VNIVERSITAT DE VALÈNCIA

Course Guide
33837 Systems of Representation of Information and Knowledge

COURSE DATA

Data Subject	
Code	33837
Name	Systems of Representation of Information and Knowledge
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1007 - Degree in Information and Documentation	Faculty of Geography and History	2	First term

Subject-matter

Degree	Subject-matter	Character
1007 - Degree in Information and Documentation	5 - Representation and retrieval of information	Obligatory

Coordination

Name	Department
GARCIA CALDERARO, JOSE FRANCISCO	240 - Computer Science

SUMMARY

The compulsory subject Systems of Representation of Information and Knowledge (SRIC) is worth 6 ECTS credits and is taught in Year 2, 3rd semester. SRIC is part of the basic subject area Representation and Retrieval of Information.

Contents will cover the evolution from data to information and finally to knowledge. Throughout the course, students will be trained for defining and representing information using markup languages. They will learn how to structure and to model web information systems by using the different types of metadata. Finally, the current standards and rules related to web publishing and the contribution of knowledge to structured information will be presented to students.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is highly recommended that students have studied the subjects Informatics I and Informatics II, taught in the first and second semester of the degree, respectively.

OUTCOMES

1007 - Degree in Information and Documentation

- Capacity to write analytical reports and summaries with regard to management and organisation of information.
- Demonstrate organisational and planning skills.
- Have oral and written communication skills in one's own language.
- Know a foreign language.
- Have skills for information management.
- Have problem-solving skills.
- Have decision-making capacity.
- Be able to apply critical reasoning to the analysis and assessment of alternatives.
- Be able to undertake improvements and propose innovations.
- Show commitment to the principle of equal opportunities for men and women.
- Have skills for managing collections and archive resources in any format, by establishing policies and participating in the process of selection, acquisition, description and dissemination of such collections, as well as in the processes of preservation, conservation and physical treatment of these materials.
- Be able to identify, authenticate and evaluate information sources and resources.
- Be able to analyse and index the content of documents according to the documentary language adopted and to organise such information using the technological means available for its analysis, storage and retrieval.
- Have skills for creating and applying documentary languages in information systems.
- Be able to use and put into practice methods, techniques and computer tools (hardware or software) for the design, implementation, development and operation of information systems.
- Know, use and apply information and communication technologies applied to the storage, use, management, handling, distribution and exploitation of data, information and knowledge.

- Know, use and apply the computer and telecommunications tools that support the development of the set of skills that must be acquired in the training process.

LEARNING OUTCOMES

On successful completion of the course students should have acquired the following skills:

- Skills for managing collections and archives, in any format, by establishing policies and participating in the selection, acquisition, description and dissemination of such collections, as well as in the process of preservation, conservation and physical treatment of these materials.
- Ability to identify, authenticate and evaluate information sources and resources.
- Ability to analyze and index the content of the documents according to the adopted documentary language and to organize this information using the technological means available for the analysis, storage and retrieval of such information.
- Capacity to create and apply documentary languages in information systems.
- Ability to use and implement the methods, techniques and tools (hardware or software) for the design, implementation, development and operation of information systems.
- Ability to understand, design and implement models for representing data and information and mechanisms for data extraction and mining and information retrieval.
- Ability to use and apply information and communication technology applied to the storage, use, management, handling, distribution and exploitation of data, information and knowledge.
- Ability to use and apply computer and telecommunication tools to support the development of the set of competencies to be acquired during the training process.

DESCRIPTION OF CONTENTS

1. Data, Information and Knowledge

Difference between data, information and knowledge.
Data. Definition.
Information: contextualizing, categorizing, calculating, editing and condensing information.
Knowledge: Comparison of elements, prediction of consequences, search for connections and conversation with other knowledge carriers.

2. Languages for structuring the content

Introduction
o Evolution of markup languages: SGML, HTML, XML
o XML features
XML documents
o XML syntax
o Elements, attributes
o Valid and well-formed XML documents
Structure of an XML document
o DTDs

o XML schemas
o Namespaces

3. Languages for Web publishing

Style languages for web publishing:
CSS
XPATH
XSLT

4. Metadata, Taxonomies and Ontologies

Types of metadata: metadata in HTML, Dublin Core, PICS.
Taxonomies
Introduction to ontologies

5. Standards and associated rules

Standards and rules related to web publishing and the contribution of knowledge to structured information.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	37,50	100
Laboratory practices	22,50	100
Attendance at events and external activities	5,00	0
Development of group work	10,00	0
Development of individual work	15,00	0
Study and independent work	10,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	15,00	0
Resolution of case studies	5,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

- Lectures:

The classes are based on active presentations. Every 20/25 minutes, the lecturer will introduce an activity which will require the students' intervention so that: 1) students can immediately put into practice the contents they have just learnt; 2) students recover the level of attention for the next block to be presented.

