3S_FB_Anthropometry and Ergonomics

Qualification: Degree in Higher Artistic Education in Design in the specialties of graphic design, interior design, fashion design and product design.

Subject: Design fundamentals

Type: TrainingBasic

Credits:4 ECTS

Course:2

Semester: 3r

Language in which it is taught: Catalan / Spanish

Prerequisites: Cap

Total hours:100h

Hours/week:6.3 hours

Face-to-face hours/week:3h

Self-employed hours/week:3.3h

1. Presentation of the subject

This subject aims to make future professionals aware of the importance of ergonomics and anthropometry and provide the foundations for their application in the design field.

Design is conceived by people and for people, an obvious fact often forgotten by professionals, who are more concerned with aesthetics or functionality than with the users of their designs. This is a key concept that students will learn and value, to incorporate it as an essential basis for design.

The general contents of the subject are structured around the user, both in the physical and psychological realms. It is essential to know the essential characteristics of the human body and its biomechanical possibilities. Equally important is to understand the needs and desires of the user, taking into account their diversity. And, of course, to study the principles of ergonomics and anthropometry, as well as their application to design.

2. Course contents

Design for All: definition, criteria and strategies.
The user and their needs.
Introduction to bionics.
The human body.
Basics of biomechanics.
Introduction to ergonomics.
Fundamentals of anthropometry.
Ergonomics and anthropometry applied to design.

3. Skills worked on in the subject(Real Decree 633/2010)

Transversal skills		Subject	Subject
CT-08	Develop ideas and arguments in a reasoned and critical manner.	X	X
CT-11	Develop in work practice a professional ethic based on aesthetic, environmental and diversity appreciation and sensitivity.	X	X

General skills		Subject	Subject
CG-04	Have a scientific view on the perception and behavior of form, matter, space, movement and color.	X	X
CG-08	Propose research and innovation strategies to resolve expectations focused on functions, needs and materials.	X	X

Specific Graphic Design skills		Subject	Subject
GRA-06	Interrelate formal and symbolic languages with specific functionality.	X	X

Specific Interior Design skills		Subject	Subject
INT-06	Interrelate formal and symbolic languages with specific functionality	X	X

Specific Fashion Design skills		Subject	Subject
MOD-07	Interrelate formal and symbolic languages with specific functionality	X	X

Specific Product Design Skills		Subject	Subject
PRO-04	Value and integrate the aesthetic dimension in relation to the use and functionality of the product	X	X

4. Learning outcomes

RA	Description of the learning outcome	Skills
RA1	Defining Design for All.	CT-08 / CT-11 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA2	Recognize whether user diversity is taken into account in designs.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA3	Examine the accessibility of the environment based on the criteria and strategies of Design for All.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 /

		MOD-07 / PRO-04
RA4	Identify the user's needs and desires through different methodologies.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA5	Analyze products and environments based on ergonomic and anthropometric needs, taking into account the diversity of the user. Distinguish the positions and movements that the human being performs in a determined context.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA6	Assess the positions and movements of the human being based on their well-being and comfort.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA7	Recognize basic principles of ergonomics. Apply ergonomic criteria to specific design problems. Identify the basics of anthropometry.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA8	Know the procedural bases of the scientific method and its interpretation.	CT-08 / CT-11 / CG-04 / GRA-06
RA9	Determine the measurements of a design based on the anthropometric data of the population.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA10	Arguing the suitability of a design from an ergonomic and anthropometric point of view.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04

5. Teaching methodologies of the subject

Code	Typology	Description	Apply
MD1	Conference and/or master class	The teacher presents and transmits knowledge to the entire group of students, the student has a passive role, that of a receiver.	AF1 / AF2 / AF3
MD2	Debate and/or discussion	The teacher encourages and moderates debates and/or discussions that promote reflection, critical thinking and active participation of students in the classroom.	AF1 / AF2 / AF3

