



## Study Plan

**School:** School of Arts  
**Degree:** Master  
**Course:** Design (cód. 630)

### 1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
VIS12190M	Project I	Design	9	Semester	243
VIS12191M	Design Methods	Design	3	Semester	78
VIS12192M	Design Theory and Criticism	Design	3	Semester	78
VIS12193M	Strategic Design and Social Innovation	Design	3	Semester	78

#### Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
VIS12198M	Typography	Design	6	Semester	156
VIS12199M	Modeling and Advanced Rendering	Design	6	Semester	156
VIS12200M	Design, Sustainability and Biomimetics	Design	6	Semester	156

### 1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
VIS12194M	Research Methodologies	Visual Arts	3	Semester	78
VIS12195M	New Materials and Technologies	Design	3	Semester	78

#### Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
VIS12201M	Project II - Product Design	Design	12	Semester	312
VIS12202M	Project II - Editorial Design	Design	12	Semester	312
VIS12203M	Editorial Photography	Design	6	Semester	156
VIS12204M	Color, Materials and Finishes	Design	6	Semester	156
VIS12205M	Design Sketching	Design	6	Semester	156

### 2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
VIS12196M	Project III	Design	6	Semester	156
VIS12197M	Seminars Research Projection Design	Design	6	Semester	156
Dissertation					
Project Work					



### 2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Stage Report					

### 2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Dissertation					
Project Work					
Stage Report					

### Conditions for obtaining the Degree:

\*\*\* TRANSLATE ME: Para conclusão do curso é necessário a aprovação (através de avaliação ou creditação) das seguintes unidades curriculares:

1.º Ano

1.º Semestre:

4 UC obrigatórias num total de 18 Ects

2 UC optativa conforme quadro de optativas num total de 12 Ects

2.º Semestre:

2 UC obrigatórias num total de 6 Ects

2 UC optativas conforme quadro de optativas num total de 12 Ects

1 UC optativa conforme quadro de optativas no total de 12

2.º Ano

3.º Semestre:

2 UC obrigatórias num total de 12 Ects

Para obtenção do grau, é necessário também a aprovação na Dissertação, Relatório de Estágio ou Trabalho de Projecto, com um total de 48 ECTS, no 3.º e 4.º Semestre. \*\*\*

## Program Contents

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### Project I (VIS12190M)

The syllabus of the course are oriented design skills deepening in the field of Product Design or Editorial Design, considering the issues of each student's research interest:

1. Phases and assumptions of theoretical-practical research in Design:
  - 1.1. Analysis and exploitation of the method phases;
  - 1.2. Comparative analysis of Case Studies.
2. Application of theoretical and practical research in Design methods:
  - 2.1. Specify the project area;
  - 2.2. Specify the design problem;
  - 2.3. Investigate, understand and validate the problem universe;
  - 2.4. Investigate and understand the user;
  - 2.4. Set goals and specifications;
  - 2.4. Explore and define assumptions of design solution;
  - 2.5. Pre-oriented design for solution.
3. Models of communication and reasoning of intermediate results.



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### **Design Methods (VIS12191M)**

1. Design Method
  - 1.1. The design process from the perspective of different authors;
  - 1.2. Principles, tools and flowcharts.
  - 1.3. Common structure: a comparative analysis of different proposals.
2. Collaborative Methods and Innovation
  - 2.1. Fuzzy Front End
  - 2.1. User-Centered Design
  - 2.2. Design Thinking
  - 2.3. Inclusive Design
  - 2.4. Technological Innovation in Design
3. Design Method vs Scientific Method
  - 3.1. Defining and framing differences between concepts, methods and tools
  - 3.2. Assumptions to consider a theoretical and practical research process
  - 3.3. Scientific method applied to theoretical and practical research in Design: Principles, tools and flowchart.
  - 3.4. Analysis and discussion of Case Studies

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### **Design Theory and Criticism (VIS12192M)**

The syllabus contents of this Course Unit are one of the supports of the theoretical body for the critical reflection underlying the personal project of Research and Development in Design, in one of the three possible modalities: Project Work, Dissertation or Internship Report. They allow to explore and experiment different approaches to Design processes to develop enlightened practices in design.

