

Course Unit	Development of Multimedia Products			Field of study	Computing from the User Point of View	
Master in	Information and Communication Technologies- Education and Training			School	School of Education	
Academic Year	2023/2024	Year of study	1	Level	2-1	ECTS credits 10.0
Туре	Annual	Semester	•	Code	1083-622-1001-00-23	
Workload (hours)	270	Contact hours	T - Lectures; TP - Lectures a	63 PL - T	C - S 10 solving, project or laboratory; TC	E - OT 17 O - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Vítor Manuel Barrigão Gonçalves

Learning outcomes and competences

- At the end of the course unit the learner is expected to be able to:
- Understand the educational and training challenges posed by emerging technologies and requirements of today's society;
 Select and use autonomously, authoring multimedia tools aimed at the design of educational products;
 Use technologies for editing image, audio and video;
 Design educational multimedia products able to enhance cognitive development of students;

- Make available or publish the products developed in the current information systems (Network, DVD or CD); Apply the basics of pre-production, production and post-production and the methods, techniques and tools for modeling and specification of multimedia applications;
- applications,
 7. Develops educational projects to integrate ICT in learning contexts, based on active methods of constructivist and socio-constructivist root;
 8. Understand the basic principles of multimedia production, using the latest technologies for their creation and publishing, developing a proactive approach.

Prerequisites

Before the course unit the learner is expected to be able to: Use Information and Communication Technologiesat user level

Course contents

1- Introduction to Multimedia. 2- Text and Typography. 3- Images and Graphics. 4- Animation. 5- Audio. 6- Video. 7- Interface and virtual space. 8- Multimedia Applications. 9- Multimedia Development. 10- Use of multimedia technologies.

Course contents (extended version)

- 1. Introduction to Multimedia:

 - Definition and basics
 Audio, Visual and Scripto Languages and Derived Languages
 Media Types and digital formats
 Basic Technologies
 Compared of the multimedia products matrix

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- Components of the multimedia products matrix
 Basic Technologies
- Characteristics of multimedia products and components
 Multimedia Applications
- Text and Typography:
 Font Types characteristics
 Influence of support in readability
 Composition and text systematization methods
 Text Technologies

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 Text Technologies
 File types and formats
 Hypertext, HTML language and Web pages
 Good practices in the design of educational Web pages
 Images and Graphics:

 Bitmap image and vector image
 Color Systems and conversion between color systems
 Acquiring, scanning and recording image
 Image Technologies
 Image file types and formats
 Good practices in image editing and processing and graphic design
 Good practices in image acquisition, editing and use for different media
- 4. Animation:

 - Animation: Traditional animation and digital animation Fundamental principles of digital composition Animation techniques and tecnologies Animation file types and formats 2D animation, 3D animation and animation on the Web.
 - Authoring tecnologies and content animation Good practices in the design of animations
- 5. Audio:

 - Hearing sense
 Sound and its main features

 - Sound and its main reduces
 Acquiring, scanning and recording audio
 Audio technologies
 Audio file types and formats
 CODECS and MPEG Audio
 Good practices in the use of sound in audiovisual and computing environments
- 6. Video:

 - Video: Convert analog video to digital video Acquiring, scanning and recording video Video technologies Video file types and formats CODECS and MPEG Video Phases of pre-production, production and post-production Good practices in the design of audiovisual products netrafece and virtual space.
- 7. Interface and virtual space:
- Human/machine interface
 - Interface: organization and navigation
 Interactivity types and levels

Course contents (extended version)

- The components in multimedia interface

- Virtual reality
- Virtual environments based in graphics
 Virtual environments based in photos: objects, panoramics and scenes
- Multimedia Applications:
 Classification in the context of the course

 - Ferramentas de autoria
- Other multimedia development technologies
- 9. Multimedia Development: Multimedia software development models
- Multimedia software development models
 Script, Storyboard and prototypes
 Software analysis, specification and design
 Functionality, usability and accessibility
 Development of multimedia products for educational contexts
 10. Use of multimedia technologies:
 Editing and processing images and vector drawing
 Images and graphics for the Internet
 Audio and video edition
 Design of interactive virtual spaces
 Design of web pages with HTML5

Recommended reading

- Costello, V. (2017). Multimedia Foundations: Core Concepts for Digital Design. Routledge. ISBN: 9780415740036
 Silva, M. (2018). Fundamentos de HTML5 E CSS3. São Paulo, SP: Novatec. ISBN: 978-857-522-708-4.
 Fonseca, M. ; Campos, P. & Gonçalves, D. (2012). Introdução ao Design de Interfaces. Lisboa: FCA. ISBN: 978-972-722-738-9.
 Ball, M. (2022). Metaverso O qué é, Como Funciona e Porque Vai Revolucionar o Mundo? Loures: Alma dos Livros. ISBN: 9789895700622
 Ribeiro, N. (2012). Multimédia e tecnologias interativas, 5^a Ed. Lisboa: FCA. ISBN: 978-972-722-744-0.

Teaching and learning methods

Concepts presentation to integrate new knowledge or to understand the contents sequence. Subject discussion, in person or distance, to introduce new concepts and/or deepen knowledge. Practice sessions for each of the multimedia technologies. Workgroup: multimedia projects.

Assessment methods

- Continuous assessement (Regular, Student Worker) (Final)

 Laboratory Work 50% (Portfolio of practical work (5 works), including participation in discussion forums)
 Projects 50% (Laboratory Project in group: Development of multimedia material for education)

 Exam (Regular, Student Worker) (Supplementary, Special)

 Final Written Exam 100% (Individual test of theoretical and practical contents)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation			
Vítor Manuel Barrigão Gonçalves	Maria Raquel Vaz Patrício	Manuel Florindo Alves Meirinhos	Carlos Manuel Costa Teixeira
22-02-2024	23-02-2024	23-02-2024	25-02-2024