MD3	Readings and/or comments	Use of selected texts or materials as a starting point to promote reflection, critical understanding and debate among students.	AF1 / AF2 / AF3
MD4	Tests and/or exams	Formal and structured activity to collect evidence on the degree of achievement of knowledge, skills or competencies by students. This can be written, oral or practical and includes a variety of formats: questionnaires, problems, open questions, practical exercises, etc.	AF1 / AF2 / AF3
MD5	Workshops and/or internships	Carrying out practical activities applied in a controlled environment, oriented towards learning through experience and/or the transfer of theoretical knowledge to real or simulated situations.	AF1 / AF2 / AF3
MD6	Presentations and/or defenses	Publicly presenting the results of a work, project or research in front of an audience.	AF1 / AF2
MD7	Case study	Analysis of situations or problems within the specialty with the aim of reflecting, analyzing and discussing different intervention or solution proposals through examples or references.	AF1 / AF2 / AF3
MD8	Project work	Project or problem based on the real or professional world that needs to be solved independently or in a group.	AF2
MD9	Guided practice	The teacher presents and transmits theoretical knowledge applied to practical activities that take place in the classroom. The teacher guides, supervises and gives active feedback during the practice.	AF1 / AF2 / AF3
MD10	Flipped classroom	Transfer part of the theoretical learning outside the classroom, through online materials or resources prepared by the teacher, to dedicate face-to-face time to practical, participatory activities and knowledge application.	AF1 / AF2 / AF3
MD11	Collaborative work	Joint construction of knowledge through interaction and collaboration between students. The teacher has a guiding and dynamizing role.	AF1 / AF2 / AF3
MD12	Agile methodologies	Type of teamwork in which work is carried out in several short periods of time.	AF2
MD13	Role-playing games	Role play with the aim of illustrating a situation and the different points of view on it.	AF1 / AF2 / AF3

6. Training activities of the subject

Code	Description	Duration	Percentage
AF1	Case analysis (teamwork development).	5 weeks	30-50%
AF2	Reworking possible alternatives to a problem.	5 weeks	30-50%
AF3	Dossier of collection of different complementary activities carried out during the course.	Throughout the course	20-40%

7. Evaluation systems

Due to their typology and educational program, all subjects in the ESDAPC undergraduate design studies include continuous assessment as a procedure to regulate and qualify the learning achieved by students during the semester.

In the event of not achieving the level of sufficiency in the evaluation activities within the closing milestones set out in the subject's schedule, the activities not passed may be corrected and/or completed within the recovery procedure defined by the teaching staff in their schedule.

7.1. Continuous evaluation

General evaluation criteria

The ESDAPC sets some **general evaluation criteria** which are common to all teaching guides, without prejudice to the specific evaluation and grading criteria of each subject:

- Subject grading: A weighted average of the grades obtained in each of the training activities will be made in accordance with the percentages described in the teaching guide and classroom schedule. The subject will be passed with a grade of 5.0 (Pass). All assessment activities can be corrected and/or completed within the recovery procedure within the continuous assessment that the teaching staff defines in their classroom schedule.
- Class attendance is essential to ensure that learning is progressive, flexible and allows feedback and adjustments in its achievement within the continuous assessment. For this reason, class attendance is mandatory. The teaching staff establishes the mechanisms to monitor it. Students who do not attend a minimum of 80% of the face-to-face hours of the subject lose the right to continuous assessment.and may present for remediation outside of the continuous assessment defined in the teaching guide and classroom schedule for the subject.In cases of serious absenteeism, with attendance of less than 60% of the face-to-face hours of the subject, the student will lose the right to be evaluated and will have a grade of "Not Presented".
- The ability to organize and plan tasks is part of the learning outcomes that the student must achieve within the training process, therefore, the deliverables of the evaluation activities must conform to the deadlines, the format and contents defined in the activity statement to be graded. Activities submitted after the deadline, format and/or minimum content will be considered outside the continuous assessment process, will not be evaluated within it and may be resubmitted as a retake.
- In the event of a submission or exam coinciding with a force majeure situation, the student may request to submit an activity after the deadline or repeat an exam, without being considered out of continuous assessment. This submission or exam will be carried out according to the conditions and calendar determined by the teaching staff.

- Force majeure is understood to mean: serious illness or temporary incapacity (hospitalization) of the student or a first-degree relative, coincidence with an official language level or driving license exam, inexcusable duties before the administration or death of a first- or second-degree relative. It must be requested in an argumented and justified manner in the form of generic application, addressed to the campus management, and must necessarily include the original with a stamp of the document proving the major cause alleged.

