

ECTS Information Package: Degree Programme

Master's degree in

DIGITAL CONTENT PRODUCTION

www.gri.ipt.pt

A - General Description

Programme Title - Mestrado em Produção de Conteúdos Digitais

Qualification awarded - Master's degree in Digital Content Production

Level of qualification - Second-cycle degree, EQF Level 7; ISCED Level 5

Specific admission requirements

General

According to the Portuguese Law, the following candidates are eligible for entry to the course of study leading to the *Mestre* degree:

- Holders of a *licenciado* degree or legally equivalent corresponding to the first cycle of higher education;
- Holders of a foreign higher degree awarded on completion of a first-cycle programme organised in the framework of the Bologna Process;
- Holders of a foreign higher degree which is deemed by the Technical-Scientific Committee of ESTT-IPT to meet the requirements of a *licenciado* degree.
- Holders of an academic, scientific or professional curriculum which is deemed by the Technical/Scientific Committee of ESTT-IPT as appropriate to access the programme.

Specific

Holders of the bachelor's degree (*licenciatura*) in computer engineering or the bachelor's degree in Design and Graphic Arts Technology offered by the School of Technology-IPT have direct access to the master's degree in Digital Content Production.

Without prejudice to the general entry requirements, the following candidates are accepted for entry onto the master's degree in Digital Content Production subject to admission quotas:

- Holders of a *licenciatura* degree or legally equivalent degrees in the field of Digital Content Production such as Computer Science, Graphic Design and Audiovisual & Media Production or related areas;
- Holders of a foreign higher degree in Digital Content Production or related areas awarded on completion of a first-cycle programme organised in the framework of the Bologna Process;
- Holders of a foreign higher degree in Digital Content Production which is deemed to meet the requirements of a *licenciado* degree by the Technical-Scientific Committee of the ESTT/IPT.
- Holders of a foreign higher degree in Digital Content Production and whose scientific and professional curriculum is deemed by the ESTT-IPT Scientific-Technical Committee as appropriate to access this second-cycle programme;
- Holders of an academic, scientific and professional CV in Digital Content Production related areas which is deemed by the ESTT-IPT Scientific-Technical Committee as appropriate to access this second-cycle programme;

Specific arrangements for recognition of prior learning (formal, non-formal and informal)

General

Granting of credits from prior learning is regulated by the Portuguese Law taking into account the level of credits and the field of study where they have been earned and is subject to the recognition of ESTT-IPT Technical/Scientific Committee.

- Training undertaken in the context of other higher education programmes of study from national or foreign HE establishments or organised in the framework of the Bologna Process or other prior learning can be credited towards the present programme of study;
- Credits earned from postgraduate studies can also be credited towards this programme of study;
- Professional experience or other training, different from the abovementioned ones, can also be credited towards this programme of study.

Specific

Allocation of credits to individuals holding a licenciado degree in computer engineering, graphic design and related areas prior to the Bologna process with a duration equivalent to 300 ECTS credits (5 years of study) is formally analysed on a case-to-case basis.

Qualification requirements and regulations:

The master's degrees are regulated by the Portuguese Law and applicable program regulations established by the School of Technology-IPT. In order to complete the master's degree it is necessary to accumulate 120 ECTS credits distributed throughout 4 curricular semesters as according to the course curriculum. Each ECTS credit corresponds to 27 hours of work.

Profile of the program:

This course of study includes:

- A master's program organised into modules corresponding to 60 ECTS credits;
- An original project or a professional internship including final report corresponding to 60 ECTS credits.

The study program aims at developing the following technical and scientific skills:

- Mathematics and Computing (33 compulsory ECTS credits);
- Digital Content Production (81 compulsory ECTS credits);
- Economics and Management (6 compulsory ECTS credits);

Key learning outcomes:

Graduates from the master's degree in Digital Content Production are expected to be able to:

- Implement digital sound and image acquisition processes;
- Design and develop multimedia products and use them for a wide variety of purposes: educational, informative or recreational;
- Design and create augmented reality or immersive applications using computer graphics paradigms;
- Develop business ideas in the field of digital content production;
- Develop scripts to serve as a support to messages made up of digital objects.
- Coordinate projects involving the production of digital contents.

