

Academic Year: ( 2022 / 2023 )

Review date: 29/11/2022 17:51:10

Department assigned to the subject: Library and Information Sciences Department

Coordinating teacher: MARTINEZ CARDAMA, SARA

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

## REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Markup Languages

## OBJECTIVES

To know the theories, principles and instruments of knowledge organization and information management related to linked data and the semantic web.

To know and manage digital editing tools for the creation of linked data content

To know the basics principles and languages of the programming and marking of web documents and modeling documents according to the principles of the semantic web

To know the design and planning principles of a complex and fully operational interactive digital publication using semantic web technologies and principles

As learning outcomes it is expected that students can:

Use techniques, tools and methods of the semantic web

Use creative design techniques to explore innovative solutions in the field of digital publishing through the use of linked data.

## DESCRIPTION OF CONTENTS: PROGRAMME

### UNITS

1. Introduction to the semantic web and linked data
2. Structuring data: RDF and RDF-S
3. SPARQL
4. Vocabularies
5. Ontologies and OWL
6. Linked data

1. Introduction to the semantic web and linked data
  - a. History and basic concepts
  - b. Semantic web applications
2. Structuring data: RDF and RDF-S
  - a. Introduction to RDF and RDF-S and differences with XML
  - b. The RDF format
  - c. Basic RDF-S
  - d. RDF- S schema and syntax
  - e. RDF-S examples
3. SPARQL
  - a. Introduction to SPARQL: protocol
  - b. SPARQL: protocol and queries
  - c. SPARQL examples
4. Vocabularies

- a. FOAF and VCARD
  - b. Dublin Core
  - c. Other vocabularies
5. Ontologies and OWL
- a. Data modeling languages  $\mathcal{L}$  and OWL
  - b. Ontologies: concepts, characteristics and functions
  - c. Tools for the creation of ontologies
6. Linked data
- a. Basic concepts: What they are and what they are for
  - b. How to generate linked data
  - c. How to publish linked data

## LEARNING ACTIVITIES AND METHODOLOGY

- Acquisition of theoretical knowledge (total 3 ECTS) through class attendance, study of learning materials prepared by the professor, tutorials, recommended articles, participation in forums and in-person or online tutorials. It is especially related to the GC2, SC10 and SC12 competences.
- Acquisition of skills and abilities (total 3 ECTS) through different practical assumptions about queries using SPARQL, on modeling documents with RDF-s and with a final work where students must demonstrate how to generate linked data and uses of ontologies. On this part students will use the practical sessions and also homeworks with the teacher's subsequent control. Specially related to the SC7 and SC12.
- The days and hours of the tutorship can be viewed in the space dedicated to the course in Aula Global, the learning platform. In addition to the hours and places officially set for the subject, students can request and arrange with the teacher other tutorials outside of that schedule, which may be in person or online.

## ASSESSMENT SYSTEM

<b>% end-of-term-examination/test:</b>	40
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	60

The following factors and their corresponding weights will determine the final course grade:

- Continuous assessment [= 60%]
- Final exam [= 40%]

The final grade is summative.

According to University policy, in the regular exam session the student who did not follow the continuous assessment is entitled to take an exam for the 60% of the final grade.

In the extra exam session, if the student did not follow the continuous assessment, is entitled to take an exam for the 100% of the final grade. If she did follow the continuous assessment, her grade will be the most beneficial: considering an exam weight of 40% plus the continuous assessment score, or an exam weight of 100%, discarding the score obtained in continuous assessment.

NOTE: Plagiarism in whatever assignment means losing the grade of that assignment and a reduction of 25% of the final grade of the whole course.

## BASIC BIBLIOGRAPHY

- Haffner, Kimberly A. Semantic Web: Standards, Tools and Ontologies, Nova Science, 2010
- Hooland, Seth van and Verborgh, Ruben Linked data for Libraries, Archives and Museums: How to Clean, Link and Publish your Metadata, Neal-Schuman, 2014
- Sakr, Sherif Linked data : storing, querying, and reasoning, Springer, 2018