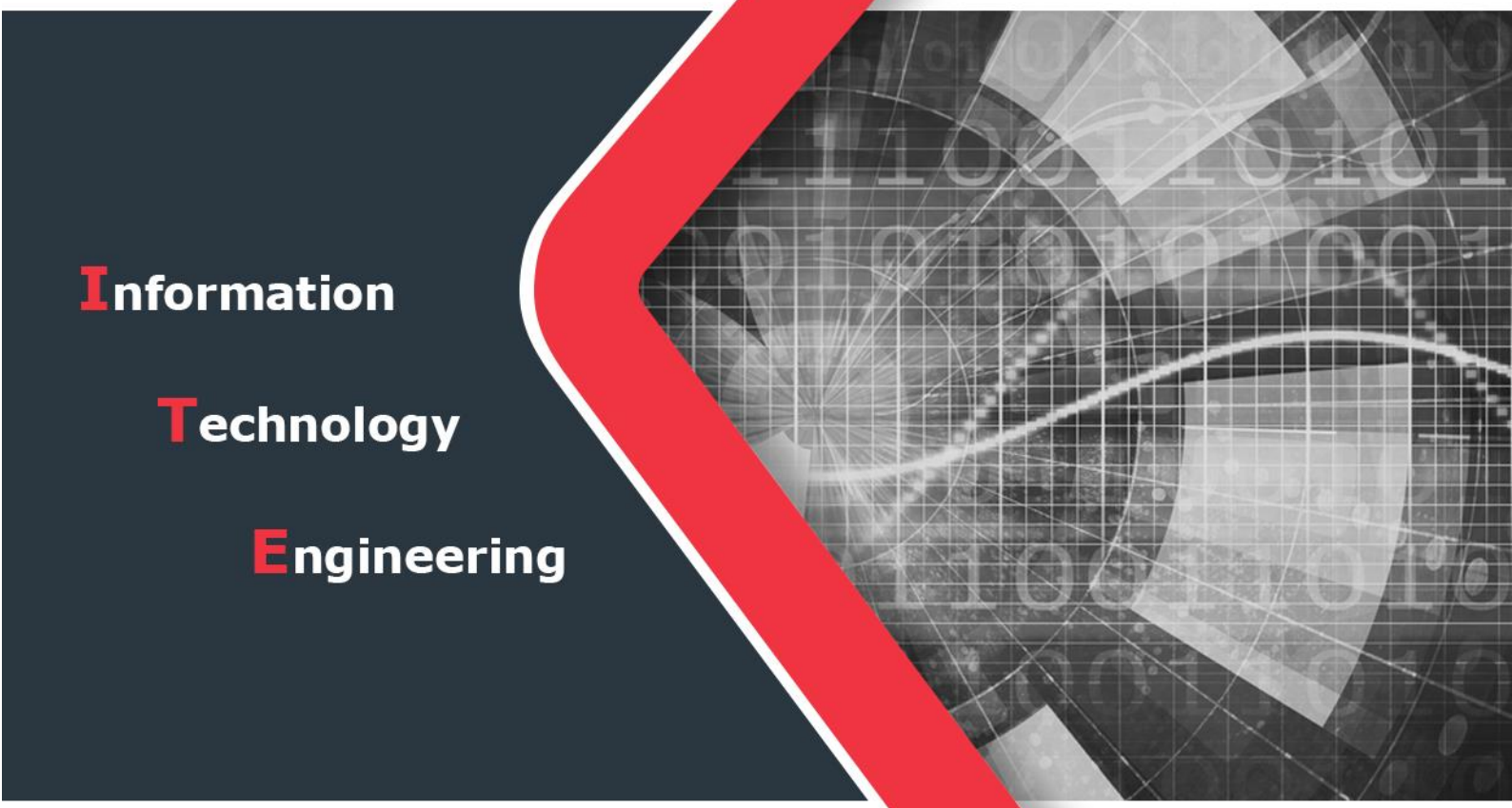
الجامعة الافتراضية السورية
SYRIAN VIRTUAL UNIVERSITY

Course Definition

Semantic Web



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Syrian Arab Republic		الجمهورية العربية السورية
Ministry of Higher Education and Scientific Research		وزارة التعليم العالـــي والبحث العلمي
Syrian Virtual University		الجامعة الافتراضية السورية

1. Basic Information:

Course Name	Semantic Web
Course Code	SSW601
Number of Presentational Sessions*	20
Number of Synchronous Sessions**	10
Number of Shorter Tests***	4
Number of Exams***	1
Theoretical Sessions Work Load (hrs.)	60
Practical Sessions Work Load (hrs.)	30
Credit Hours	6

***Each presentational session comprises both recorded lecture (1.5 hrs.) and interactive learning content (1.5 hrs.).**

****Each synchronous session comprises the interactive lecture carried out in real time in a virtual class (1.5 hrs.).**

*****Each shorter test is 0.5 hr. long. The final exam is 2 hrs. long.**

N.B.