Occupational profiles of graduates with examples:

Graduates from the master's degree in Digital Content Production are prepared to perform as:

- Process managers or assistant process managers in companies or organisations engaged in the production of digital content;
- Collaborator or responsible for the implementation, programming and administration of systems designed to create and support the use of digital content;
- Members of multidisciplinary teams engaged in the creation of digital contents targeted to a wide range of areas such as dissemination of cultural, heritage and scientific issues;
- Director or middle manager within bodies engaged in the creation, dissemination and management of digital content.
- The master's degree in Digital Content Production gives access to third-cycle programmes in computer engineering, graphic design and related areas according to applicable admission regulations.

Access to further studies:

The Master's degree in Digital Content Production gives access to third-cycle programmes in engineering and graphic design related areas as according to applicable admission regulations.

Course structure diagram with credits

Course Title	Year	Semester	Credits
Algorithmic Design and Analysis	1	S1	6
Computer Graphics I	1	S1	6
Digital Signal Recording and Processing	1	S1	5
Entrepreneurship and Business Planning	1	S1	3
Multimedia Products Development	1	S1	6
Project and Research Methodology	1	S1	3
Seminar I	1	S1	1
3D Animation and Modelling	1	S2	6
Computer Games and Augmented Reality	1	S2	6
Computer Graphics II	1	S2	6
Digital Content Production Project	1	S2	3
Image Representation and Coding	1	S2	3
Multimedia Networks	1	S2	5
Seminar II	1	S2	1
Project or Internship	2	A	60
op: Project	2	A	

(*) This course may not be available in certain academic years. Please confirm availability with the Erasmus coordinator.

Examination regulations, assessment and grading

General

Assessment of course units complies with the Academic Regulations in force at ESTT-IPT, except for the Dissertation, Project and Internship, to which apply the provisions set out in the regulations for the master's degrees offered by the ESTT-IPT.

- Dissertation, Project and Internship have only two assessment seasons and the students are free to choose only one.
- The assessment calendar for the Dissertation, Project and Internship is proposed by the Programme Coordinating Committee to the Technical/Scientific Committee at the beginning of each academic year.
- The general grade improvement scheme does not apply to the Dissertation, Project and Internship.

The overall grade of the master's programme is the arithmetic weighted average rounded off to the ones of the number of ECTS credits and the grades of the course units that form part of the programme of study.

The 10-20 mark expressed on a 0-20 scale is converted into its equivalent in the European grading scale with the awards Satisfactory, Good, Very Good or Excellent.

Specific

The students must develop an original project or undertake professional internship and associated report. Both the project and the internship report must be submitted for appreciation to an examination panel appointed for that purpose.

Graduation requirements:

Completion of the programme requires a pass in all its constituent course units including public defence of the final project or internship report in order to accumulate 120 ECTS credits.

Mode of study:

Full- or part-time.

