

ADVANCED PRODUCT DESIGN PROJECTS I

PROYECTOS AVANZADOS DE DISEÑO DE PRODUCTO I

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

5 hours/week

SUBJECT MATTER: Product and systems design projects

3rd year

1st term

In Advanced Product Design Projects I, students reflect on the environmental footprint of production processes and how certain decisions during the design phase, processes, or materials affect them, and how to minimize their impact. The second part of the course is dedicated to self-management, both in design and production. Students are encouraged to create products with a strong conceptual component, intended for self-production. This second part is closely linked to the Prototype and Model Workshop, which takes place in the second semester of the third year, where the proposals designed in this course will be implemented.

COURSE CONTENT:

Project execution in various fields of specialization. Theoretical and practical foundation and study of product and systems design projects. Definition and execution of product and systems projects, considering usage, expressive, conceptual, technical, production, environmental, and market factors in the current context. Application of strategy and decision-making criteria, innovation, and quality. Application of representation and presentation techniques for the complete definition and communication of the product or system. Budgeting and feasibility analysis. Decision-making based on production viability and quality criteria. Digital technology for project presentation and communication, and product development. Level of project definition appropriate for implementation in the industrial sector. Research methods in design. The design process as research. Studies and application of redesign criteria to existing products. Pre-production. Short runs. Quality criteria. Evaluation and verification. Decision criteria. Sequencing. Identification of needs and generation of design alternatives. Needs analysis techniques. Establishment of product specifications. Specification of the design problem and formulation of design objectives. Determination of trends and variations. Decision criteria.

BIONICS

BIÓNICA

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

3rd year

2nd term

The Bionics course aims to introduce students to solving design problems through mechanisms inspired by nature. Students will learn the fundamentals of Biomimetics, Bionics, and Biomechanics, their historical development, and their applications in product design.

COURSE CONTENT:

Biomimicry. Bionic methodology. Biomechanics. Energy balance and life cycle analysis of materials, products, and processes: Cradle-to-Cradle philosophy. Structures and systems. Research and experimentation methods specific to matter. Physical properties of natural subjects.

COMPUTER MEDIA: PRODUCT DESIGN

MEDIOS INFORMÁTICOS: DISEÑO DE PRODUCTO

COMPULSORY SPECIALTY PRODUCT DESIGN

8 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

1st year

annual term

The general objectives of this course are to foster an understanding of the theoretical foundations of digital language and to recognize the essential role that digital media has played, both conceptually and practically, in the evolution of product design. It also aims to develop knowledge and appropriate use of industry-specific software tools, critically and creatively incorporating the possibilities offered by artificial intelligence into the ideation, development, and communication processes of projects. Furthermore, the course promotes the integration of these resources into students' regular workflows, while simultaneously encouraging a collaborative spirit and the capacity for self-directed learning in a constantly evolving technological context.

COURSE CONTENT:

Digital technology applied to product design. Digital technology for project presentation and communication. Digital technology: Networks and communications. Introduction to computer science. Fundamentals of digital imaging. Digital language and techniques, beginner level: digital image editing software. CAD software: 3D drawing and modeling. 3D digital rendering software. Use of online resources. Innovations in the field of digital image editing, CAD software, and digital rendering. Computer-aided design. Research and experimentation methods specific to the subject.

DIGITAL REPRESENTATION: PRODUCT DESIGN I

REPRESENTACIÓN DIGITAL: DISEÑO DE PRODUCTO I

COMPULSORY SPECIALTY PRODUCT DESIGN

6 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

2nd year

1st term

The general objectives of this course are to foster an understanding of the theoretical foundations of digital language and to recognize the essential role that digital media has played, both conceptually and practically, in the evolution of product design. It also aims to develop knowledge and appropriate use of industry-specific software tools, critically and creatively incorporating the possibilities offered by artificial intelligence into the ideation, development, and communication processes of projects.

COURSE CONTENT:

Digital technology applied to product design. Digital technology for project presentation and communication. Digital technology: Networks and communications. Digital languages and techniques, intermediate level I: Digital image editing software. CAD software: 3D drawing and modeling. 3D digital rendering software. Use of online resources. Computer-aided design tools: digital imaging, CAD software, and digital rendering. Research and experimentation methods specific to the subject.

