



Universidad
de Huelva

Escuela Técnica Superior
de Ingeniería

GENERAL SPECIFICATIONS



COURSE 22/23

Subject Data

Name:

Ingeniería de Requisitos

English name:

Requirements Engineering

Code:

606010218

Type:

Compulsory

Hours:

	Total	In class	Out class
Time distribution	150	60	90

ECTS:

Standard group	Small groups			
	Classroom	Lab	Practices	Computer classroom
	40	20		

Departments:

Tecnologías de la Información

Knowledge areas:

Lenguajes y Sistemas Informáticos

Year:

3

Semester

2

ANEXO I**TEACHING STAFF**

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Others Data (Tutoring, schedule...)

See: www.uhu.es/etsi

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SPECIFIC INFORMATION OF THE COURSE

I. Contents description:

I.1 In English:

The objectives of this course are:

- To offer an overview of the importance of Requirements Engineering and of the software development process.
- To learn the procedures, techniques, products, and tools for Requirement Engineering to demonstrate the procedures

I.2 In Spanish:

- Fundamentos de la Ingeniería de Requisitos.
- El Proceso de la Ingeniería de Requisitos. Procesos, métodos y herramientas.
- Clasificación de tipos de requisitos: funcionales, no funcionales, de información y atributos de calidad.
- Estudios de viabilidad
- Técnicas de identificación de requisitos
- Análisis y negociación de requisitos
- Validación y verificación de requisitos
- Gestión de requisitos.
- Técnicas de especificación de requisitos, documento de especificación de requisitos y control del cambio.
- Introducción a la calidad en la ingeniería de requisitos.

2. Background:

2.1 Situation within the Degree:

The contents developed within this subject are directly related to those developed in Principles and Fundamentals of Software Engineering (2nd Year) and it is an essential subject within the Software Engineering itinerary of the Degree in Computer Engineering.

2.2 Recommendations

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3. Objectives (as result of teaching):

The main objective of this course is to present the fundamentals of Requirements Engineering, its processes, methods, and tools. In general, the objectives encompass the following concepts:

- Requirements Engineering Process.
- Processes, methods, and tools.
- Classification of Software Requirements
- Feasibility Studies, Requirements Identification Techniques, Requirements Analysis and Requirements Negotiation
- Introduction to Quality in Software Requirements Engineering

4. Skills to be acquired

4.1 Specific Skills:

CE1-IS: Ability to develop, maintain and evaluate services and software systems that meet all the user requirements and behave reliably and efficiently, are affordable to develop and maintain, and meet quality standards, applying the theories, principles, methods and practices of Software Engineering.

CE2-IS: Ability to assess customer needs and specify the software requirements to satisfy these needs, reconciling conflicting objectives by seeking acceptable compromises within the limitations derived from cost, time, the existence of already developed systems and the organizations.

4.2 General, Basic or Transversal Skills:

CB3: Ability to collect and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant issues of a social, scientific or ethical nature.

CG0: Capacity for analysis and synthesis: Find, analyze, criticize (critical reasoning), relate, structure and synthesize information from various sources, as well as integrate ideas and knowledge.

G01: Capacity for organization and planning as well as information management capacity.

G04: Ability to make decisions based on objective criteria (experimental, scientific or simulation data available) as well as the ability to argue and logically justify such decisions, knowing how to accept other points of view.

G08: Ability to adapt to technologies and future environments, updating professional skills.

CT2: Develop critical thinking in relation to the capacity for analysis and synthesis.

CT3: Develop an attitude of inquiry that allows the revision and permanent advancement of knowledge.

CT4: Ability to use Computer and Information Competences (CI2) in professional practice.

5. Training Activities and Teaching Methods

5.1 Training Activities:

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- Lecture
- Problem Solving Sessions
- Practical sessions in specialized laboratories
- Evaluation activities and self-evaluation and other activities (Essay, debates, tasks delivery, conferences...)

5.2 Teaching Methods:

- Participatory magisterial class.
- Development of practices in specialized laboratories or computer classrooms in small groups.
- Problem solving and practical exercises.
- Evaluations and exams.

5.3 Development and Justification:

In each participatory magisterial class, main concepts of each subject will be explained.

The practice activity of this subject will consist of development the Software Requirements Specification (SRS) and the Requirements Analysis Document (RAD). For the evaluation of the practices, an individual evaluable practical test will be carried out.

Throughout the course, the student must carry out group work on a topic related to the subject and present it in the classroom. In addition, assessable follow-up tests (assessment activities) will be carried out.

The subject has a web page where students can consult what they must prepare for each class, as well as the necessary documentation for each session. All the technological means available in the classroom will be used (cannon, wi-fi, etc). Students who wish can bring material to class (books, laptops, etc).

