

**COURSE DATA****Data Subject**

Code	33837
Name	Systems of Representation of Information and Knowledge
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

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 subject in first call shall follow a continuous assessment scheme in which the following aspects will be considered:

1. Written exam: A single written final exam on theory and practical contents will be held. Students must have completed all practical assignments and at least 80% of the supervised group and individual work to be allowed to sit the exam. The minimum score that the student must achieve to pass the course is 5 points out of 10. The score obtained in this exam will account for 50% of the final mark.
2. Supervised individual work: Problems and activities proposed in the theory classes must be submitted within the deadline set and are worth 5% of the final mark. Those assignments that the student does not complete will be marked as 0 and will be weighted towards the final mark.



3. Supervised group work: The mark obtained in this section accounts for 10% of the final mark. Those assignments that the student does not complete will be marked as 0 and will be weighted towards the final mark.

4. Practical work (laboratory): The mark obtained in this section accounts for 35% of the final mark. All practical assignments are compulsory for the subject to receive a mark.

In summary, the composition of the final mark in first call will be calculated according to the following table:

EXAM : 50 %

SUPERVISED WORK: 15%

PRACTICAL WORK (LABORATORY): 35 %

TOTAL 100 %

Second call. A theory and practice written exam will be held. This exam will be worth 65% of the final mark. Practical work (laboratory) will account for the remaining 35%. Those students who fail the practical work component in the first call must complete new practical exercises for the second call and present them in front of the lecturer. The minimum score that the student must achieve to pass the course is 5 points out of 10 in both parts (exam and work).

This assessment is based on the premise that teaching at the University of Valencia is, by definition, classroom-based teaching. In this sense, students should be aware that attendance at both theory and practical sessions is essential for the proper understanding of the contents of the subject. Students must also bear in mind the possibility of part-time enrollments when they are unable to attend all the subjects that make up a complete academic year (60 credits). However, in duly justified circumstances, students may request to be assessed without attending none or some of the lessons. In such cases, the following procedure must be followed:

- At the start of the year, students must inform the course head lecturer(s) of the reason why they are unable to attend class by providing written proof.
- Based on this information, the head lecturer will decide on the possibility of exempting students from attending all or part of the classes.

To be assessed, students who are in this situation must submit all the practical tasks required by the lecturer (not necessarily identical to those required during the course). Also, they will be asked to defend their assignments orally in front of the lecturer, and they will have to pass a theory test. Assignments will be worth 35% of the final mark and the test will be worth the remaining 65%.

In second call, the same criteria will be followed for all students



REFERENCES

Basic

- La biblioteca digital E. García Camarero, I.a. García Melero. Ed. Arco/libros.2001.
- Gestión Digital de la Información: De bits a bibliotecas Digitales y la Web, R. Peña, R. Baeza, J. Rodríguez, Ed. RA-MA 2002.
- Curso XML. G. Martin y Martin I. Prentice-Hall. 2005
- Curso XML Imprescindible. Harold, Elliotte Rustu u Scott Means, W. Anaya Multimedia - Anaya Interactiva
- Metadatos y recuperación de información: estándares, problemas y aplicabilidad en bibliotecas digitales. Eva Méndez Rodríguez. Ediciones Trea S.L. ISBN: 84-9704-055-4
- Ontologías, taxonomía y tesauros. Emilia Currás. Ediciones Trea S.L. ISBN: 84-9704-157-7
- Sistemas y servicios de información digital (El sector de la información digital). Ernest Abadal Falgueras. Ediciones Trea S.L. ISBN: 84-95178-98-2

Additional

- Fundamentos de programación Web con HTML, XHTML y CSS de DUCKETT, Ed. Anaya Multimedia, 2008.
- Lenguajes de Marcas para la gestión de recursos digitales, E. BRUN, Ed. Trea, S.L.2008.
- Beginning XML. David Huter, Jeff Rafter, Joe Fawcett, Eric van der Vlist, Danny Ayers, Jon Duckett, Andrew Watt, Linda Mckinnon. Ed. Wrox, 2007
- La fotografía digital en los archivos. Qué es y cómo se trata. David Iglésias Franch. Ediciones Trea S.L. 2008. ISBN: 978-84-9704-377-9
- Los documentos electrónicos. Qué son y cómo se tratan. Jordi Serra Serra. Ediciones Trea S.L. 2008. ISBN: 978-84-9704-395-3
- Aplicación de técnicas de clustering en la recuperación de información web. Montserrat Mateos Sánchez y Carlos García-Figuerola Paniagua. Ediciones Trea S.L. 2009. ISBN: 978-84-9704-403-5
- Lenguajes de marcas para la gestión de recursos digitales: aproximación técnica, especificaciones y referencia. Ricardo Eito Brun Ediciones Trea S.L. 2008. ISBN: 978-84-9704-347-2
- El consorcio World Wide Web (W3C).<http://www.w3.org>



Plataforma para la selección de contenidos en Internet. <http://www.w3.org/PICS/>

Conjunto de metadatos dublin core. <http://dublincore.org/>

Tutorial on-line de XML http://www.programacion.com/articulo/apuntes_de_xml_152/12

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

1. Contents

The contents initially included in the teaching guide are maintained

2. Workload and time schedule

The activities and their hours of dedication in ECTS credits marked in the original Course Guide will be kept. If the classrooms capacity according to the sanitary norms allows it, the theoretical and practical class attendance will be 100% (if the capacity couldn't be guaranteed, the class attendance would be reduced). Teaching planning will be specified at the beginning of the term.

If the sanitary situation changes and no access to the University facilities is possible, all teaching activities will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.

3. Teaching Methodology

Theory and practice classes that may be complemented with different types of materials and activities in the Virtual classroom.

Tutorials will be done online (through the UV corporate mail) or face-to-face by prior appointment with the teacher.

If the sanitary situation changes and no access to the University facilities is possible, teaching and tutorials will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.

4. Evaluation



If the University facilities were closed on the dates set in the official calendar for the final exam, the face-to-face exam will be replaced by an online test.

The evaluation criteria established in the Course Guide are kept with 3 criteria: Individual examination, Practical activities and Continuous assessment of subject monitoring (resolution of proposed exercises, questions, active participation, etc.). The relative weights of each criterion will remain the same as in the teaching guide, i.e.,

Exam 50%, Practical activities 35% and Monitoring and follow-up 15%.

The adaptation of the evaluation system focuses on the following internal aspects of each criterion:

Individual examination

This will be done through online questionnaires, via Virtual Classroom. The exam will be organized in several questionnaires to facilitate its resolution. The questionnaires will consist of different types of questions: multiple choice, or open answer, requiring some type of reasoning or practical application of concepts. All students will take the exam simultaneously, in a synchronous manner, and with a maximum established time. The questionnaires will be constructed from a wide bank of questions that allows the random generation of questions for each student, but maintaining criteria of equity and objectivity in the generation of these questionnaires.

Practical Evaluation

The procedure for the development of practical work established in the Course Guide is maintained, but replacing classroom attendance at the laboratory with autonomous work with online support from the teaching staff (forums, videoconference, email, etc.).

Continuous assessment of subject monitoring

The conditions and weight established in the Course Guide are maintained, but now the elements that can be evaluated will be in non-attendance mode (resolution of questionnaires, participation in forums and other proposed activities).

5. Bibliographic references

The recommended bibliography in the Course Guide is kept. If the sanitary situation changes and the access to the recommended bibliography is not possible, it will be replaced by materials accessible online.