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Course Unit	Application Interfaces			Field of study	Computer Science	
Bachelor in	Management Informatics			School	School of Technology and Management	
Academic Year	2023/2024	Year of study	2	Level	1-2	ECTS credits	6.0
Type	Semestral	Semester	1	Code	9186-709-2105-00-23	

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)	Leonel Domingues Deusdado

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Understand the basic concepts of human-computer interaction: definition, challenges and relevance, conceptual models, social and organizational aspects.
2. Understand the concepts of usability engineering and interface design user-centered.
3. Understand the theoretical models of human-machine interaction: cognitive models, the cycle of interaction of Norman, principles, rules and heuristics of good usability.
4. Understand the software development focused on users.
5. Develop the ability to design, evaluate and develop interfaces for interactive applications.
6. Using software tools in order to understand and create programs for user interaction, using high level programming languages .

Prerequisites

Not applicable

Course contents

Introduction to Human-Computer Interaction; Understand the Humans; Understand the Computers; Usability Engineering; The Analysis Process; Methodology for Internet Survey Implementation; The Design Process; Interface Design - Principles and Practice; Usability Evaluation; Interface Development Tools.

Course contents (extended version)

1. Introduction to Human-Computer Interaction (week 1)
    - Definitions and motivations in IMH
    - Evolution of interfaces
    - Cognitive Revolution
    - Tools
    - Design and Innovation
    - Objectives for an "Interaction Designer"
2. Understand the Humans (Weeks 2, 3)
    - The Model of Human Processing (MHP)
    - The implications of the human senses
    - Principles of operation in MHP
    - The GOMS Model
    - Norman Interaction Cycle
    - Cognitive System
    - Reasoning and problem-solving
3. Understand the Computers (Weeks 4, 5)
    - Physical devices
    - Recognition and input devices
    - Menus and their interaction
    - Natural language
    - Forms and direct manipulation
4. Usability Engineering (Weeks 6, 7)
    - Life cycle of a technology
    - Usability
    - Development focused on users (DCU)
    - The RUP model - Rational Unified Process
5. The Analysis Process (Weeks 8, 9)
    - Interviews
    - Roles of users vs tasks
    - Field visits
    - Group analysis
    - Questionnaires
6. Methodology for Internet Survey Implementation
    - The prospect of the user
    - Principles of bad and good examples
    - Structure and conduct of contextual questionnaires
7. The Design Process (Weeks 10 e 11)
    - Design and prototyping
    - Fidelity
    - Mock-ups
    - Scenarios
    - Maps and navigation patterns
8. Interface Design - Principles and Practice (Weeks 12, 13)
    - Main principles of design
    - Other types of principles to be followed
    - Rules of Shneiderman
9. Usability Evaluation (Weeks 14, 15)
    - Usability evaluation and heuristic
    - Report - debriefing
    - Degrees of Defects - Evaluation
    - Roles in inspections
    - Assessment of usability
10. Interface Development Tools (web and Mobile) Weeks (1, 15)
    - Prototyping of Interfaces for Web desktop and Mobile Devices
    - Development of Mobile interfaces using a real problems

Recommended reading

1. Alan Dix; Janet Finlay; Gregory Abowd; Russel Beale: "Human-Computer Interaction", Pearson, Prentice Hall, 2004.
2. Dan Diaper, Neville A. Stanton: "The handbook of task analysis for human-computer interaction". London : Lawrence Erlbaum Associates , 2004
3. Pedro Coelho: "Javascript : animação e programação em páginas web". Lisboa: FCA-Editora de Informática, 2003
4. Manuel J. Fonseca, Pedro Campos, Daniel Gonçalves: "Introdução ao Design de Interfaces", FCA - 2012
5. Diapositivos PDF - Docente, IAI - 2023/2024. Leonel Deusdado

Teaching and learning methods

Coaching-oriented sessions, training sessions, based on reading books and challenges proposals. Encouragement of creativity, group work on UC related projects (60 hours). Out of classes (100 hours): individual and group study of the lesson subjects, reading of the bibliography, resolution of practical assignments.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary)
   - Practical Work - 100%
2. Alternative 2 - (Regular, Student Worker) (Special)
   - Practical Work - 100%

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Leonel Domingues Deusdado	Tiago Miguel Ferreira Guimaraes Pedrosa	José Carlos Rufino Amaro	Nuno Adriano Baptista Ribeiro
02-10-2023	07-10-2023	10-10-2023	06-11-2023