- The evaluation process is based on the student's personal work and presupposes the authenticity of the authorship and originality of the exercises carried out. Any act of copying and/or plagiarism or irregular use of Artificial Intelligence (AI) will result in the immediate and irrevocable suspension of the assessable activity, without the right to recovery.

However, and without contradicting these general criteria, each teacher may define other specific complementary conditions, which are included in this teaching guide.

These complementary conditions cannot in any case result in a penalty or limitation of the qualification of an activity, nor the loss of the right to recover an activity.

Specific evaluation criteria within continuous evaluation

- Selection of significant cases (10% to 25%). LO7 Recognize basic principles of ergonomics.
- Ability to collect appropriate information (10% to 25%): LO3 Examine the accessibility of the environment based on the criteria and strategies of Design for All / LO6 Evaluate the positions and movements of human beings based on their well-being and comfort.
- Level of in-depth analysis (20% to 35%): LO1 Define Design for All / LO4 Identify user needs and desires using different methodologies / LO5 Analyze products and environments based on ergonomic and anthropometric needs, taking into account diversity.
- Capacity to draw conclusions (20% to 35%): LO2 Recognize whether user diversity is taken into account in designs. LO8 Know the procedural bases of the scientific method and its interpretation / LO9 Determine the measurements of a design based on the anthropometric data of the population / LO10 Argue the suitability of a design from an ergonomic and anthropometric point of view.
- Effective team coordination (4% to 10%).
- Responsible participation in group work (acquisition of roles or tasks) (3% to 10%).
- Promoting communication and respect between the different team members (3% to 10%).
- Presentation, structure, form and order of the document (5% to 15%).

Evaluation instruments within continuous evaluation

During the development of the activities, monitoring will be carried out in the classroom with direct observations and individual and/or group oral feedback. Within the indicated period, the various activities will be submitted electronically and, subsequently, individual and/or group feedback will be returned.

7.2. Recovery

General recovery criteria

The ESDAPC sets general recovery criteria that are common to all teaching guides, without prejudice to the specific evaluation and grading criteria of each subject:

- The ESDAPC provides for a single recovery per activity. The recovery of suspended activities will be done within the deadlines defined by the teachers in their classroom schedule within the same semester. In the event that the teachers have not established a recovery calendar, students may submit the recovery activities during the last school week of the semester.

Specific recovery criteria within continuous assessment

The recovery instruments will be: Within the indicated period, the telematic delivery of the activity will be made, incorporating improvements based on indications and individual and/or group feedback, in the ordinary delivery of the activity.

The same criteria are described in the section "*specific evaluation criteria within continuous evaluation".*

Specific recovery criteria outside of continuous assessment

Students who do not meet the format and deadline conditions will have to submit the activity and, in addition, carry out an oral defense of their activity in person. Students who do not meet the minimum attendance will, in addition, have to take a written test.

In any case, the same criteria described in the section "specific evaluation criteria within the continuous evaluation" will be assessed, except, where applicable, the teamwork sections.

Subject recovery instruments outside of continuous assessment

Within the indicated period, the activity will be submitted electronically and an oral defense of the activity will be held in person. Students who do not meet the minimum attendance requirements will additionally have to take a written test.This test will account for 30% of the final grade for the subject; the remaining 70% will correspond to the final result of the activities according to the weighting of the continuous assessment.

8. Educational care within the framework of an inclusive education system

This Teaching Guide takes into account educational care within the framework of an inclusive educational system that includes two reference frames that support it:

- MISU: Universal Measures and Supports to promote personal and social development in equity and equality.
- DUA: Universal Learning Design, which allows flexible learning situations to be created based on a design

that detects and minimizes the barriers of the context, from the beginning, and that considers variability.

However, to ensure freedom of thought and opportunities in relation to the gender perspective, a co-educational dynamic is carried out that avoids the predisposition of differential treatment, role attributions or assumptions of abilities determined by gender.

The MISU and DUA will be applied to all ESDAPC students. Those students in need of additional measures and support will be included through an Individualized Support Plan.

9. Copying, plagiarism, and academic honesty

From a legal point of view, plagiarism is an infringement of copyright.

The ESDAPC NOFC describes in section 5.4 irregular conduct in the evaluation procedure, which includes copying or plagiarism in any academic activity.

