Information*
Department: *Information Systems*

Course Specification

1- Basic Information		
Code: INF 490	**Course Title:** Elective Course-Semantic Web	**Year/Level:** Fourth year – Second term
Programme: B.Sc degree in Information Systems	**Number of units:** Lecture: Tutorial: Practical:	3 hrs/ week 0 hrs/ week 2 hrs/ week

2- Aims of Course:	The purpose of this course is to give a complete picture for the Semantic Web as a new emerging field that makes the content available to be read and used by human and intelligently by machines. In addition to that establishes meaning to data to be shared, automatically reasoned and reused via machine-readable applications. This course will give a brief history of the web and explains the meaning and the importance of the "Semantic Web." Then will cover the different technologies used for building the Semantic Web including Ontology representation, creation, design, reasoning, programming and applications. Start from URIs and namespaces, and then move to XML, XML Schema, RDF, RDF/XML, RDFS, Individuals, OWL and SPARQL.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A7. Demonstrate essential facts, concepts, principles and theories relating to computing , **information** and computer applications as appropriate to the program of study. a_1) Study the concepts and principles relating to the semantic web. *a2*) Define the differences between web2.0 and web3.0 A12. Selects advanced topics to provide a deeper understanding of some aspects of the subject such as Unified Process, object-oriented analysis and design, e-commerce technologies, and Decision support systems. *a3*) Study of ontology engineering as an advanced topic related to the semantic web. *a4*) study of advanced vocabularies used on the web3.0 that extends the current web. A17. Demonstrate the new concepts and techniques that

	represent the future of information systems such as semantic web and Linked Open Data (LOD) *a5*) Demonstrate RDF,RDF Schema, and OWL as technologies representing ontologies via the semantic web *a6*) Study the principles of open data, linked open data and to represent the future of data through the web.
B- Intellectual Skills:	B9. Compare between the classifications of (data, results, methods, techniques, algorithms... etc.). *b1*) Define the different methodologies used for building an ontology. *b2*) Apply the principles of ontology engineering for the ontology used in the course using RDF & OWL.
C- Professional and Practical Skills:	C8.Deploy appropriate tools for the construction and documentation of computer-based systems that are used to solve practical problems. *c1*) Apply the different tools used in this course such as portage and Jena to solve practical problems. *c2*) Compare between different tools used according to their capabilities , needs and when to use. C9.Deploy different modeling techniques to model and analyze real life computing problems. *c3*) Apply the ontology principles and life cycle to model real life problems.
D- General and transferable Skills	D3. Work as a member of a development team, recognizing the different roles within a team and different ways of organizing teams. *d1*) Identify the roles of the teamwork , how they can work with each other and how can distribute the tasks between team members. *d2*) Measure the team performance, and how they collaborate with each other. D5. Communicate effectively through oral, written, and visual means. *d3*) concentrate on the communication between the tutor and students in addition to the communication between the team itself. *d4*) Giving a chance to Students to present their work and negotiate with each other. D6. Demonstrate skills in team work, team management, time management and organizational skills. *d5*) Focus on how Students respect time , deadline and time management.

4-Course Content:	1. Fundamental concepts, objective of the Semantic Web, its characteristics and components. 2. Uniform Resource Identifier, Namespaces, Extensible Markup Language (XML), XML Schema and Document

	Type Definition (DTD).
	3. Ontology Engineering principles and characteristics.
	4. Resource Description Framework (RDF)
	5. Resource Description Framework Schema (RDF Schema), Friend of A Friend Vocabulary (FOAF) and Dublin Core.
	6. OWL Lite, OWL DL and OWL Full.
	7. Ontology Building using Protégé.
	8. Graph Visualization and Reasoning with Pellet
	9. Ontology Querying with SPARQL
	10. Ontology Programming with the Jena API
	11. DBpedia

5- Teaching and Learning Methods:	1. Lectures 2. Tutorials 3. Computer-lab Sessions 4. Practical lab work 5. Class discussions 6. Internet searches 7. Group Projects

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment

A- Assessment Methods:	1. Assignments and Quizzes 2. Mid-Term written exam 3. Oral exam 4. Practical exam 5. Final written exam
B- Assessment schedule:	Mid-Term Examination: Week 7 Practical Examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Assignments and Quizzes: 0% Mid-Term Examination: 10% Practical Examination: 15% Oral Examination: 10% Final-term Examination: 65%

8- Books and References

A- Notes:	Handed out to the students part by part.
B- Essential Books (Text Books):	▪ Semantic Web for Dummies. (2009) ▪ Semantic Web Primer, Snellenburg JJ, van Stokkum IHM (2012).
C- Recommended Books:	▪ Semantic Web Programming (Recommended) (2009) ▪ Owl: Representing Information Using the Web (2006) ▪ Ontology Language – Lee Lacy (2006)

D- Periodicals, Web sites, … etc	• Lecture Notes

Course Professor: Dr.Haytham Al-feel Department Head: Dr.Amira Edress

Course Content Intended Learning Outcomes Matrix

Course Title: Introduction to Information Systems
Course Code: INF 280

Course Content	Week	Knowledge & Understanding						Intellectual Skills		Professional & Practical Skills			General & Transferable Skills				
		a1	a2	a3	a4	a5	a6	b1	b2	c1	c2	c3	d1	d2	d3	d4	d5
1. Fundamental concepts, objective of the Semantic Web, its characteristics and components.	1	x	x					x		x			x		x		x
2. Uniform Resource Identifier, Namespaces, Extensible Markup Language (XML), XML Schema and Document Type Definition (DTD).	2	x		x				x			x			x	x	x	x
3. Ontology Engineering principles and characteristics.	3			x	x	x			x	x	x			x	x	x	x
4. Resource Description Framework (RDF)	4				x	x		x	x	x	x			x	x	x	x
5. Resource Description Framework Schema (RDF Schema), Friend of A Friend Vocabulary (FOAF) and Dublin Core.	5				x	x		x	x	x	x			x	x	x	x
6. OWL Lite, OWL DL and OWL Full.	6			x	x	x		x	x	x	x	x		x	x	x	x
7. Ontology Building using Protégé.	7				x	x		x	x	x		x		x	x	x	x
8. Mid Term Exam	8																
9. Graph Visualization and Reasoning with Pellet	9				x	x	x	x	x	x		x		x	x	x	x
10. Ontology Querying with SPARQL	10			X	x	x		x	x	x		x		x	x	x	x
11. Ontology Programming with the Jena API	11				x	x		x	x	x	x	x		x	x	x	x
12. DBpedia	12				x	x		x	x	x	x	x		x	x	x	x

Course coordinator: Dr.Haytham Al-feel   Head of Department: Dr.Amira Edress