Program director or equivalente

Director: Pedro Daniel Frazão Correia

Erasmus coordinator: Pedro Daniel Frazão Correia

ECTS coordinator: Pedro Daniel Frazão Correia

B - Description of individual course units

Course unit title	Algorithmic Design and Analysis
Course unit code	30163
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	6
Name of Lecturer(s)	Luís Miguel Merca Fernandes António Manuel Rodrigues Manso
Learning outcomes of the course unit	1-Develop multimedia applications for mobile devices. 2-Master the general techniques of design and analysis of algorithms. 3-In-depth study of data structures and algorithms. 4-Implement algorithms using advanced algorithmic techniques.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contents	1-Develop multimedia applications for mobile devices based on Android SDK. 2-Fundamentals of algorithms and complexity analysis. 3-Computer algorithmics techniques. 4-Algorithms design techniques. 5-Sorting and orders statistics. 6-Advanced Data Structures
Recommended or required Reading	- Cormen, T. e Leiserson, C. e Rivest, R. e Stein, C. (2009). <i>Introduction to Algorithms</i> . (Vol. 1). (pp. 1-1312). Cambridge: MIT Press - Weiss, M.(2010). <i>Data Structures and Problem Solving Using Java</i> . (Vol. 1). (pp. 1-1024). Pearson: Addison-Wesley
Planned learning activities and teaching methods	Lectures: course content presentation Laboratory sessions: Laboratorial classes involving practical experiments.
Assessment Methods and criteria	Assessment includes two projects, a research assignment and an end-of-semester exam.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Computer Graphics I
Course unit code	30162
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	6
Name of Lecturer(s)	João Manuel Mourão Patrício
Learning outcomes of the course unit	Understand the connection between Mathematics and Computer Graphics. Master the basics of object representation (straight lines, planes, surfaces, etc) in two and tri-dimensional spaces. Understand the mathematical notions behind the translation, rotation and variation.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme componentes	Not applicable.
Course contents	Points, lines and curves in the plane and in the space. Transformations. Space, curves and surfaces. Introduction to OpenGL.
Recommended or required Reading	<ul style="list-style-type: none"> - Foley, J. e Van Dam, A. e Hughes, J. (1996). <i>Computer Graphics: Principles and Practice</i>. New York: Addison-Wesley Publ. Company - Hearn, D. e Baker, M. e Carithers, W. (2011). <i>Computer Graphics with OpenGL</i>. New York: Pearson - Wright, R. e Haemel, N. e Sellers, G. e Lipchack, B. (2011). <i>OpenGL Superbible: Comprehensive Tutorial and Reference</i>. New York: Addison-Wesley Publ. Company
Planned learning activities and teaching methods	Expository and practical classes using novel technologies. Lab classes involving computer practice.
Assessment Methods and criteria	Assessment includes a written test (30%) and a computational project (70%). Written final exam.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Digital Signal Recording and Processing
Course unit code	30166
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	5
Name of Lecturer(s)	António Manuel Dias Costa Valente
Learning outcomes of the course unit	1. Be able to apply the main techniques for recording and editing sound. 2. Designing sound environments for virtual and visual formats. 3. Be familiar with camera operating principles. 4. Be able to edit and mix sound and picture. 5. Understand sound and picture production processes
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contents	1. Sound module: 1.1. Sound capture and recording 1.2. Special sound effects 1.3. Sound mixing and edition 2. Picture module: 2.1 Photographic and Video cameras and its main characteristics 2.2 Lighting techniques 2.3 Production phases 2.4 Colour correction techniques 2.5 Non-linear edition 2.6 Video for the Web
Recommended or required Reading	<ul style="list-style-type: none"> - Alten, S.(2002). <i>Audio in Media</i>. : Wadsworth - Rose, J.(2002). <i>Audio Postproduction for Digital Video</i>. : CMP Books - Daly, T.(2000). <i>Fotografia digital: um guia prático</i>. : Centralivros - Zettl, H.(2003). <i>Television Production Handbook</i>. : Wadsworth
Planned learning activities and teaching methods	Theoretical and practical lessons using laboratorial equipment, audiovisual resources and practical examples.
Assessment Methods and criteria	Written tests and individual or group projects.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Entrepreneurship and Business Planning
Course unit code	30165
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	3
Name of Lecturer(s)	Olinda Maria dos Santos Sequeira
Learning outcomes of the course unit	Provide the students with fundamental concepts about the process of creating a company and its obligations towards the state; In-depth study of the analysis process with a view to developing a business plan for a new company; Develop presentation skills based on the investor's agenda.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme componentes	Not applicable.
Course contentes	Concepts of entrepreneurship; Entrepreneurial process; Project Selection Methodologies; Business Plan Development; Project Funding; How to create your own company; Activity starting up procedures; Business Success/Failure.
Recommended or required Reading	- Idis, R. e Welter, F. (2008). <i>Innovation and Entrepreneurship – Successful Start-ups and Businesses Emerging Economies</i> . London: Edgar Elgar Publishing
Planned learning activities and teaching methods	Throughout the semester students will carry out coursework including the validation of a business opportunity, the internal organization of an enterprise and a business plan in groups of up to 4 students.
Assessment Methods and criteria	Continuous assessment: Class performance and project discussion (25%) Analysis/opportunity plan report and presentation (30%) Business Plan and Final report and presentation (45%) Weighted average (min. mark: 10/20) Final assessment: exam (100%)
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Multimedia Products Development
Course unit code	30161
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	6
Name of Lecturer(s)	Gonçalo Cardoso Leite Velho
Learning outcomes of the course unit	1- Plan and produce pages, websites and web applications using the HTML, CSS, JS, PHP specifications/languages. 2- Combine different types of media in Web interfaces and content using Adobe Flash Tools, Adobe Edge and jQuery framework.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme componentes	Not applicable.
Course contentes	1- Hypertext Markup Language. 2- Cascading Style Sheets (CSS) 3- Dynamic pages on the client side with javascript. 4- Dynamic pages on the server side with PHP. 5- Edit movies and interactive applications for the web. 6- Final project development.