10. Use of Artificial Intelligence (AI)

The ESDAPC recognizes the value of Artificial Intelligence (AI) in the educational field, while highlighting the risks it entails if it is not used ethically, critically and responsibly. The use of AI in the teaching and evaluation context is governed by the principles, criteria and recommendations established in the ESDAPC Guide to the Ethical and Responsible Use of Artificial Intelligence, which constitutes the institutional reference document in this matter.

In this sense, in each assessment activity, students will be informed about the AI tools and resources that can be used and under what conditions, recommending their use as an assistance tool during the research, analysis or conceptual exploration process, but not as a replacement for their own work or professional judgment.

For their part, students undertake to follow the instructions of the ESDAPC when carrying out the assessment activities, as well as the criteria included in the Guide for the Ethical and Responsible Use of AI. Within this framework, students must transparently cite the AI tools used and explicitly identify texts, images or other content generated with AI systems, which may not be presented as their own production.

Misuse of Artificial Intelligence can seriously affect the evaluation of assessment activities. In case of doubt, it is recommended that students consult the teacher responsible for the subject before submitting.

The specifics of the use of Artificial Intelligence in each subject —including the authorized tools, conditions of use and associated evaluation criteria— will be defined in the classroom programming, where teachers will contextualize the Teaching Guide and the Guide for the Ethical and Responsible Use of AI based on the objectives, skills and methodologies of the subject.

In all cases, students are responsible for any possible errors, omissions or biases that may be generated by the Artificial Intelligence used in the work process.

11. Sources of information and teaching resources

Basic bibliography

Ania, M. J. (2016). Accessible exhibitions. Criteria for eliminating communication barriers and facilitating access to content. Barcelona: Barcelona Institute of Culture and Municipal Institute for People with Disabilities, Barcelona City Council. Retrieved from: https://media-edg.barcelona.cat/wp-content/uploads/2016/10/Exposicions-accessibles_web-acc.pdf

Flores, C. (2001). Ergonomics for design. Mexico: Designio.

Reference bibliography and other resources

Aragall, F. (2008). Design for all. A set of tools. Retrieved from: https://biblioteca.fundacionONCE.es/publicaciones/colecciones-propias/coleccion-accesibilidad/diseno-para-todos-un-junto-de

Bustamante, A. (2008). Ergonomics for designers. Madrid: MAPFRE.

Carmona, A. (2003). Anthropometric aspects of the Spanish working population applied to industrial design. Madrid: INSHT Editions.

Costa, J. (2007). Designing for the eyes. Barcelona: Costa dot com.

Clavería, N. (2019). Design for All versus specific needs. Healthcare understood from the user's perspective. Inmaterial. Design, Art and Society, 4(8), pp. 131-163. Retrieved from: https://www.researchgate.net/publication/339630447_Design_for_All_versus_necesidades_especificas_La_sanidad_eunderstood_from_the_user

Claveria. N (2018). Design for All. The Past that Provides a Future. ICDHS. Back to the Future. The Future in the Past. Barcelona, 29,30 i 31 d'octubre 2018. Recuperat de: https://www.researchgate.net/publication/330669310_Design_for_All_The_Past_that_Provides_a_Future

Jardí, E. and Surís, E. (2012). Exhibition design and accessibility. Recommendations for a design for everyone. Barcelona: ArticketBCN.

McCormick, E. (1980) Ergonomics. Barcelona: Gustavo Gili.

Mondelo, P. et al. (1999). Ergonomics 1. Fundamentals. Barcelona: Ediciones UPC.

Mondelo, P. et al. (2001). Ergonomics 3. Job design. Barcelona: Edicions UPC.

Mondelo, P. et al. (2001). Ergonomics 4. Office work. Barcelona: Edicions UPC.

Neufert, E. (2006). The art of architectural design. Barcelona: Gustavo Gili.

12. Content blocks

ACTIVITY 1	Duration: 5 weeks	Weighting: **30 > 50 %**

Description of the activity

Case analysis; the activity aims to analyze the need, using methods and knowledge specific to anthropometry and ergonomics (teamwork development).

Contents

- Design for All: definition, criteria and strategies.
- The user and their needs.
- The human body.
- Fundamentals of anthropometry.