DIGITAL REPRESENTATION: PRODUCT DESIGN II

REPRESENTACIÓN DIGITAL: DISEÑO DE PRODUCTO II

COMPULSORY SPECIALTY PRODUCT DESIGN

6 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

2nd year

2nd term

The general objectives of this course are to foster an understanding of the theoretical foundations of digital language and to recognize the essential role that digital media has played, both conceptually and practically, in the evolution of product design. It also aims to develop knowledge and appropriate use of industry-specific software tools, critically and creatively incorporating the possibilities offered by artificial intelligence into the ideation, development, and communication processes of projects. Furthermore, the course promotes the integration of these resources into students' regular workflows, while simultaneously encouraging a collaborative spirit and the capacity for self-directed learning in a constantly evolving technological context.

COURSE CONTENT:

Digital technology applied to product design. Digital technology for project presentation and communication. Digital technology: Networks and communications. Digital languages and techniques, intermediate level II: Digital image editing software. CAD software: 3D drawing and modeling. 3D digital rendering and animation software. Use of online resources. Computer-aided design tools: digital image, CAD software, digital rendering, and 3D animation. Research and experimentation methods specific to the subject.

DIGITAL TECHNOLOGY: PRODUCT DESIGN I

TECNOLOGÍA DIGITAL: DISEÑO DE PRODUCTO I

COMPULSORY SPECIALTY PRODUCT DESIGN

4 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

3rd year

1st term

This subject allows you to understand the theoretical foundations of digital imaging and sectoral applications, learn its correct use, assimilate the creative and technical possibilities it offers, integrate the digital tool into the student's usual communication and management processes and, finally, foster a collaborative and self-learning spirit.

COURSE CONTENT:

Digital technology applied to product design. Digital technology for project presentation and communication. Digital technology: Networks and communications. Digital languages and techniques, advanced level I: digital image editing software. CAD software: 3D drawing and modeling. 3D digital rendering and animation software. Use of online resources. Computer-aided design tools: digital image, CAD software, digital rendering, and 3D animation. Research and experimentation methods specific to the subject.

DIGITAL TECHNOLOGY: PRODUCT DESIGN II

TECNOLOGÍA DIGITAL: DISEÑO DE PRODUCTO II

COMPULSORY SPECIALTY PRODUCT DESIGN

4 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

3rd year

2nd term

The subject Digital Technology II: Product Design aims to understand the fundamentals for the representation of 2D-3D digital images in product design, with special attention to the creation of three-dimensional models and scenes, as well as to know the correct use of these tools, assimilate the creative and technical possibilities they offer, integrate the digital tool into the student's usual communication and management processes and promote a collaborative and self-learning spirit.

COURSE CONTENT:

Digital technology applied to product design. Digital technology for project presentation and communication. Digital technology: Networks and communications. Digital languages and techniques, advanced level II: digital image editing software. CAD software: 3D drawing and modeling. 3D digital rendering and animation software. Use of online resources. Computer-aided design tools: digital image, CAD software, digital rendering, and 3D animation. Research and experimentation methods specific to the subject.

ERGONOMICS AND ANTHROPOMETRY I

ERGONOMÍA Y ANTROPOMETRÍA I

COMPULSORY SPECIALTY PRODUCT DESIGN

2 ECTS

2 hours/week

SUBJECT MATTER: Product and systems design projects

2nd year

1st term

In Ergonomics and Anthropometry I, students acquire the theoretical foundations of ergonomics and anthropometry and the ability to use anthropometric tables to correctly size any product. The course balances theoretical content with its application in design projects.

COURSE CONTENT:

Foundations and theoretical-practical study of product and systems design projects. Areas of application of ergonomics. Ergonomic analysis. Anthropometric analysis.

ERGONOMICS AND ANTHROPOMETRY II

ERGONOMÍA Y ANTROPOMETRÍA II

COMPULSORY SPECIALTY PRODUCT DESIGN

2 ECTS

2 hours/week

SUBJECT MATTER: Product and systems design projects

2nd year

2nd term

The specific subject Ergonomics and Anthropometry II belongs to the Product and Systems Projects course, which is taught in the second semester of the second year of the Product Design program. In this course, students tackle the second part of the Ergonomics and Anthropometry I course and apply the theory learned in the first part to practical proposals. They also acquire specific ergonomic and anthropometric knowledge related to the problems faced by product designers. The course balances theoretical content with its application to solving product design problems.

COURSE CONTENT:

Foundations and theoretical-practical study of product and systems design projects. Research methods in design. The design process as research. Ergonomic analysis. Anthropometric analysis. Ergonomics and anthropometry applied to product design. Accessibility.