Recommended or required Reading	- Lopes, P.(2005). <i>Multimédia Digital</i> . Lisboa: Departamento de Ciências e Tecnologias da Informação, ISCTE
Planned learning activities and teaching methods	Theoretical and practical. Laboratory sessions: Lab lessons involving practical experiments.
Assessment Methods and criteria	Coursework projects including presentation and written tests.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Project and Research Methodology
Course unit code	30164
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	3
Name of Lecturer(s)	Alexandra Águeda de Figueiredo
Learning outcomes of the course unit	1.Understand the basic concepts of research or project creation 2.Understand and limit a study problem and analyse it critically 3.Be able to carry out a project based on digital data 4.Be able to draw up analysis reports, surveys, work plans, estimates and quotations 5. Be able to prepare a pro
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme componentes	Not applicable.
Course contentes	I. Introduction to project and research methodology II. Research methodology: diagnostic, analysis methodology, objective definition, evaluation criteria, data correlation, results dissemination and presentation III. Project methodology: diagnostics, scenarios and skills IV. Management processes:the measures table - program, project planning matrix and implementation dynamics
Recommended or required Reading	- Almeida, M.(1996). <i>Como elaborar monografias</i> . Brasil: Cejup - Cervo, A. e Bervian, P. (1996). <i>Metodologia científica</i> . São Paulo, Brasil: Edições Sílabo
Planned learning activities and teaching methods	Theoretical-practical classes featuring exposition of subjects and presentation and solution of test cases, relying on the use of new Information and Communication Techniques.
Assessment Methods and criteria	Continuous Assessment: coursework (70%)+ class performance and and mini digital tests (30%) Final assessment:exam including practical exercise (100%)
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Seminar I
Course unit code	30167
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	First Semester
Number of ECTS credits allocated	1
Name of Lecturer(s)	Nuno José Valente Lopes Madeira José Manuel Palma Redes Ramos
Learning outcomes of the course unit	1. Develop qualitative and quantitative approaches to risk assessment in information security; 2. Analyze and plan the future of Social Media in the context of the Digital Content Industry.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contentes	1. Risk Management in ICT; 2. Trend Analysis of "Social Media";
Recommended or required Reading	- Oliveira, W.(2001). <i>Segurança da Informação: Técnicas e Soluções</i> . Lisboa: Centro Atlântico - Oliveira, A.(2006). <i>Método de Auditoria a Sistemas de Informação</i> . : Porto Editora - Azuma, R.(1997). A Survey of Augmented Reality. <i>Presence: Teleoperators and Virtual Environments</i> , 6, pp. 355-385. - Pollard, N. e Hodgins, J. e Reitsma, J. e Lee, W. (2002). Interactive Controls of Avatars Animated with Human Motion Data. <i>Proceedings of ACM SIGGRAPH 2002, Special issue</i> , pp. 491-500.
Planned learning activities and teaching methods	Presentation and discussion.
Assessment Methods and criteria	1. Development of a model of risk assessment in information security; 2. Prospective essay (1500-2000 words) on the future impacts of the digital content industry; 3. Average ratings of the two activities.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	3D Animation and Modelling
Course unit code	30168
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	6
Name of Lecturer(s)	Jorge Morarji dos Remédios Dias Mascarenhas Gonçalo Cardoso Leite Velho
Learning outcomes of the course unit	Ability to use the key techniques for modelling and animation of objects, characters and 3D scenes using the main software platforms available on the market.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contentes	1. Modeling in MAX. 2. Modeling techniques for games (Low Poly). 3. Introduction to animation: animation concept in time and space. 4. Animation in 3D Studio MAX. 5. Animation objects, camera and light. 6. V-Ray Rendering. 7. Integration of 3D elements in real images. 8. Global Lighting with HDRI.
Recommended or required Reading	- Santos, J.(2009). <i>AutoCad 2010</i> . (Vol. I). (pp. 190-195). Lisboa: FCA - Santos, J.(2009). <i>AutoCad 3D 2010</i> . Lisboa: FCA - Ross, A.(2004). <i>Foundations of 3Ds Max 6</i> . USA: Autodesk, Incorporated
Planned learning activities and teaching methods	Laboratory classes for practical work demonstration using the major software tools available on the market. Final project work.
Assessment Methods and criteria	Laboratory coursework and final project.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Computer Games and Augmented Reality
Course unit code	301610
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	6
Name of Lecturer(s)	João Manuel Mourão Patrício
Learning outcomes of the course unit	Distinguish between different types of games. Apply identification and collision algorithms. Using specific libraries in the development of an entertainment or virtual environment. Prototyping a 2D game in a short period of time. Identify and describe at least one 3D visibility algorithm.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contents	PART I: VIDEO GAMES Introduction to video games. Taxonomy of video games. Game design and amusement theory. Architecture of game engines. Management and rendering of indoor and outdoor scenes. Body collision detection and physics simulation. Artificial intelligence algorithms for games. Network technology in games. PART II: VIRTUAL REALITY Introduction to virtual environments. Human factors
Recommended or required Reading	<ul style="list-style-type: none"> - Eberly, D.(2005). <i>3D Game Engine Architecture</i>. London: Morgan Kaufmann Publishers - Eberly, D.(2007). <i>3D Game Engine Design</i>. London: Morgan Kaufmann Publishers - Vince, J.(2004). <i>Introduction to Virtual Reality</i>. New York: Springer
Planned learning activities and teaching methods	Lectures and exercise-solving classes using new technologies. Lab lessons involving computer analysis and implementation.
Assessment Methods and criteria	Continuous assessment: computer project Final assessment: written exam
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Computer Graphics II
Course unit code	30169
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	6
Name of Lecturer(s)	João Manuel Mourão Patrício
Learning outcomes of the course unit	1. Development of the basic concepts of Computer Graphics. 2. Application of mathematical modelling to programming. 2. Extend the OpenGL implementation of two- and three-dimensional objects.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contents	1. Curve and surface modelling in space 2. Materials and Lighting 3. Textures