Skills

CT-08	Develop ideas and arguments in a reasoned and critical manner.
CT-11	Develop in work practice a professional ethic based on aesthetic, environmental and diversity appreciation and sensitivity.
CG-04	Have a scientific view on the perception and behavior of form, matter, space, movement and color.
CG-08	Propose research and innovation strategies to resolve expectations focused on functions, needs and materials.
GRA-06	Interrelate formal and symbolic languages with specific functionality. Graphic Design
INT-06	Interrelate formal and symbolic languages with specific functionality. Interior Design
MOD-07	Interrelate formal and symbolic languages with specific functionality. Fashion Design
PRO-04	Value and integrate the aesthetic dimension in relation to the use and functionality of the product. Product Design

Teaching methodologies applied:

MD1	Conference and/or master class	The teacher presents and transmits knowledge to the entire group of students, the student has a passive role, that of a receiver.
MD2	Debate and/or discussion	The teacher encourages and moderates debates and/or discussions that promote reflection, critical thinking and active participation of students in the classroom.
MD3	Readings and/or comments	Use of selected texts or materials as a starting point to promote reflection, critical understanding and debate

		among students.
MD4	Tests and/or exams	Formal and structured activity to collect evidence on the degree of achievement of knowledge, skills or competencies by students. This can be written, oral or practical and includes a variety of formats: questionnaires, problems, open questions, practical exercises, etc.
MD5	Workshops and/or internships	Carrying out practical activities applied in a controlled environment, oriented towards learning through experience and/or the transfer of theoretical knowledge to real or simulated situations.
MD6	Presentations and/or defenses	Publicly presenting the results of a work, project or research in front of an audience.
MD7	Case study	Analysis of situations or problems within the specialty with the aim of reflecting, analyzing and discussing different intervention or solution proposals through examples or references.
MD9	Guided practice	The teacher presents and transmits theoretical knowledge applied to practical activities that take place in the classroom. The teacher guides, supervises and gives active feedback during the practice.
MD10	Flipped classroom	Transfer part of the theoretical learning outside the classroom, through online materials or resources prepared by the teacher, to dedicate face-to-face time to practical, participatory activities and knowledge application.
MD11	Collaborative work	Joint construction of knowledge through interaction and collaboration between students. The teacher has a guiding and dynamizing role.
MD13	Role-playing games	Role play with the aim of illustrating a situation and the different points of view on it.

Learning outcomes

RA1	Defining Design for All.	CT-08 / CT-11 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA2	Recognize whether user diversity is taken into account in designs.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA3	Examine the accessibility of the environment based on the criteria and strategies of Design for All.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA4	Identify the user's needs and desires	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04

	through different methodologies.	
RA5	Analyze products and environments based on ergonomic and anthropometric needs, taking into account the diversity of the user. Distinguish the positions and movements that the human being performs in a determined context.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA6	Assess the positions and movements of the human being based on their well-being and comfort.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA8	Know the procedural bases of the scientific method and its interpretation.	CT-08 / CT-11 / CG-04 / GRA-06

Continuous evaluation

Specific evaluation criteria within continuous evaluation

- Selection of significant cases (10% to 25%): LO1 Define Design for All.
- Ability to collect appropriate information (10% to 25%): LO3 Examine the accessibility of the environment based on the criteria and strategies of Design for All / LO6 Evaluate the positions and movements of human beings based on their well-being and comfort.
- Level of in-depth analysis (20% to 35%): LO4 Identify the user's needs and desires using different methodologies / LO5 Analyze products and environments based on ergonomic and anthropometric needs, taking into account the diversity of the user.
- Ability to draw conclusions (15% to 35%): LO2 Recognize whether user diversity is taken into account in designs. LO8 Know the procedural bases of the scientific method and its interpretation.
- Effective team coordination (3% to 10%).
- Responsible participation in group work (acquisition of roles or tasks) (3% to 10%).
- Promoting communication and respect between the different team members (2% to 5%).
- Presentation, structure, form and order of the document (5% to 15%).

Evaluation instruments within continuous evaluation

During the development of the activity, classroom monitoring will be carried out with direct observations and individual and/or group oral feedback. Within the indicated period, the activity will be submitted electronically and, subsequently, individual and/or group feedback will be returned.

Specific recovery criteria within continuous assessment

The recovery instruments will be: Within the indicated period, the telematic delivery of the activity will be made, incorporating improvements based on indications and individual and/or group feedback, in the ordinary delivery of the activity. The same criteria are described in the section "*specific evaluation criteria within continuous evaluation*".

