

SYSTEMS ANALYSIS AND DESIGN

Degree in Computer Systems

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Code: 10800

Main Scientific Area: Production Engineering and Systems

Lecturer: Joaquim Gonçalves Pereira da Silva

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 60h Total Workload: 100h

ECTS: 6,0

Objectives

This curricular unit aims to prepare the students to understand the basic concepts about system analysis and design. It is also intended to develop in the students the capabilities of abstraction and communication, using several techniques of requirements elicitation and analysis.

The students will get skills to use methods and techniques of specification and modeling, suitable to document the activities of software systems development life cycle.

Learning Outcomes

On successful completion of this curricular unit, students should be able to:

Describe the process of analysis and design of software systems;

Demonstrate abstraction, communication and teamwork skills in the development of software systems;

Analyze and model a software system using the UML modeling language;

Develop a software project, integrating a team, using adequate support tools.

Course Contents

1. Software systems development

What is software?

Information Systems

Software engineering

Agile development

2. Requirements engineering (RE)

Software requirements

RE process

Communication with stakeholders

Requirements elicitation

Business process modeling

3. Requirements analysis and specification

Requirements Analysis

Specification techniques

Requirements validation and management

Agile requirements

4. Software modeling
Systemic approach
Software modeling using UML

Recommended Bibliography

Pressman, R. S. (2010). Software Engineering: a Practitioner's Approach, 7th edition., McGraw-Hill
Rubin, K. S. (2013). Essential Scrum: A Practical Guide to the Most Popular Agile Process, Addison-Wesley Professional

Learning and Teaching Methods

The program of the curricular unit introduces the key concepts that allow understanding the scope and context in which the system analysis and design activities are developed. To develop skills in this field, students should be familiarized with the principles and best practices of the system analysis and design, to know how to use UML, and to understand the agile software process.

Assessment Methods

Learning outcomes will be assessed through (a) a theoretical component and (b) a practical component. The theoretical component consists of individual written tests and the practical component consists of the development of a project team. The practical component will be held during the lessons.

The theoretical component grade results from the assessment by written tests or, if the student has not obtained the minimum score in the theoretical component or in the final grade, it corresponds to the exam score. The final grade (FG) is a weighted average calculated according to the expression:

$$FG = \text{Theoretical Component} * 40\% + \text{Practical Component} * 60\%$$

Approval for the curricular unit is subject to obtaining a minimum score of 9.0 (scale from 0 to 20) in the theoretical component. The final exam just assesses the theoretical component, keeping, for the calculation of the final grade, the value obtained in the practical component at the frequency of the curricular unit.