

Course Unit	Software Engineering I	Field of study	Information Systems
Bachelor in	Informatics and Communications	School	School of Public Management, Communication and Tourism
Academic Year	2023/2024	Year of study	2
Type	Semestral	Semester	1
Level	1-2	ECTS credits	6.0
Code	9188-320-2104-00-23		
Workload (hours)	162	Contact hours	T - , TP 30, PL 30, TC - , S - , E - , OT 20, 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) Sandra Maria Fernandes Grilo

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Acquire and apply knowledge and techniques for analysis of requirements for information systems;
2. Develop a system model for their complementary visions: functional, data, and behavior;
3. Know and Use tools from software engineering (CASE tools - Computer-Aided Software Engineering);
4. Have the knowledge of the Project Management Software.

Prerequisites

Before the course unit the learner is expected to be able to:
Not applicable

Course contents

- Software Project Management; - System Development; - Specification information systems; - Structured Analysis; - CASE Tools; - Architectural Design Software Systems; - Testing and Implementation.

Course contents (extended version)

1. Software Project Management.
2. System Development
 - SD Paradigms: Waterfall Model, V Model; Prototyping; Exploratory Programming; Spiral Model
 - Models
 - Tools
3. Technics of Requirements Identification
 - Documentation analysis
 - Interviews
 - Questionnaires
 - Direct observation
4. Structured analysis
 - Different analysis perspectives
 - Process oriented model DFD: IDEF0 diagram; data dictionary; structured language; decision tables;
 - Data oriented model: entity relation diagram; normalization
 - Behaviour oriented models: transition state diagram (DTE)
5. CASE tools
6. Design
7. Tests and implementation

Recommended reading

1. Mendonça, V. (2021). *Sebenta da disciplina de Engenharia de Software*. IPB, EsACT.
2. Maalej, W. , Thurimella, A. (2013). *Managing Requirements Knowledge*. Springer. ISBN: 978-3642344183
3. Pressman, R. , Maxim, B. (2016). *Engenharia de Software: Uma Abordagem Profissional*. 8ª ed. McGraw-Hill. ISBN: 9788580555332
4. Thayer, R. , Dorfman, M. (2012). *Software Engineering Essentials*. Volume I, Volume II e Volume III. Software Management Training. ISBN: 978-0985270704; 978-0985270711; 978-0985270728
5. Sommerville, I. (2010). *Engenharia de Software*. Pearson. ISBN: 9788579361081

Teaching and learning methods

Contact Hours: Exposure of theoretical concepts and guidance in the use of CASE tools; Application of knowledge to solve problems; Discussion of case studies. Not presental Hours: Elaboration of practical work (individual or group); Research, analysis and study of documentation; Exploration and Use of Tools CASE.

Assessment methods

1. Final Evaluation - (Regular, Student Worker) (Final, Supplementary, Special)
 - Case Studies - 20% (Continuous Evaluation: presence and effort on project resolution are considered.)
 - Practical Work - 45% (Practical group work: Structured Modeling of an Information System. (Evaluation Minimum mark >= 7/20))
 - Final Written Exam - 35% (Individual evaluation of skills and knowledge acquired. (Evaluation Minimum mark >= 7/20))
2. Not Aplicable - (Student Worker) (Final, Supplementary, Special)
 - Laboratory Work - 20%
 - Practical Work - 45%
 - Final Written Exam - 35%

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Sandra Maria Fernandes Grilo	Vítor José Domingues Mendonça	Anabela Neves Alves de Pinho	Luisa Margarida Barata Lopes
13-01-2024	08-02-2024	08-02-2024	14-02-2024