Recommended or required Reading	- Foley, J. e Van Dam, A. e Hughes, J. (1996). <i>Computer Graphics: Principles and Practice</i> . New York: Addison-Wesley Publ. Company - Hearn, D. e Baker, M. e Carithers, W. (2011). <i>Computer Graphics with OpenGL</i> . New York: Pearson - Wright, R. e Haemel, N. e Sellers, G. e Lipchack, B. (2011). <i>OpenGL Superbible: Comprehensive Tutorial and Reference</i> . New York: Addison-Wesley Publ. Company
Planned learning activities and teaching methods	Lectures and exercise solving classes using new technologies. Lab classes involving computer analysis and implementation.
Assessment Methods and criteria	Continuous assessment: a computer project. Final assessment: written exam
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Digital Content Production Project
Course unit code	301612
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	3
Name of Lecturer(s)	Raquel Palma Tomé de Sousa Botelho
Learning outcomes of the course unit	Special emphasis is placed on the creation of digital grids and architectures implying the construction of interactive contents/scripts for digital supports and on recombinatorial aesthetics privileging procedures resulting from traditional content production.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme componentes	Not applicable.
Course contentes	Hypertext and Cybertext; Communication and ergodic writing; Liquid architectures; Ludology vs narratology ; Collaborative authoring and the writer-reader; Multimedia projects; Information architecture; Usability; Writing for the internet/digital media; Games and ludology; Digital journalism or cyberjournalism; New communication framework; blogs and social networks; interviews; reports; news.
Recommended or required Reading	<ul style="list-style-type: none"> - Mourão, J.(2001). <i>Ficção Interactiva, Para uma Poética do Hipertexto</i>. (Vol. -). (pp. ---). Lisboa: Edições Universitárias Lusófonas - Darley, A.(2002). <i>Visual Digital Culture</i>. (Vol. -). (pp. ---). -: - - Nielsen, J. <i>Designing Web USability</i>. (Vol. -). (pp. ---). -: - - Garrand,, T.(2001). <i>Writing Multimedia and the Web</i>.. (Vol. -). (pp. ---). -: Focal Press
Planned learning activities and teaching methods	As the major aim of this unit is to promote learning by practical experience, student projects are extremely important.
Assessment Methods and criteria	After learning the basic concepts, they should be able to apply them to produce a working grid of their choice according to their personal interests.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Image Representation and Coding
Course unit code	301613
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	3
Name of Lecturer(s)	Sandra Maria Gonçalves Vilas Boas Jardim
Learning outcomes of the course unit	Students should learn the theoretical foundations of digital image processing, including its applications in the acquisition and analysis of images for the production of digital content and some of relevant techniques. They should be able to apply image enhancement and compression techniques.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contents	Topics on the human visual system; General concepts; Digital image processing system; Fundamentals of digital image; Noise removal; Image enhancement; Detection of lines and edges in an image; Detection of the region of interest; Information Theory.
Recommended or required Reading	- Gonzalez, W.(2007). <i>Digital Image Processing</i> . USA: Prentice Hall
Planned learning activities and teaching methods	The course unit is organised in theoretical and practical sessions supported by powerpoint presentations and selected practical exercises.
Assessment Methods and criteria	Assessment consists in a written test and coursework, with both assessment components worthing 50% of the final mark.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Multimedia Networks
Course unit code	301611
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	5
Name of Lecturer(s)	Luís Miguel Lopes de Oliveira Pedro Daniel Frazão Correia
Learning outcomes of the course unit	a) Understand the Quality of Service (QoS) parameters for multimedia traffic support. b) Evaluate the network topologies and technologies for satisfying particular QoS requirements; c) Understand the admission control and congestion control mechanisms; d) Be familiar with the support protocols
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme componentes	Not applicable.
Course contentes	1. Multimedia networking applications. 2. Audio and video coding standards. 3. Quality of experience (QoE) and error resiliency. 2. Protocols for real-time interactive applications 4. Quality of service (QoS). 5. Broadcast Schemes for video, Video-on-demand and Content-Based Retrieval in Digital Libraries 6. Wired and wireless networks design to support multimedia service
Recommended or required Reading	- Li, Z. e Drew, M. (2005). <i>Fundamentals of Multimedia</i> . London: Pearson Education - Ohm, J.(2005). <i>Multimedia Communication Technology</i> . New York: Springer International Edition
Planned learning activities and teaching methods	Theoretical and practical with the support of laboratory equipment, audio-visual tools and practical examples.
Assessment Methods and criteria	Written tests and presentation of individual or group projects.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Seminar II
Course unit code	301614
Type of course unit	Compulsory
Level of Course unit	Second Cycle
Year of Study	First Year
Semester/Trimester when the course unit is delivered	Second Semester
Number of ECTS credits allocated	1
Name of Lecturer(s)	José António Ribeiro Mendes
Learning outcomes of the course unit	1. Be aware of the significance of digital content. 2. Be familiar with the use of digital content to disseminate and promote cultural heritage.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable
Recommended optional programme components	Not applicable.
Course contents	1. The information society, digital agenda 2020 and relevant contents. 2. Digital Content and Cultural heritage 2.1 Digitisation and preservation; 2.2 Visitation; 2.3 Dissemination (virtual and augmented reality)
Recommended or required Reading	<ul style="list-style-type: none"> - Marques, C. e Mendes, J. (2010). <i>Bab</i>. Lisboa: Paginas Livres - Mendes, J.(2009). <i>World Digital Library in Portugal: The Convent of the Order of Christ and the Castle of the Order of the Temple</i>. Dublin: IIMC - Mendes, J.(2010). <i>World Heritage.Computer Science, 1</i>, - Mendes, J. e Marques, C. (2012). <i>teste.teste1, 1</i>,
Planned learning activities and teaching methods	This course unit includes two workshops: one about Part I and another about Part II of the course. Workshops are intended to foster interaction between the lecturers, the guest speakers and the audience involved.
Assessment Methods and criteria	Assessment includes an individual assignment based on the workshops attended.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	Not applicable.