Recovery outside of continuous assessment

Specific recovery criteria outside of continuous assessment

Students who do not meet the format and submission deadline conditions will have to submit the activity and, in addition, carry out an oral defense of their activity in person. Students who do not meet the minimum attendance will, in addition, have to take a written test.

In any case, the same criteria described in the section "specific evaluation criteria within the continuous evaluation" will be assessed, except, where applicable, the teamwork sections.

Recovery instruments outside of continuous assessment

Within the indicated period, the activity will be submitted electronically and an oral defense of the activity will be held in person. Students who do not meet the minimum attendance requirements will additionally have to take a written test.

ACTIVITY 2	Duration: 5 weeks	Weighting: **30 > 50 %**

Description of the activity

Reworking possible alternatives to a problem.

Contents

- Design for All: definition, criteria and strategies.
- The user and their needs.
- Introduction to bionics.
- The human body.
- Basics of biomechanics.
- Introduction to ergonomics.
- Fundamentals of anthropometry.
- Ergonomics and anthropometry applied to design.

Skills

CT-08	Develop ideas and arguments in a reasoned and critical manner.
CT-11	Develop in work practice a professional ethic based on aesthetic, environmental and diversity appreciation and sensitivity.
CG-04	Have a scientific view on the perception and behavior of form, matter, space, movement and color.
CG-08	Propose research and innovation strategies to resolve expectations focused on functions, needs and materials.
GRA-06	Interrelate formal and symbolic languages with specific functionality. Graphic Design
INT-06	Interrelate formal and symbolic languages with specific functionality. Interior Design
MOD-07	Interrelate formal and symbolic languages with specific functionality. Fashion Design
PRO-04	Value and integrate the aesthetic dimension in relation to the use and functionality of the product. Product Design

Applied teaching methodologies

MD1	Conference and/or master class	The teacher presents and transmits knowledge to the entire group of students, the student has a passive role, that of a receiver.
MD2	Debate and/or discussion	The teacher encourages and moderates debates and/or discussions that promote reflection, critical thinking and active participation of students in the classroom.

MD3	Readings and/or comments	Use of selected texts or materials as a starting point to promote reflection, critical understanding and debate among students.
MD4	Tests and/or exams	Formal and structured activity to collect evidence on the degree of achievement of knowledge, skills or competencies by students. This can be written, oral or practical and includes a variety of formats: questionnaires, problems, open questions, practical exercises, etc.
MD5	Workshops and/or internships	Carrying out practical activities applied in a controlled environment, oriented towards learning through experience and/or the transfer of theoretical knowledge to real or simulated situations.
MD6	Presentations and/or defenses	Publicly presenting the results of a work, project or research in front of an audience.
MD7	Case study	Analysis of situations or problems within the specialty with the aim of reflecting, analyzing and discussing different intervention or solution proposals through examples or references.
MD8	Project work	Project or problem based on the real or professional world that needs to be solved independently or in a group.
MD9	Guided practice	The teacher presents and transmits theoretical knowledge applied to practical activities that take place in the classroom. The teacher guides, supervises and gives active feedback during the practice.
MD10	Flipped classroom	Transfer part of the theoretical learning outside the classroom, through online materials or resources prepared by the teacher, to dedicate face-to-face time to practical, participatory activities and knowledge application.
MD11	Collaborative work	Joint construction of knowledge through interaction and collaboration between students. The teacher has a guiding and dynamizing role.
MD12	Agile methodologies	Type of teamwork in which work is carried out in several short periods of time.
MD13	Role-playing games	Role play with the aim of illustrating a situation and the different points of view on it.

