

Description of Course Unit

Master in Informatics and Computing Engineering
Information Description, Storage and Retrieval
Instance: 2011/2012

Institutional page

General Information

Course Unit: Information Description, Storage and Retrieval

Code: EIC0108

Programmes: MIEIC, Year 5, xx students + PRODEI, Year 1 xx students

Academic Year: 2011/2012

Semester: 1S

Credits: 6

ECTS: 6

Hours/Weeks: 3 TP

Teachers: [Cristina Ribeiro](#) | [João Correia Lopes](#)

Teaching Language

Suitable for English-speaking students

Objectives, Skills and Learning Outcomes

The "Information Description, Storage and Retrieval" unit assumes as its context the existence of large collections of heterogeneous information which needs to be organized, described, stored and retrieved.

Goals

1. Make the students aware of the main issues in the organization and storage of large data collections.
2. Make the students familiar with the main concepts in textual information retrieval and their application in retrieval tools.
3. Explore the semantic web methods and tools, and use web resources and their descriptions in applications that make use of data semantics.

Learning Outcomes

On completion of this course, the student should be able to:

- Identify the uses of document markup languages in data repositories and in application support;
- Analyze an XML document and show its conformity to a model;
- Create models for XML documents;
- Interpret the results of document processing with XML-based technologies;

- Compare data organization in markup models and other models and explore data migration between models;
- Generate a markup model for data in an application domain, and choose an appropriate storage solution for them;
- Describe the models used in information retrieval, specifically in web retrieval;
- Recognize the various tasks considered in information retrieval;
- Apply information retrieval evaluation measures to the comparison of web retrieval tools;
- Relate web documents with the metadata that describes or links them;
- Treat ontologies as providers of description tools;
- Explore the applications which manipulate semantic web information descriptions and create metadata sets for a chosen domain;
- Compare semantic web- based services with simpler approaches to resource description.

Program

- Introduction to XML and associated technologies: models and document validation; XPath processing and XQuery interrogation.
- Text information retrieval; retrieval models; evaluation; web information retrieval.
- Information description: semantic web languages; RDF, RDF-Schema, OWL; ontologies for data in a domain.

Main Bibliography

- Anders Møller, Michael I. Schwartzbach; An Introduction to XML and Web Technologies, Addison Wesley Professional, 2006. ISBN: 0321269667 [Biblioteca](#)
- Christopher D. Manning, Prabhakar Raghavan, Hinrich Schütze; Introduction to Information Retrieval, Cambridge University Press, 2008. ISBN: 0521865719 [Biblioteca](#)

Teaching Procedures

Lectures include theoretical presentation of the course subjects and practical sessions where proposed research topics are discussed with the students and practical coursework reported.

Software

- Apache Lucene + Solr
- XMLSpy XML editor
- oXygen XML editor
- Protegé

Keywords

Physical sciences > Computer science > Informatics

Evaluation Type

Distributed evaluation without final exam

Registered evaluation and occupation components

Description	Type	Time (hours)	Date of conclusion
Attendance (estimated)	Lectures	39	
1st Project Delivery	Project Work	15	2011-10-14
2nd Project Delivery	Project Work	30	2011-11-18
3rd Project Delivery	Project Work	30	2012-01-06
Test 1	Test/Examination	1	2011-11-25
Test 2	Test/Examination	1	n/a
Study	Test/Examination	46	n/a
	Total:	162	

Admission to Exams

The course has a practical component which results from the execution of projects, to be delivered up to the due dates established in the course plan.

The students are admitted to the final exam if they achieve 50% in each component of the project work.

Success in the course requires 40% in each intermediate written test.

Final grade

The final grade is computed using the formula: $\text{GRADE} = 60\% \text{ Projects} + 40\% \text{ Tests}$.

The Projects component is the result of the practical evaluation and can be obtained:

- completing three practical assignments according to the proposed scripts;
- proposing a semester-long project and reporting its results in the same sessions as the assignments.

The project and its workplan must be validated by the course instructors.

Special Assignments

None. All students have to complete the projects and present them as scheduled.

Special evaluation (TE, DA, ...)

Distributed evaluation, performed during the semester, is required of all students, regardless of their enrollment status.

Improvement of Final/Distributed Classification

Improving the classification requires a new enrollment in the course, taking the course projects and tests again.

- MCR, JCL

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