University of the Balearic Islands

Teaching guide

Subject identification

Subject	10936 - Web Semantics
Credits	1.2 in-class (30 hours) 3.8 distance (95 hours) 5 totals (125 hours).
Group	Group 1, 2S(Campus Extens)
Teaching period	2nd semester
Teaching language	Spanish

Lecturers

Lecturers	Timetable for student attention					
	Starting time	**Finishing time**	**Day**	**Start date**	**Finish date**	**Office**
Carlos Juiz García cjuiz@uib.es	There are no defined sessions					
Isaac Lera Castro isaac.lera@uib.es	10:00h	12:00h	Tuesday	02/09/2013	01/03/2014	132

Degrees where the subject is taught

Degree	Character	Course	Studies
Master's Degree in Information Technologies	Optional		Postgraduate degree

Contextualisation

This Semantic Web subject (SW) can be decomposed into two main groups:

1 First one consists on theoretical foundations of the subject showing the full potential of SW at an intermediate level, it is enough to acquire basic skills to easily solve a real case.

2 The second block, a "hybrid block" where the combination of theoretical explanations is interspersed with practical case of study, and it ends with the development of a practical case where the student handles current tools and apps

From a researcher's career, this subject is based on areas with great appeal. From the professional point of view, SW provides innovative solutions for data modeling which is essential for any information system and also for exchange which leads to new ways of spreading, discover web services. At research level, it is clear the potential of SW to offer a wide range of approaches in fields such as artificial intelligence (descriptive logic, data mining, information discovery, etc..), software engineering, security, privacy, autonomous systems, etc..

Requirements

Given the introductory nature of this subject it is not necessary to have knowledge about a specific field.

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Recommendable

Basics of XML, entity-relationship models and programming in Java.

Skills

* Ability to apply specific techniques in professional work
* Capacity to incorporate scientific advances to the professional field
* Ability to communicate in a professional environment related to Semantic and Web technologies

Specific

1. Ability to communicate in a professional environment related to Semantic and Web technologies.

Generic

1. Ability to apply specific techniques in professional work.
2. Capacity to incorporate scientific advances to the professional field.

Content

The thematic content of the course is structured as follows

Theme content

1. Agenda:
   Introduction to the Semantic Web: purpose and objectives
   Areas of Applicability
   Architecture: Layers
   Ontological engineering
   Modeling and reasoning using semantic technologies
   Basic concepts of XML, RDF, RDFS and OWL
   Basic concepts of descriptive logic and its implications for modeling
   The OWL language, OWL1 and owl2
   Queries and reasoning: SPARQL
   Software tools: Protege, Jena vs OwlApi, reasoners (pellet, factor, hermit)

Teaching methodology

Classes will be mainly theoretical, with the participation of students in resolving specific issues. One or more classes will be devoted to the practice approach

In-class work activities

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Modality	Name	Typ. Grp.	Description
Theory classes	master class	Large group (G)	Through the expository method the teacher will establish the theoretical and practical aspects on the different topics covered in the course. For each subject was given information about the working method and materials recommended further that the student must use to develop content independently.
Practical classes	Computer-guided practice	Large group (G)	Students bring to completion working sessions led by the teacher which will show the use of working tools of the subject.

Distance education work activities

Modality	Name	Description
Individual self-study	Project realization	The student will conduct the project.
Group self-study	Project preparation	The student with other students outline their project with the aim of solving the requirements presented in it, for him, for the rest of their classmates and teacher.

Specific risks and protective measures

The learning activities of this course do not entail specific health or safety risks for the students and therefore no special protective measures are needed.

Workload estimate

Modality	Name	Hours	ECTS	%
In-class work activities		**30**	**1.2**	**24**
Theory classes	master class	26	1.04	20.8
Practical classes	Computer-guided practice	4	0.16	3.2
Distance education work activities		**95**	**3.8**	**76**
Individual self-study	Project realization	80	3.2	64
Group self-study	Project preparation	15	0.6	12
	Total	**125**	**5**	**100**

At the beginning of the semester a schedule of the subject will be made available to students through the UIBdigital platform. The schedule shall at least include the dates when the continuing assessment tests will be conducted and the hand-in dates for the assignments. In addition, the lecturer shall inform students as to

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whether the subject work plan will be carried out through the schedule or through another way included in the Campus Extens platform.

Student learning assessment

Students have to explain the development of the model and theirs decisions in order to reach the goals of the practice.

master class

Modality	Theory classes
Technique	Short-answer tests **(Non-retrievable)**
Description	Through the expository method the teacher will establish the theoretical and practical aspects on the different topics covered in the course. For each subject was given information about the working method and materials recommended further that the student must use to develop content independently.
Assessment criteria	

Percentage of final qualification: 10% following path A

Computer-guided practice

Modality	Practical classes
Technique	Papers and projects **(Non-retrievable)**
Description	Students bring to completion working sessions led by the teacher which will show the use of working tools of the subject.
Assessment criteria	

Percentage of final qualification: 20% following path A

Project realization

Modality	Individual self-study
Technique	Papers and projects **(Retrievable)**
Description	The student will conduct the project.
Assessment criteria	

Percentage of final qualification: 60% following path A

Project preparation

Modality	Group self-study
Technique	Papers and projects **(Non-retrievable)**
Description	The student with other students outline their project with the aim of solving the requirements presented in it, for him, for the rest of their classmates and teacher.
Assessment criteria	

Percentage of final qualification: 10% following path A

Resources, bibliography and additional documentation

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Notes and slides will be given to students as a basic material support.

Basic bibliography

* Grigoris Antoniou and Frank van Harmelen, A Semantic Web Primer, second edition, MIT Press, 2008, ISBN 978-0-262-01242-3

Complementary bibliography

* John Hebeler, Matthew Fisher, Ryan Blace, Andrew Perez-Lopez, Mike Dean, Semantic Web Programming, Wisley, 2009, ISBN 978-0470418017
* Dean Allemang, Jim Hendler, Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL, Morgan Kaufmann, 2008, ISBN 978-0123735560

Other resources

* OWL Web Ontology Language Overview: http://www.w3.org/TR/owl-features/
* Tim Berners-Lee, Semantic Web Road Map. http://www.w3.org/DesignIssues/Semantic.html
* Tim Berners-Lee on the next Web. http://www.ted.com/talks/tim_berners_lee_on_the_next_web.html

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