1. Theory and Criticism:  
Observation and speculation of realities and their discussion through the simplification and systematization of the knowledge produced;
2. Inspirational Intersections:  
Themes, concepts and ideas leading to the transformation of existing ideas into new ones.
3. Research Methods in Design:  
Literature review, case studies, among others.
4. Critical experimentation:  
Critical mapping of ideas and narratives. Fundamental rules for the elaboration of a scientific article.



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### **Strategic Design and Social Innovation (VIS12193M)**

1. Strategic Design and Innovation
  - 1.1. Strategic principles
    - 1.1.1. Innovation as experience;
    - 1.1.2. Innovation as a system;
    - 1.1.3. Innovation as a collaboration culture;
    - 1.1.4. Innovation as a process.
  - 1.2. Innovation process by Design
    - 1.2.1. Setting the Intent;
    - 1.2.2. Knowing the context;
    - 1.2.3. Knowing the business;
    - 1.2.4. Knowing the users;
    - 1.2.5. Setting the structure;
    - 1.2.6. Exploring concepts;
    - 1.2.7. Defining Solutions;
    - 1.2.8. Perform value.
2. Design for Social Innovation
  - 2.1. The concept of social innovation;
  - 2.2. Challenges of Design for Social Innovation;
  - 2.3. design approaches to social situations;
  - 2.4. Essential tools of Design for Social Innovation;
  - 2.5. Facilitate dialogue and co-creation;
  - 2.6. Barriers for Transformation;
  - 2.7. Analysis of case studies.

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### **Typography (VIS12198M)**

1. Contextualization of Typography (generic references)
2. Letter Study - From analog to digital
3. Advanced Typography
  - 3.1. Anatomy and drawing of the letter
  - 3.2. Typemetric
  - 3.3. Introduction to Digital
    - 3.3.1. Expressiveness
    - 3.3.2. Functionality and Usability
    - 3.3.3. Readability
4. Optimization flows - preparation of final arts



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### **Modeling and Advanced Rendering (VIS12199M)**

1. Advance modeling 3D, CAD and CAE:
  - 1.1. Surface (b-splines - nurbs) and solid modeling.
  - 1.2. Assembly constraint
  - 1.3. Animation constraint
  - 1.4. FEA analyse
  - 1.5. Transfer file formats
  - 1.6. 3D printing modeling and surface repair.
2. PCU and GPU render:
  - 2.1. Render engines.
3. Advance Shaders:
  - 3.1. Conductive and insulators materials.
  - 3.2. Shader maps types.
  - 3.3. Shader construction.

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### **Design, Sustainability and Biomimetics (VIS12200M)**

1. Design and Sustainability
  - 1.1 Definition and framework of Ecodesign and Design for Sustainability concepts
  - 1.2. Definition and analysis of the intrinsic variables of the Product Life Cycle
  - 1.3 Identification and analysis of business management strategies oriented towards the success of Design for Sustainability implementation
  - 1.4 Identification and analysis of Sustainable Designed products
  - 1.5 Comparative analysis of Case Studies
2. Design and Biomimicry
  - 2.1. Definition and framework of Biomimicry concept
  - 2.2. Identification and analysis of research aimed strategies for the successful implementation of Biomimicry processes
  - 2.3. Biomimicry, its relation to efficiency and Sustainability concepts
  - 2.4. Identification and analysis of Biomimetic's Design products
  - 2.5. Comparative analysis of Case Studies
3. Sustainability, Biomimicry and Collaborative Design: the importance of transdisciplinarity
4. Application of knowledge to a project.



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### **Research Methodologies (VIS12194M)**

1. Creativity, exercise and production in research.

1.1. Paradigms of research;

1.2. Research and planning;

1.2.1. Strategies of search:

1.2.1.1. Select theme - font selection;

1.2.2. Bibliographical and documentary archives and libraries;

1.2.3. Qualitative and quantitative methods;

1.2.4. Multiplicity of media in research;

1.2.5. Techniques of synthesis and analysis databases: thematic and citation; critical reviews, standards and criteria for citation; primary and secondary bibliography, citations of URLs

1.2.6. Current research through technological means.

2. Presentation of research results.

Organization of speech - summary, review, dissertation.