- Preparation of lectures:

Students will have to prepare the content of the corresponding theoretical class according to the planning of the subject. For that, they will use the basic and specific literature, as well as the material eventually provided by the lecturer. In addition, some activities will be proposed, which the students must prepare at home on an individual basis or in groups and which will be evaluated during the class or in scheduled tutoring hours.

- Preparation of practical work:

To facilitate the assimilation of theory contents, a set of practical sessions will be established to put into practice the knowledge presented in the lectures. The practical sessions will be oriented to focusing on the content introduced in the theoretical part. The results of these activities must be submitted via the UV e-learning platform (pizarra) within the deadlines set.

TUTORING:

a) Programmed tutorials: to solve activities/problems proposed in the theoretical classes.

b) Non-programmed tutorials: certain hours of tutoring per week will be established. Students may attend to clarify concepts or concerns encountered while carrying out individual work.

EVALUATION

The evaluation of the course in the first call will be carried out through the assessment of the knowledge, skills and competences acquired by the student, both individually and in a group work environment, following a continuous evaluation scheme in which the following aspects will be considered:

1. Written test: There will be a single final written test of theoretical-practical nature. This exam will evaluate, on the one hand, the understanding of the theoretical-conceptual aspects and the associated formalism, through simple questions or particular cases. And, on the other hand, the ability to solve problems by applying the formalism will be assessed, as well as the critical capacity regarding the results obtained.

The grade obtained in this test will represent 50% of the final grade.

1. Continuous practical evaluation of the knowledge acquired during the academic year:
    1. Intermediate controls. There will be several tests at the end of the different thematic blocks of the course, which will consist of both theoretical-practical questions and problems. The average grade obtained in these intermediate controls will represent 15% of the final grade.
    2. In addition, the students will have a practical grade corresponding to the evaluation of the small tests carried out during the practical classes in the computer classroom and that are of obligatory accomplishment. These will demonstrate the skills that are being acquired in the realization of exercises with computer and presentation of results. This will represent 35% of the final grade.

If a student does not take a test, he/she will get a grade of zero and if he/she misses more than one, he/she will automatically pass with the practices to the second call.

1. Evaluation based on the participation and degree of involvement of the student in the teaching-learning process, taking into account the regular attendance to the scheduled face-to-face activities and the resolution of questions and problems proposed periodically. The following aspects will be considered: Resolution of exercises proposed during the teaching period; Public resolution of questions and problems discussed in class; Active participation in the proposed activities....

This criterion will be considered as an extra point, but only if it is greater than or equal to 5 on the previous grade. In addition, the increase will be limited to a maximum of 10% of the grade obtained from the written test and the continuous practical evaluation.

Particular considerations on the evaluation:

1. Sections requiring minimum grade: A minimum grade of 5 (out of 10) is required in each of the following evaluation sections in order to pass the subject:
    1. Written test (final exam).
    2. Laboratory practices.

Thus, the composition of the final grade in the first call will follow, in summary, the following table:

EXAM: 50 %.

Intermediate controls: 15 %.

Practical tests carried out in the computer classroom: 35 %.

TOTAL 100 %.

In the second call, only the sections Final exam and practical laboratory tests are recoverable, maintaining the grade of the intermediate controls carried out during the course. Those students with failed practicals will have to do new practicals for the second call and defend them in front of their practical teacher.

The composition of the final mark will be the same as in the first call.

This evaluation is based on the premise that teaching at the Universitat de València is, by definition, face-to-face teaching. In this sense, the student must keep in mind that attendance, both in theory classes and in practical classes, is essential for a proper monitoring of the contents of the course. The student should also be aware of the possibility of part-time enrollment when it is not possible to attend all the subjects that make up a full course (60 credits). However, the possibility will be established, in cases that are adequately justified and for those students who request it, the possibility of being evaluated without the need to attend all or part of the classes. In these cases the student must proceed as follows:

- The student must communicate at the beginning of the course to the teacher/s responsible for the subject the incidence for which it is impossible to attend class, which must be adequately justified in documentary form.
- The teacher in charge, in view of this information, will decide the possibility of evaluation without total or partial attendance to the classes of the subject.

Students in this situation must submit, in order to be evaluated, all the practical work required by the professor through the virtual classroom, within the same deadlines as the on-site students and defend them orally before the professor. They will also take the written test (exam) on the official date assigned to the subject and a set of theoretical-practical questions corresponding to the intermediate controls that will take place on the same day of the exam. The weight of the practical work in the final grade will be 35%, the written test (final exam 50%) and 15% the questions corresponding to the intermediate controls.

REFERENCES

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