Learning outcomes

RA2	Recognize whether user diversity is taken into account in designs.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*
RA3	Examine the accessibility of the environment based on the criteria and strategies of Design for All.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*

RA5	Analyze products and environments based on ergonomic and anthropometric needs, taking into account the diversity of the user. Distinguish the positions and movements that the human being performs in a determined context.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*
RA6	Assess the positions and movements of the human being based on their well-being and comfort.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*
RA7	Recognize basic principles of ergonomics. Apply ergonomic criteria to specific design problems. Identify the basics of anthropometry.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*
RA8	Know the procedural bases of the scientific method and its interpretation.	CT-08 / CT-11 / CG-04 / GRA-06
RA9	Determine the measurements of a design based on the anthropometric data of the population.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*
RA10	Arguing the suitability of a design from an ergonomic and anthropometric point of view.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 /*INT-06 / MOD-07 / PRO-04*

Continuous evaluation

Specific evaluation criteria within continuous evaluation

- Interpretation and application of the theory of ergonomics and anthropometry. (10% to 25%) LO7 Recognize basic principles of ergonomics.
- Diversity of alternative proposals. (5% to 15%) LO2 Recognize whether user diversity is taken into account in designs.
- Identification of relevant solutions. (10% to 30%) LO8 Know the procedural bases of the scientific method and its interpretation / LO5 Analyze products and environments based on ergonomic and anthropometric needs, taking into account the diversity of the user.
- Ability to make strategic use of the knowledge acquired in tasks and decisions. (10% to 35%) LO10 Argue the suitability of a design from an ergonomic and anthropometric point of view.
- Ability to modify a product to make it more ergonomic. (10 to 25%) LO9 Determine the measurements

of a design based on the anthropometric data of the population.
- Presentation, structure, form and order of the document.(5 a 15%)

Evaluation instruments within continuous evaluation

During the development of the activity, classroom monitoring will be carried out with direct observations and individual and/or group oral feedback. Within the indicated period, the activity will be submitted electronically and, subsequently, individual and/or group feedback will be returned.

Specific recovery criteria within continuous assessment

The recovery instruments will be: Within the indicated period, the telematic delivery of the activity will be made, incorporating improvements based on indications and individual and/or group feedback, in the ordinary delivery of the activity.
The same criteria described in the section "*specific evaluation criteria within continuous evaluation".*

Recovery outside of continuous assessment

Specific recovery criteria outside of continuous assessment

Students who do not meet the format and deadline conditions will have to submit the activity and, in addition, carry out an oral defense of their activity in person. Students who do not meet the minimum attendance will, in addition, have to take a written test.

In any case, the same criteria described in the section "specific evaluation criteria within the continuous evaluation" will be assessed, except, where applicable, the teamwork sections.

Recovery instruments outside of continuous assessment

Within the indicated period, the activity will be submitted electronically and an oral defense of the activity will be held in person. Students who do not meet the minimum attendance requirements will additionally have to take a written test.

ACTIVITY 3	Duration: Follow-up throughout the entire course (16 or 17)	Weighting: 20-40%

Description of the activity

Dossier of collection of different complementary activities carried out during the course, such as:

- Text comments.
- Audiovisual comments.
- Interviews.
- Evaluable workshop.
- Data and percentile study.
- Signal analysis.
- Analysis of web pages or Apps.
- Comparison of spaces.
- Specific research.

Contents

- Design for All: definition, criteria and strategies.
- The user and their needs.
- Introduction to bionics.
- The human body.
- Basics of biomechanics.
- Introduction to ergonomics.
- Fundamentals of anthropometry.
- Ergonomics and anthropometry applied to design.

Skills

CT-08	Develop ideas and arguments in a reasoned and critical manner.
CT-11	Develop in work practice a professional ethic based on aesthetic, environmental and diversity appreciation and sensitivity.
CG-04	Have a scientific view on the perception and behavior of form, matter, space, movement and color.
CG-08	Propose research and innovation strategies to resolve expectations focused on functions, needs and materials.
GRA-06	Interrelate formal and symbolic languages with specific functionality. Graphic Design
INT-06	Interrelate formal and symbolic languages with specific functionality. Interior Design
MOD-07	Interrelate formal and symbolic languages with specific functionality. Fashion Design
PRO-04	Value and integrate the aesthetic dimension in relation to the use and functionality of the product.