Types of thesis;

Formal aspects: graphic criteria and drafting;

introduction;

Development;

Quotes;

Footnotes;

conclusion;

Annexes and Appendices;

Indexes;

Bibliography.



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## **New Materials and Technologies (VIS12195M)**

### **1. Materials**

- 1.1 Composite materials;
- 1.2. New plastics and bio plastic materials;
- 1.3 New glass and ceramic materials and its applications;
- 1.4 New metallic materials like mesh foam and sintering;
- 1.5. New natural and regenerative materials;
- 1.6. Materials for additive and subtractive manufacturing.

### **2. Technology**

- 2.1. Manufacturing processes and technologies;
- 2.2. New applications;
- 2.3. Additive and subtractive manufacturing processes.

### **3. Life cycle of new materials**

- 3.1. Environmental and social sustainability;
- 3.2. Product and material's life cycle;
- 3.3. Material's degradation processes and its environmental impact.

### **4. Good practices**

- 4.1. Environmental sustainability;
- 4.2. Social responsibility;
- 4.3. Value an engagement;
- 4.4. Legal aspects and certification.



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### **Project II - Product Design (VIS12201M)**

1. Planning (collective action):
  - 1.1. Defining the project briefing and the respective planning (distribution and scheduling of tasks).
2. Context factors (collective tasks organized by working groups):
  - 2.1. Know and understand the user.
  - 2.2. Understand and interpret the market.
  - 2.3. Analysis of case studies related to the defined problem.
  - 2.4. Identify and define possible technologies and materials.
  - 2.5. Design thinking as a system: to investigate, interpret, question and relate to social, environmental, technological and economic factors inherent in the problem (s) (s) Design, redefining solution hypotheses.
3. Project (individual action)
  - 3.1. Definition of specifications, project goals and tools.
  - 3.2. Exploration, study and selection of design solutions.
  - 3.3. Project development.
  - 3.4. Realization of models and / or intermediate prototypes.
  - 3.5. Testing and validation of intermediate solutions.
  - 3.6. Tuning project in alignment with the test results.
  - 3.7. Defining the colour, materials and finishes details.
  - 3.8. Construction of prototypes for usability testing (CMA – user centred design)
  - 3.9. Validation of Design solution in alignment with the problem.
4. Professional Portfolio (mixed action)
  - 4.1. Analysis of case studies - Professional Portfolio (collective action).
  - 4.2. Systematization of structural models of Portfolio organization (collective action).
  - 4.3. Structural model selection and organization of the project results in Portfolio (individual action).
5. Report overview of the process and project results.

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### **Project II - Editorial Design (VIS12202M)**

The syllabus of the course are geared to the further development of research skills in the area of Editorial Design, which are based on graphic architecture, in speech and graphic narrative:

1. Graphics Architecture
  - 1.1. Approach to architectural design.
  - 1.2. The products of Graphic Architecture: reticles, grids, grid, grids.
  - 1.3. Graphics architecture as a result of methodological.
2. Graphic Narrative
  - 2.1. Graphics; Contragrafismo.
  - 2.2. Cursus; ductus.
  - 2.3. Graphics Families.
  - 2.4. stylistic Families.
3. Speech Chart
  - 3.1. The linguistic material of graphic discourse.
  - 3.2. oral communication to the  $\{\backslash\}\{\backslash\}\{\backslash\}$  "integrational $\{\backslash\}\{\backslash\}\{\backslash\}$  theory" written. "
  - 3.3. Graphic Design on paper or digital, the adjetivação form.
  - 3.4. The essential function of graphical syntax.
4. Publishing project on paper or digital
  - 4.1. Creating a publishing project
  - 4.2. Research and understand the user
  - 4.3. Explore and define solutions and its application in the project
  - 4.4. Project presentation





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### **Editorial Photography (VIS12203M)**

The syllabus of the course unit are oriented to the development of skills in the area of Editorial photography, which is based on the different areas of Editorial photography, as fashion photography, Product, food and Lifestyle publications, printed or digital.

