INSTITUTO POLITÉCNICO DE BRAGANÇA

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
Type	Annual	**Semester** -	**Code** 1083-622-1001-00-23

Workload (hours)	270	**Contact hours**	T	-	TP	63	PL	-	TC	-	S	10	E	-	OT	17	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)	Vítor Manuel Barrigão Gonçalves

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Understand the educational and training challenges posed by emerging technologies and requirements of today's society;
2. Select and use autonomously, authoring multimedia tools aimed at the design of educational products;
3. Use technologies for editing image, audio and video;
4. Design educational multimedia products able to enhance cognitive development of students;
5. Make available or publish the products developed in the current information systems (Network, DVD or CD);
6. Apply the basics of pre-production, production and post-production and the methods, techniques and tools for modeling and specification of multimedia 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
    - Components of the multimedia products matrix
    - Basic Technologies
    - Characteristics of multimedia products and components
    - Multimedia Applications
2. Text and Typography:
    - Font Types characteristics
    - Influence of support in readability
    - Composition and text systematization methods
    - Text Technologies
    - File types and formats
    - Hypertext, HTML language and Web pages
    - Good practices in the design of educational Web pages
3. 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:
    - 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
    - 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:
    - Convert analog video to digital video
    - Acquiring, scanning and recording video
    - Video technologies
    - Video file types and formats
    - CODECS and MPEG Vídeo
    - Phases of pre-production, production and post-production
    - Good practices in the design of audiovisual products
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
8. Multimedia Applications:
   - Classification in the context of the course
   - Ferramentas de autoria
   - Other multimedia development technologies
9. Multimedia Development:
   - 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 augmented reality environments
    - Design of Web pages with HTML5

Recommended reading

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

1. 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)
2. 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

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