Generally, each chapter requires two presentational sessions: one for the recorded content and one for the interactive content (unless the chapter is too long, in which case it may require more sessions (This note applies to synchronous sessions as well, where each chapter requires one synchronous session generally.

2. Prerequisites courses:

Course	Code
Artificial Intelligence	BAI501

3. Course Objectives:

The main aims of this course "Semantic Web" are:

- Study Knowledge representation on the web towards the semantic web.
- Query knowledge on the web.
- Study reasoning and inference on the web.
- Ontology Engineering.

4. Learning Outcomes (LO):

By the end of this course, the learner is expected to acquire and learn the following subjects:

- Using RDF for knowledge modeling on the web.
- Design DRF schemas.
- Design and build ontologies.
- Using SPARQL to query RDFs.
- Making inferences on the web.

5. Assessment Results:

Chapter Number	Chapter Title	General Objectives	Assessment Type				
			Interactive Content & Recorded Sessions	Applied Activities	Final Exam* / Shorter Tests**	Presentations and Interviews***	Reports****
CH1	**Semantic Web**	Comprehension –Analytical Thinking –Tools and Application Hands– On	√	√	√	√	√
CH2	**RDF**	Comprehension –Analytical Thinking –Tools and Application Hands– On	√	√	√	√	√
CH3	**RDF Schemas**	Comprehension –Analytical Thinking –Tools and Application Hands– On	√	√	√	√	√
CH4	**SPARQL**	Comprehension	√	√	√	√	√

		–Analytical Thinking –Tools and Application Hands– On					
CH5	**Ontologies Inference on the web**	Comprehension –Analytical Thinking –Tools and Application Hands– On	√	√	√	√	√
CH6	**Entailment**	Comprehension –Analytical Thinking –Tools and Application Hands– On	√	√	√	√	√

***The final exam is two hours long and is given at the end of the course.**

****Shorter tests are about 30 minutes long and are given after three or four lectures throughout the semester during synchronous sessions.**

*****Presentations, interviews, and reports are submitted once after each three or four lectures throughout the semester during synchronous sessions.**

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6. Course Syllabus:

Chapter	Subject	Content	Number of Learning Objects	Number of synchronous Learning Objects
CH1	**Semantic Web**	1. Introduction 2. Importance 3. Technologies 4. Applications 5. Challenges 6. Conclusion	6	3
CH2	**RDF**	1. Introduction to RDF 2. Why RDF 3. RDF Syntax 4. Merging RDFs 5. RDF containers 6. Making Statements about Containers 7. Non-Binary Relations 8. The parseType attribute 9. Containers vs. Repeated Properties 10. Statements about Statements 11. Dublin Core 12. FOAF	12	6

CH3	**RDF Schemas**	1. Introduction to RDFS 2. Useful properties 3. Useful classes 4. Problem1 5. Summary 6. Problem 2	**6**	**3**
CH4	**SPARQL**	1. Introduction to SPARQL 2. SPARQL Query 3. First Example 4. Running SPARQL Query 5. DBPedia 6. Examples 1 7. SPARQL built-in Filter functions 8. SPARQL accessors 9. Grouping	**9**	**4**
CH5	**Ontologies**	1. Introduction to OWL 2. Ontology 3. Importance of OWL 4. Technologies used with OWL 5. OWL Features 6. Semantic Web Stack 7. OWL Syntax 8. Defining Classes 9. Defining Properties	**12**	**6**

		10. Classes Operations 11. Property Restrictions 12. Properties Types		
CH6	**Entailment**	1. Entailments in OWL 2. OWL Reasoners 3. Protégé 4. RDFS entailment rules 5. Using RIF in Python	**5**	**2**

7. Practical Activity:

- **Tools and Labs:**

Tool Name	Description
Python	Programming Language
Protege	Ontology Tool

- **Practical Activities per Chapters:**

Chapter	Activities Type	Remarks
CH1	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☐ Experiment ☐ Other	
CH2	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☐ Experiment ☐ Other	
CH3	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☐ Experiment ☐ Other	
CH4	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☐ Experiment ☐ Other	

CH5	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☐ Experiment ☐ Other	
CH6	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☐ Experiment ☐ Other	

8. References:

- A Developer's Guide to the Semantic Web 2nd Edition, Kindle Edition.