INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Requirements Engineering			Field of study	Informatics		
Master in	Informatics			School	School of Technology and Management		
Academic Year	2025/2026	Year of study	1	Level	2-1	ECTS credits	6.0
Type	Semestral	Semester	1	Code	5060-858-1103-00-25		

Workload (hours)	162	Contact hours	T -	TP 60	PL -	TC -	S -	E -	OT -	O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): José Eduardo Moreira Fernandes

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Know and explain the fundamental concepts of requirements engineering.
2. Understand and frame requirements engineering in software development.
3. Recognize the importance of understanding the organization's objectives and processes in defining requirements.
4. Understand the fundamentals of business process modeling.
5. Understand the activities and apply the main requirements engineering techniques.
6. Understand and explain activities and requirements in the context of agile projects and secure software development.

Prerequisites

Before the course unit the learner is expected to be able to:
Read and understand texts in English.

Course contents

Fundamentals of Requirements Engineering.
Requirements engineering in software development.
Organizational context.
Requirements elicitation.
Negotiation, prioritization, and validation of requirements.
Requirements documentation.
Complementary topics.

Course contents (extended version)

1. Fundamentals of Requirements Engineering
   - Requirement definition
   - Requirements engineering definition
   - Requirements classification
   - Requirements engineering activities
   - Bodies of knowledge and standards
2. Requirements engineering in software development
   - Process
   - Architecturally significant requirements
   - Tools
3. Organizational context
   - Business requirements
   - General view of the system
   - Business process modeling
4. Requirements elicitation
   - Elicitation process
   - Techniques
   - Understanding user requirements
   - Business rules
   - Data requirements
5. Negotiation, prioritization, and validation of requirements
   - Negotiation strategies
   - Prioritization
   - Validation
6. Requirements documentation
   - Natural language writing
   - Requirements specification document
   - Models for requirements
7. Complementary topics
   - Requirements engineering in agile projects
   - Requirements management practices
   - Security requirements

Recommended reading

1. J. Fernandes and R. Machado, "Requirements in Engineering Projects", Springer, 2015.
2. K. Wiegers, and J. Beatty, "Software Requirements", 3rd ed., Microsoft Press, 2013.
3. P. Laplante, "Requirements Engineering for Software and Systems", 3rd ed., CRC Press, 2018
4. R. Wazlawick, "Object-Oriented Analysis and Design for Information Systems", 2nd ed., Morgan KaufMann, 2024.
5. R. Gandhi, M. Richards, and N. Ford, "Head First Software Architecture", O'Reilly, 2024

Teaching and learning methods

The unit will be taught using lectures exposing theoretical concepts, practice classes for problem-solving, and teacher-oriented self-learning.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary)
   - Portfolio - 20% (Classroom-based activities.)
   - Practical Work - 80% (Practical assignments may include an individual written assessment component.)
2. Alternative 2 - (Regular, Student Worker) (Special)
   - Practical Work - 35%
   - Final Written Exam - 65%

Language of instruction

English, with additional Portuguese support

Electronic validation

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14-10-2025	15-10-2025	01-11-2025