FUNDAMENTALS OF GRAPHIC DESIGN

FUNDAMENTOS DEL DISEÑO GRÁFICO

COMPULSORY SPECIALTY PRODUCT DESIGN

3 ECTS

2 hours/week

SUBJECT MATTER: Product and systems design projects

3rd year

1st term

In the subject of Fundamentals of Graphic Design, students acquire the knowledge necessary for developing graphic projects, as well as the theoretical foundations and languages that influence their development. Based on these foundations, students should be able to use systems and working methods for developing simple graphic projects applied to product design.

COURSE CONTENT:

Application of representation and presentation techniques for the complete definition and communication of the product or system. Digital technology for presentation, project communication, and product development. Graphic communication. Graphic composition. Text hierarchy. Typography. Editorial design.

GRAPHIC FOR PRODUCTS

GRÁFICA PARA PRODUCTO

COMPULSORY SPECIALTY PRODUCT DESIGN

3 ECTS

2 hours/week

SUBJECT MATTER: Product and systems design projects

3rd year

2nd term

In the Product Graphics course, students apply the knowledge acquired in the first semester's Fundamentals of Graphic Design course to specific graphic design projects related to product design. It is recommended that students have passed the Packaging Projects I course (first semester) since the knowledge acquired in packaging will be applied to the graphic development of these projects.

COURSE CONTENT:

Application of representation and presentation techniques for the complete definition and communication of the product or system. Digital technology for presentation, project communication, and product development. Interdisciplinary product development. The design process as research. Instruction manual. Graphics applied to the product. Surface design: Packaging.

HISTORY OF PRODUCT DESIGN I

HISTORIA DEL DISEÑO DE PRODUCTO I

COMPULSORY SPECIALTY PRODUCT DESIGN

3 ECTS

2 hours/week

SUBJECT MATTER: History of product design

1st year

1st term

The subject of History of Product Design I comprises a chronological journey through product design, its main designers and artistic movements from its historical beginnings in the 18th century, when the demographic increase and the Industrial Revolution determined a technological progress that originated new forms of production, until the end of Modernism, through the analysis of its designs or industrial productions, studying the connection and contextualization of said productions with the historical situation, the aesthetic trends and the prevailing artistic movements, as well as with the scientific development and technological progress.

COURSE CONTENT:

Knowledge, analysis, and historical significance of product design. Movements, designers, and trends. Research methods specific to the field. The acquisition of a general historical understanding of the evolution of industrial design, in its various aspects, from the Industrial Revolution to the end of modernism, beginning with an introduction that establishes its relationship to preceding periods. The association of the industrial product with its time, considering the historical context, aesthetic trends, and artistic movements, as well as scientific development and technological progress. Understanding the different conceptions of the industrial product throughout this period and their materialization in successive design movements.

HISTORY OF PRODUCT DESIGN II

HISTORIA DEL DISEÑO DE PRODUCTO II

COMPULSORY SPECIALTY PRODUCT DESIGN

3 ECTS

2 hours/week

SUBJECT MATTER: History of product design

#VALUE! year

2nd term

The subject of History of Product Design II comprises a chronological journey through product design, its main designers and artistic movements from the first decade of the 20th century, when proto-rationalist ideas laid the foundations of the new aesthetics and industrial production, up to the 1950s, through the analysis of its designs or industrial productions, studying the connection and contextualization of these productions with the historical situation, the aesthetic trends and the prevailing artistic movements, as well as with scientific development and technological progress.

COURSE CONTENT:

Knowledge, analysis, and historical significance of product design. Movements, designers, and trends. Research methods specific to the field. The acquisition of a general historical understanding of the evolution of industrial design, in its various aspects, from the first decade of the 20th century to the 1950s, beginning with an introduction that establishes its relationship to preceding situations. The association of the industrial product with its time, considering the historical context, aesthetic trends, and artistic movements, as well as scientific development and technological progress. Understanding the different conceptions of the industrial product throughout this period and their materialization in successive design movements.

HISTORY OF PRODUCT DESIGN III

HISTORIA DEL DISEÑO DE PRODUCTO III

COMPULSORY SPECIALTY PRODUCT DESIGN

3 ECTS

2 hours/week

SUBJECT MATTER: History of product design

3rd year

1st term

The subject of History of Product Design III comprises a chronological journey through product design, its main designers and artistic movements from the sixties of the twentieth century, to the present, through the analysis of its designs or industrial productions, studying the connection and contextualization of said productions with the historical situation, the aesthetic trends and the prevailing artistic movements, as well as with the scientific development and technological progress.