#### **1. Photograph Editorial**

1.1. The function of the Designer / Art Director.

1.2. Design, the preparation and finalisation of an editorial Photo project.

#### **2. Specific concepts**

2.1. Different typologies of editorial photography

2.2. Visual Identity of publication.

2.3. The briefing of production and the PPM (Pré-Production Meeting).

#### **3. Technical concepts**

3.1. Photograph for editorial fashion.

3.2. Photograph for the editorial product.

3.3. Photograph for editorial Gastronomy

3.4. Photo to cover or the entry of publication, Imprensa Digital or different lighting techniques for different results.

3.5. PackShot of Photography

3.6. Lighting Techniques for these different types of photography Editorial

#### **4. Production**

4.1. Planning, projecting

4.2. Pré-Producing.

4.3. Monitoring of production.

4.4. Coordination of work teams.

4.5. Post-production.

4.6. Selection of the image.

4.7. Image scroll press

4.8. Web image pagination

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### **Color, Materials and Finishes (VIS12204M)**

1. Colour, Materials and Finishes: concepts contextualization:

1.1. Design and cultural identity of objects;

1.2. Function objects: Relationship between usability, aesthetic and symbolic factors;

1.3. Objects and sensory stimulation;

1.4. Product and ideological, physical, mental and social satisfaction;

1.5. Colour, Materials and Finishes as emotional design factors.

#### **2. Colour as Finishes:**

2.1. Psychology of Colour: Fundamental principles;

2.2. Cognitive implications of the relationship colour and light;

2.3. Colour as element defining emotional factors;

2.4. Colour as element defining cultural factors;

2.5. Emotional Design: Colour as finishes.

#### **3. Materials and Finishes:**

3.1. Types of finishes: textiles, metals, wood and derivatives, glass, ceramics, plastics and composites.

3.2. Surface and texture: material qualities applied to various materials.

3.3. The color while defining element of emotional factors

3.4. The color while defining element of cultural factors

3.5. Emotional Design: Materials and finishes.

4. Identify and explore the properties of color, materials and finishes in design solutions



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### **Design Sketching (VIS12205M)**

1. Concept drawing:
  - 1.1. Analytical drawing thinking.
  - 1.2. Discovering ideas through drawing process.
2. Representation techniques:
  - 2.1. Sketching styles.
  - 2.2. Mix Mediums drawing.
3. Vanishing point perspective:
  - 3.1. Perspective with 1, 2 and 3 vanishing points.
  - 3.2. Primitive geometry forms.
  - 3.3. Atmospheric effects.
  - 3.4. Line weight.
4. Sketching and color:
  - 4.1. Color manual techniques.
  - 4.2. Color digital techniques.
  - 4.3. Working with texture and volume.
5. Communication Drawing strategies:
  - 5.1. Schematic drawing exploded perspectives.
  - 5.2. Page Composition and organization.
  - 5.3. Sketching portfolio development.

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### **Project III (VIS12196M)**

The programmatic contents of this Course Unit are the theoretical support for the elaboration of the Research Project Proposal and its development.

1. Perspectives for Design:  
Participated speculation about visions of the future;
2. Research and Development Universes in Design:  
Visions; Strategies; Itineraries; Law Suit; Methods; Instruments.
3. The Scientific Work and the Research Project Proposal:  
Title, Abstract; Key words; Index; Introduction (Issues, Research Questions, Objectives); Theoretical Framework / State of the Art; Hypothesis / Argument; Forecast Calendar; References; Bibliography.
4. Variety and Complexity:  
Inspirational references; Design Culture;
5. Experiences and Experimentation in Design:  
Conferences, seminars, workshops and assistance to Final Examination in Design (Viva Voce).

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### **Seminars Research Projection Design (VIS12197M)**

Monitoring tutorial and attendance of the student during the third semester of the Design Master course with the aim of preparing students for the development, presentation and defence of dissertation.

Presentation and sharing, by external experts, of professional experiences of working life and of topics of interest for the development in Design.