

## SYSTEMS ANALYSIS AND DESIGN

---

Code: 322008

Main Scientific Area: Programming and software development

Lecturer: Rosa Liliana Figueiredo Fernandes

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**

Software systems development–The software product

- Information systems

– Software engineering (ES)

- Agile development

(Scrum) Requirements Engineering (RE)– Software requirements

– RE process

–Communication with stakeholders

– Requirements gathering techniques

Definition of requirements– Requirements analysis

– Specification techniques

–Validation and requirements management

Software modeling– Systemic approach

– UML language

– BPMN notation

### **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 ObjectorientedAnalysis 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**

The assessment will have the following components:1. Theoretical test: 40%

2. Development of a project: 50%

3. Attendance, behavior and participation in classe: 10%

The Project (practical component of the evaluation - PC) has to be carried out during the class period:– PC deliveries after the deadline defined in the statement are not accepted.

– The minimum grade of the PC component is 10.0 values

– Students are not admitted to the exam if they do not participate at the PC

The theoretical component (TC) can be carried out by exam:– Those who did not pass the exam or did not reach the minimum grade in the theoretical component may take the exam

– The minimum grade of the TC component is 9.0 values

– The calculation formula is maintained, where TC will be equal to the exam grade

Only the TC component can be improved in an exam

– Achieving the PC grade ends with classes and cannot be improved by exam.