6. Detailed Contents

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1. Introduction to requirements engineering

- Software Requirement Concept
- Requirements Classification
- Requirements Engineering Process

2. Requirements elicitation

- Concept of "elicitation"
- Objectives, problems, products and techniques of the elicitation process
- Problem domain in Requirements Engineering
- Positive and negative aspects identification
- Business Modeling in Requirements Engineering
- Technological Project Analysis
- Obtaining and documenting requirements

3. Use Case

- What is a Use Case?
- Using different types of Use Case
- When should you use Use Case?
- Know how to properly Use Case to document requirements

4. Requirements Analysis

- Objectives, products and processes of Requirements Analysis
- Basic concepts of modeling software systems.
- Common UML Elements

5. State Diagrams

- Dynamic Modeling with UML StateCharts.
- How to make a state diagram from a selection of requirements.

6. Sequence Diagrams

- Dynamic Modeling Using UML Sequence Diagrams
- How to make the sequence diagram from a selection of requirements.

7. Quality check on requirements

- Main requirements verification techniques
- Managing nonconformities

7. Bibliography

7.1 Basic Bibliography:

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- Roger Pressman. Ingeniería del Software. Séptima Edición. 2010
- G. Kontoya e I. Sommerville. Requirements Engineering: Processes and Techniques. John Wiley & Sons, 1997.
- Sommerville y P. Sawyer. Requirements Engineering: A Good Practice Guide. John Wiley & Sons, 1997.C.
- B. Silver. BPMN Method & Style (2nd edition).
- M. Cohn. User Stories Applied for Agile Software Development. Addison-Wesley, 2004.
- C. Larman. UML y Patrones. Ed. Prentice-Hall, 1999.

7.2 Additional Bibliography:

- S. Lauesen. Software Requirements: Styles and Techniques. Addison-Wesley, 2002.
- Wohlin et al. Experimentation in Software Engineering: An Introduction. Kluwer Academic Publishers, 2000.
- C. Larman. UML y Patrones (2ª edición). Ed. Prentice-Hall, 2003.
- M. Fowler. UML Distilled (3rd edition). Ed. Addison-Wesley, 2004.
- Ivar Jacobson. Object-oriented software engineering: A use case driven approach. Addison-Wesley, 1992.

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8. Systems and Assessment Criteria

8.1 System for Assessment:

- Examination of theory / problems
- Defense /Examen of practice
- Individual monitoring (partial tests and activities)
- Work Defense

8.2 Assessment Criteria and Marks:

8.2.1 Examinations Convocatory I

The overall grade for the course will be calculated using the following formula:

$$\text{Final grade} = 0.4 \text{ Theory grade} + 0.4 \text{ Practice grade} + 0.1 \text{ Individual Monitoring} + 0.1 \text{ Work Defense}$$

The theory exam will be multiple choice. During the practices defense the student will solve problems related to the development of their work in the practice sessions and the documentation developed during them. The Individual Monitoring mark will be obtained by evaluation of partial tests and activities. The work defense mark will consider the documentation and presentation.

Student must obtain more than 3 points in the grade corresponding to the theory mark and to the one corresponding to the practice grade. A part will be considered as approved when its grade is higher than 5 points out of 10. Approved grades will be saved from the Convocatory I to II if you the student so wish. In this case, the student should advise that they want to save the part through the mechanisms enabled for this purpose. In case of not notify anything, it will be considered that the student wants to save it.

8.2.2 Examinations Convocatory II

The overall grade for the course will be calculated using the following formula:

$$\text{Final grade} = 0.4 \text{ Theory grade} + 0.4 \text{ Practice grade} + 0.1 \text{ Individual Monitoring} + 0.1 \text{ Work Defense}$$

The theory exam will be multiple choice. During the practices defense the student will solve problems related to the development of their work in the practice sessions and the documentation developed during them. The Individual Monitoring mark will be obtained by evaluation of partial tests and activities. The Work Defense Mark will consider the documentation and presentation.

Student must obtain more than 3 points in the grade corresponding to the theory mark and to the one corresponding to the practice grade. A part will be considered as approved when its grade is higher than 5 points out of 10.

8.2.3 Examinations Convocatory III

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Same as Single Final Evaluation

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8.2.4 Extraordinary Convocatory

Same as Single Final Evaluation

8.3 Single Final Evaluation:

Final mark = $0.6 * \text{Theory exam} + 0.4 * \text{Practical defense}$

In this case, both the theoretical exam and the resolution of the practical problem will be held on the day set by the University. The theory exam will consist of solving problems and theoretical-practical questions related to the theory syllabus. To carry out this exam, it will not be possible to use additional material to that indicated. The practice defense will consist of the preparation of a requirements specification and analysis documentation and the resolution of a problem related to the document developed on the day set by the University for the theoretical exam. To pass the subject, the student must obtain at least 5 points out of 10 in the theoretical exam and 5 points out of 10 in the practical defense.