COURSE CONTENT:

Knowledge, analysis, and significance of the most relevant current products. Designers, movements, and current trends. Research methods specific to the field. Knowledge of theories, trends, and key product designers from the 1960s to the present. Training in the various aspects involved in developing critical analysis skills for the present day, considering design as a form of communication, and acquiring tools for analyzing product design.

INTRODUCTION TO THE PRODUCT DESIGN PROJECT

INICIACIÓN AL PROYECTO DE DISEÑO DE PRODUCTO

COMPULSORY SPECIALTY PRODUCT DESIGN

6 ECTS

6 hours/week

SUBJECT MATTER: Product and systems design projects

1st year

2nd term

The aim of this course is to introduce students to the fundamentals of product design project development. Students will solve problems arising from projects within the specialization at a basic level, paying particular attention to the concept, the idea, and the degree of communication of the proposals.

COURSE CONTENT:

Project development in various fields of specialization. Theoretical and practical foundations and study of product and systems design projects. Research methods in design. The design process as research. Analysis of industrial production. Development of basic projects at a conceptual and functional level. Application of design principles. Application of design methodologies. Project phases: Creativity techniques. Ideation and sketching. Practical foundation of the procedures, techniques, languages, and methodologies for project development and their application in the conception and resolution of projects. Project resolution. Workshop and final drawings. Report. Models, mock-ups, and prototypes. Evaluation of results.

MANUFACTURING PROCESSES

PROCESOS DE FABRICACIÓN

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

2nd year

1st term

The subject of Manufacturing Processes aims to provide a global view of the different mechanisms of transformation of materials into products, based on their physical, chemical and mechanical properties, in order to meet the technical knowledge needs of a product designer.

COURSE CONTENT:

Energy balance and life cycle analysis of materials, products, and processes. Tools for assessing and projecting the technical aspects of product design: Product development. Research and experimentation methods specific to the subject. Tools for assessing and projecting the technical aspects of product design: material response to transformation, simulation of working conditions, and analysis of transformation possibilities. Study of products based on manufacturing processes.

MATERIALS: PRODUCT DESIGN

MATERIALES: DISEÑO DE PRODUCTO

COMPULSORY SPECIALTY PRODUCT DESIGN

6 ECTS

2 hours/week

SUBJECT MATTER: Materials and technology applied to product design

1st year

annual term

The subject is oriented to study and acquire the basic knowledge so that the product designer can achieve the ability to solve technical problems that may arise in his professional life and throughout higher design studies; they are a basic tool to know the properties and characteristics of the materials with which we design the objects that surround us.

COURSE CONTENT:

Physical, chemical, and mechanical properties of materials. Energy balance and life cycle analysis of materials, products, and processes. Research and experimentation methods specific to the subject. Energy balance and life cycle analysis of materials: Materials procurement and recycling. Materials testing. Corrosion and fatigue of materials.

PACKAGING PROJECTS I

PROYECTOS DE ENVASES Y EMBALAJES I

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

4 hours/week

SUBJECT MATTER: Packaging and container projects

3rd year

1st term

The subject focuses on introducing the product designer to the area of packaging and labeling. Students acquire the necessary general knowledge to carry out projects and are subsequently able to develop proposals for practical cases related to the paper/cardboard sector and the environmental responsibility of the designer in the sector.

COURSE CONTENT:

Graphic design applied to packaging. Development of packaging design projects. Origin and evolution of the functional and communicative aspects of packaging. Functions of packaging: protective and communicative. Concept/idea in packaging projects. Sustainable packaging. Recycling and reuse. Packaging projects: paper and cardboard.

PACKAGING PROJECTS II

PROYECTOS DE ENVASES Y EMBALAJES II

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

4 hours/week

SUBJECT MATTER: Packaging and container projects

3rd year

2nd term

The course focuses primarily on the development of packaging projects related to the glass, metal, and plastics sectors. Students acquire industry-specific knowledge to later carry out projects using these materials.

COURSE CONTENT:

Design projects for packaging and containers. Research methods in design. The design process as research. Industrial processes and materials applied to the sector. Closure systems. Packaging and transport. Packaging projects: plastic, glass, and metal.

PHYSICS OF DESIGN

FÍSICA DEL DISEÑO

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

2nd year

2nd term

The subject of Physics of Design is an approach to design and the scientific world behind it, taking a journey through the basic physical principles that govern the objects that surround us and their applications.