B - Description of individual course units

Course unit title	Project
Course unit code	301616
Type of course unit	Optional
Level of Course unit	Second Cycle
Year of Study	Second Year
Semester/Trimester when the course unit is delivered	Annual
Number of ECTS credits allocated	60
Name of Lecturer(s)	João Manuel Mourão Patrício Cristina Maria Mendes Andrade Helena Cláudia Telo Falcão Neto Ricardo Pereira Triães Gabriel Pereira Pires Pedro Daniel Frazão Correia Luis Agnelo de Almeida Luís Miguel Lopes de Oliveira
Learning outcomes of the course unit	1 - Familiarise with the business world in the sector of digital content production 2 - Be able to organise and develop a long-term project of reasonable complexity.
Mode of delivery	Face-to-face
Prerequisites and co-requisites	Not applicable.
Recommended optional programme components	Not applicable.
Course contents	Topics to be addressed will vary according to student, project and/or internship provider.
Recommended or required Reading	- .., ..to be defined on the basis of the students choice of theme. ∴ .
Planned learning activities and teaching methods	The project will be closely followed by the supervisors.
Assessment Methods and criteria	Oral presentation and discussion to an examination panel.
Language of Instruction	Portuguese Mentoring in English
Work placement(s)	This Course may take the form of an internship in a company or institution.

