

SYSTEMS ANALYSIS AND DESIGN

Code: 322008

Main Scientific Area: Programming and software development

Lecturer: Margarida Isabel Pereira Portela

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 60h Total Workload: 108h

ECTS: 6,0

Objectives

This curricular unit aims to transmit basic concepts about analysis and design of information systems. Through it is intended that the students develop abstraction and communication skills, in addition to the practice with techniques for surveying and analyzing requirements.

The recipients of this curricular unit will obtain skills in the use of methods and techniques for modeling and specification of software, suitable for the preparation of documentation to support systems development activities.

Learning Outcomes

At the end of the course, students should be able to:

Describe the concept of software and its role in the organizational context and of its information systems;

Describe the process of analysis and design of software systems;

Use abstraction skills in software analysis and modelling;

Analyse and model a software system using the modelling language UML;

Prepare the analysis and modelling documentation of a software system, based on an appropriate software development methodology.

Course Contents

1. Software systems development

The software product

Software engineering (SE)

Software process models

Information Systems (IS)

2. Requirements engineering (RE)

Software requirements

RE process and activities

3. Requirements elicitation

Project inception

Requirements elicitation techniques

Communication with stakeholders

4. Requirements analysis and specification

Requirements Analysis

Requirements specification

Requirements validation and management

5. Software modelling

Systemic approach

Modelling process

UML Language

6. Agile software requirements

Agile development

Scrum concepts and practices

Recommended Bibliography

Cadle, J., Paul, D., Turner, P. (2010). Business Analysis Techniques – 72 Essential Tools for Success, BCS

Larman, C. (2004). Applying UML and Patterns: An Introduction to Object-oriented Analysis and Design and Iterative Development, 3rd edition, Prentice-Hall PTR

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 curricular unit's program introduces the key concepts to understand the scope and context in which the activities of analysis and design of information systems are developed.

To develop skills in this domain, students must become familiar with the principles and good practices of analysis and systems design, know how to use the UML language and know the agile development process.

Assessment Methods

Learning outcomes will be assessed through (a) a theoretical component and (b) a practical component. The theoretical component consists of participation through activities (30%) and an individual written test (35%) and the practical component in the development of a group project (30%) and cross-sectional assessment in classroom (5

%).

The practical component must be carried out during the academic period with the accompaniment of the teacher.

The theoretical component results from the evaluation of the written tests or, if the student has not been successful or has not reached the minimum grade in the theoretical component, corresponds to the exam grade. The final grade (NF) is the weighted average calculated according to the following expression:

$$\text{Final Grade} = \text{Theoretical Grade} * 65\% + \text{Practical Grade} * 35\%$$

The use of the course unit is subject to obtaining the minimum grade of 10 values (scale from 0 to 20) to the theoretical component. In exam periods, only the theoretical component will be evaluated, maintaining, for the purpose of calculating the final grade, the value obtained in the practical component during the course unit frequency.