COURSE CONTENT:

Research and experimentation methods specific to the subject. Tools for evaluating and projecting the technical aspects of product design: vector analysis, application of physical laws, and analytical study of objects. Statics and dynamics applied to the product design specialty. Study of products based on the basic principles and magnitudes of physics applied to design. Research and experimentation methods specific to the subject. Articulated quadrilaterals, gears, and simple mechanisms.

PRODUCT DESIGN PROJECTS I

PROYECTOS DE DISEÑO DE PRODUCTO I

COMPULSORY SPECIALTY PRODUCT DESIGN

6 ECTS

6 hours/week

SUBJECT MATTER: Product and systems design projects

2nd year

1st term

In Product Design Projects I, students face the definition and realization of product and system projects, according to usage, expressive, conceptual, technical, productive, environmental and market factors, at the present time.

COURSE CONTENT:

Project execution in various fields of specialization. Theoretical and practical foundation and study of product and systems design projects. Definition and execution of product and systems projects, considering current usage, expressive, conceptual, technical, production, environmental, and market factors. Application of strategy and decision-making criteria, innovation, and quality. Application of representation and presentation techniques for the complete definition and communication of the product or system. Budgeting and feasibility analysis. Decision-making based on production viability and quality criteria. Digital technology for project presentation and communication, and product development. Project definition level appropriate for implementation in the industrial sector. Research methods in design. The design process as research. Studies and application of redesign criteria to existing products. Pre-production. Short runs. Quality criteria. Evaluation and verification. Decision criteria. Sequencing. Identification of needs and generation of design alternatives. Needs analysis techniques. Establishment of product specifications. Specification of the design problem and formulation of design objectives. Determination of trends and variations. Decision criteria.

PRODUCT DESIGN PROJECTS II

PROYECTOS DE DISEÑO DE PRODUCTO II

COMPULSORY SPECIALTY PRODUCT DESIGN

6 ECTS

6 hours/week

SUBJECT MATTER: Product and systems design projects

2nd year

2nd term

In Product Design Projects II, students face the task of defining and carrying out product and system projects, taking into account current usage, expressive, conceptual, technical, production, environmental, and market factors.

COURSE CONTENT:

Implementation of projects in various fields of specialization. Theoretical and practical foundations and study of product and systems design projects. Definition and implementation of product and systems projects, considering usage, expressive, technical, production, environmental, and market factors. Definition and implementation of product and systems projects according to production processes and materials analysis. Innovation and quality criteria. Project resolution methods. Evaluation and verification. New technologies applied to design and industrial production. Comprehensive computer science and integrated design. Modeling and simulation. Practical application of analysis, synthesis, and methodology criteria. Decision criteria. Project resolution.

PROTOTYPE AND MODEL WORKSHOP

TALLER DE PROTOTIPOS Y MAQUETAS

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

5 hours/week

SUBJECT MATTER: Product and systems design projects

3rd year

2nd term

In the Prototype and Model Workshop course, students develop prototypes that are used in the process and final version of the product design project. The prototypes will be based primarily on projects from the Advanced Product Design Projects I course, which students will have taken in the first semester; therefore, it is recommended that they have passed this course.

COURSE CONTENT:

Modeling and prototyping processes and techniques. Application of representation and presentation techniques for the complete definition and communication of the product or system. Research methods in design. The design process as research. Application of CAM software to product development. Adapting the design to production processes for short runs. Working models. Processing information for execution on numerically controlled machines. Tools specific to prototype development. Prototype troubleshooting. Prototype verification.

STRUCTURES AND SYSTEMS

ESTRUCTURAS Y SISTEMAS

COMPULSORY SPECIALTY PRODUCT DESIGN

5 ECTS

4 hours/week

SUBJECT MATTER: Materials and technology applied to product design

3rd year

1st term

The Structures and Systems course is intended as a continuation of the second-year Physics of Design course. This course will analyze the forces acting on the structures and systems that product designers use in their projects. It will also cover General Systems Theory and its implications for the world of design.

COURSE CONTENT:

Physical, chemical, and mechanical properties of materials. Structures and systems. Tools for evaluating and projecting the technical aspects of product design. Product development. Research and experimentation methods specific to the subject. Tools for evaluating and projecting the technical aspects of product design: stress analysis, safety factors, and deformation and fracture simulation. Systems theory. Interaction between systems. Complex mechanisms.