

Academic Year: (2022 / 2023)

Review date: 09-05-2022

Department assigned to the subject: Department of Computer Science and Engineering

Coordinating teacher: MORATO LARA, JORGE LUIS

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 0

OBJECTIVES**BASIC COMPETENCIES**

CB9 Students should know how to communicate their conclusions, knowledge and reasoning to specialized and non-specialized audiences, in a clear and unambiguous way

GENERAL COMPETENCIES

CG5 Acknowledge the growing importance of team-working in the labor market and show adaptability and integration capabilities in different work environments, keeping relationships and fluid communications.

CG8 To value the quality of the work undertaken when planning, organizing and developing the activities related with the grade. The student should be able to show initiative, creativity and sense of the responsibility, keeping the interest during the process and showing commitment for results obtained.

CG9 Integrate knowledge, report informed judgments and communicate conclusions, grounded in specialized knowledge and reasoning, to specialized and non-specialized audiences, in a clear and unambiguous way

CG11 Ability to interpret, apply and innovate methodologies, technologies, policies, analysis, and information management and retrieval methods

SPECIFIC COMPETENCIES

CE1 Learn and analyze the current state and the future perspectives and application of these technologies in libraries and archives.

CE6 Using metadata vocabularies and other semantic schema models for managing digital documents.

CE7 Data visualization, using temporal techniques, geospatial, thematic and network analysis.

LEARNING RESULTS

In this course is specially important all the techniques that facilitates information exchange and publication of digital documents, specially in regard with Semantic Web technologies.

After completing the course the student should know:

1. Evaluate the main Information Retrieval Systems, emphasizing retrieval on the Web and the Semantic Web.
2. Know how-to clean and augment data in BigData lifecycle
3. Evaluate retrieval systems
4. Know how-to disseminate of documentation on the Web: search engine positioning and management
5. Learn formalisms and strategies to improve the interoperability and organization of documents
6. Know how to use the main retrieval languages in databases and the Semantic Web.

DESCRIPTION OF CONTENTS: PROGRAMME

Common contents in regard with the other subjects:

- Using information retrieval systems and semantic schemas.

Specific contents to the subject:

- Search in different web types: Semantic web, social web, data web, question-answering web, deep web, dark web, commercial web.
- Information retrieval systems for Big Data, documents (scrapers) and Linked Data
- Evaluation metrics for information retrieval .
- Knowledge management model of knowledge representation and organization of information and

semantic Interoperability

- Techniques of positioning and SEO tools that affect the indexing and retrieval
- Fundamentals in information retrieval languages: SQL, SPARQL, Xpath, Regex

Assignments:

- Academic activities based on exercises and problems.
- Seminar/Workshop based on use cases

LEARNING ACTIVITIES AND METHODOLOGY

LEARNING ACTIVITIES IN THE STUDY PLAN

- AF1 Individual work related with theoretical contents and practicalities delivered by the professor.
- AF2 Individual work for problem resolution and case study
- AF3 Theoretical and practical face-to-face classes
- AF4 Tutorial class
- AF5 Teamwork
- AF6 Active involvement in forums in the platform
- AF7 Self-assessment tests

Activity cod	Total hours	Classroom classes	%
AF1	125	(32)	0
AF2	80	(30)	0
AF3	12	(3)	12 (3)
AF4	10	(2)	0
AF5	124	(18)	0
AF6	5	(2)	0
AF7	4	(3)	0
TOTAL	360	(90)	12 (3) 3,3 (3,3)

TEACHING METHODOLOGY

MD1 Class presentations by the teacher, with computer and audiovisual resources, in these classes the basic concepts in the subject will be explained and a basic bibliography will be provided.

MD2. Critical review of the text suggested by the teacher: articles, reports, manuals and research papers, to complement the teacher's material.

MD3. Resolution of practical case studies and problems, to be solve in teams or individually.

MD5. Report writing individually or in teams.

MD6. Reading teaching theoretical and practical materials

TUTORIAL CLASSES

Tutorial classes will be scheduled according the regulations provided by the University. They will be published in the e-learning platform (Aula Global). There will be two types of tutorial classes, face-to-face and online. Students will ask for individual tutorial classes in different hours to those published.

ASSESSMENT SYSTEM

- SE1 Class participation and forums participation
- SE2 Individual or team works during the course
- SE3 Evaluation questionnaires
- SE4 End-of-term examination
- SE5 Presentation and quality of the Master Dissertation Thesis

* End-of-term examination will be done in the presence-based modality, in the university Carlos III or related center. In order to pass the subject the student should pass this exam.

Assessment System

SE1 Participation in forums and face-to-face sessions 5

SE2

Individual practice Positioning

Individual practice Evaluation metrics

Individual practice SQL

SPARQL questionnaire

SE3

- Completion of the evaluation tests

SE4

- Final on-site exam through the Aula Global platform: 20

- Completion and Delivery of the final project (data acquisition with scrapers and SPARQL and cleaning

with Refine, upload in the time frame reserved for the final on-site test): 30

A minimum mark of 5 in the final exam and a mark of 5 in the continual assessment is needed in order to pass the subject.

In case of failing in the continual assessment process, the extraordinary exam will have a weight of 75%

% end-of-term-examination:	20
% of continuous assessment (assignments, laboratory, practicals...):	80

BASIC BIBLIOGRAPHY

- Baeza-Yates, Ricardo Modern Information Retrieval, ACM Press, 2011
- Dean Allemang, James Hendler Semantic Web for the Working Ontologists: Effective Modelin in RDFS and OWL, Elsevier, 2011
- Verborgh, Ruben, De Wilde, Max Using OpenRefine: the essential OpenRefine guide that takes you from data analysis and error fixing to linking your dataset to the Web, Packt Publishing, 2013

ADDITIONAL BIBLIOGRAPHY

- Anne Ahola Ward The SEO battlefield : winning strategies for search marketing programs, OReilly, 2017

BASIC ELECTRONIC RESOURCES

- Cody Burleson . SPARQL Query Examples: <https://wiki.base22.com/display/btg/SPARQL+Query+Examples>
- Enipedia . OpenRefine Tutorial: http://enipedia.tudelft.nl/wiki/OpenRefine_Tutorial
- Google . Search Engine Optimization (SEO) Starter Guide:
<https://support.google.com/webmasters/answer/7451184?hl=en>
- MOZ . The beginner's guide to SEO: <https://moz.com/beginners guide to SEO>
- Manning, Christopher D; Raghavan , Prabhakar ; Schütze , Hinrich . Introduction to Information Retrieval:
<https://nlp.stanford.edu/IR book/information retrieval book.html>
- Stardog . Tutorial Sparql: <https://www.stardog.com/tutorials/>
- W3schools . SQL Tutorial: <https://www.w3schools.com/sql/>