Product Design

Applied teaching methodologies

MD1	Conference and/or master class	The teacher presents and transmits knowledge to the entire group of students, the student has a passive role, that of a receiver.
MD2	Debate and/or discussion	The teacher encourages and moderates debates and/or discussions that promote reflection, critical thinking and active participation of students in the classroom.
MD3	Readings and/or comments	Use of selected texts or materials as a starting point to promote reflection, critical understanding and debate among students.
MD4	Tests and/or exams	Formal and structured activity to collect evidence on the degree of achievement of knowledge, skills or competencies by students. This can be written, oral or practical and includes a variety of formats: questionnaires, problems, open questions, practical exercises, etc.
MD5	Workshops and/or internships	Carrying out practical activities applied in a controlled environment, oriented towards learning through experience and/or the transfer of theoretical knowledge to real or simulated situations.
MD7	Case study	Analysis of situations or problems within the specialty with the aim of reflecting, analyzing and discussing different intervention or solution proposals through examples or references.
MD9	Guided practice	The teacher presents and transmits theoretical knowledge applied to practical activities that take place in the classroom. The teacher guides, supervises and gives active feedback during the practice.
MD10	Flipped classroom	Transfer part of the theoretical learning outside the classroom, through online materials or resources prepared by the teacher, to dedicate face-to-face time to practical, participatory activities and knowledge application.
MD11	Collaborative work	Joint construction of knowledge through interaction and collaboration between students. The teacher has a guiding and dynamizing role.
MD13	Role-playing games	Role play with the aim of illustrating a situation and the different points of view on it.

Learning outcomes

RA1	Defining Design for All.	CT-08 / CT-11 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA2	Recognize whether user diversity is taken into account in designs.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04

RA3	Examine the accessibility of the environment based on the criteria and strategies of Design for All.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA4	Identify the user's needs and desires through different methodologies.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA5	Analyze products and environments based on ergonomic and anthropometric needs, taking into account the diversity of the user. Distinguish the positions and movements that the human being performs in a determined context.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA6	Assess the positions and movements of the human being based on their well-being and comfort.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA7	Recognize basic principles of ergonomics. Apply ergonomic criteria to specific design problems. Identify the basics of anthropometry.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA8	Know the procedural bases of the scientific method and its interpretation.	CT-08 / CT-11 / CG-04 / GRA-06
RA9	Determine the measurements of a design based on the anthropometric data of the population.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04
RA10	Arguing the suitability of a design from an ergonomic and anthropometric point of view.	CT-08 / CT-11 / CG-04 / CG-08 / GRA-06 / INT-06 / MOD-07 / PRO-04

Continuous evaluation

Specific evaluation criteria within continuous evaluation

- Selection of significant cases (10% to 25%). LO7 Recognize basic principles of ergonomics.
- Ability to collect appropriate information (10% to 25%): LO3 Examine the accessibility of the environment based on the criteria and strategies of Design for All / LO6 Evaluate the positions and movements of human beings based on their well-being and comfort.
- Level of in-depth analysis (20% to 35%): LO1 Define Design for All / LO4 Identify user needs and desires using different methodologies / LO5 Analyze products and environments based on ergonomic and anthropometric needs, taking into account user diversity.

- Capacity to draw conclusions (20% to 35%): LO2 Recognize whether user diversity is taken into account in designs. LO8 Know the procedural bases of the scientific method and its interpretation / LO9 Determine the measurements of a design based on the anthropometric data of the population / LO10 Argue the suitability of a design from an ergonomic and anthropometric point of view.
- Effective team coordination (0% to 10%).
- Responsible participation in group work (acquisition of roles or tasks) (0% to 10%).
- Promoting communication and respect between the different team members (0% to 5%).
- Presentation, structure, form and order of the document (5% to 15%).

Evaluation instruments within continuous evaluation

During the development of the activity, classroom monitoring will be carried out with direct observations and individual and/or group oral feedback. Within the indicated period, the activity will be submitted electronically and, subsequently, individual and/or group feedback will be returned.

Specific recovery criteria within continuous assessment

The recovery instruments will be: Within the indicated period, the telematic delivery of the activity will be made, incorporating improvements based on indications and individual and/or group feedback, in the ordinary delivery of the activity.
The same criteria described in the section "*specific evaluation criteria within continuous evaluation".*

Recovery outside of continuous assessment

Specific recovery criteria outside of continuous assessment

Students who do not meet the format and deadline conditions will have to submit the activity and, in addition, carry out an oral defense of their activity in person. Students who do not meet the minimum attendance will, in addition, have to take a written test.

In any case, the same criteria described in the section "specific evaluation criteria within continuous evaluation" will be assessed.

Recovery instruments outside of continuous assessment

Within the indicated period, the activity will be submitted electronically and an oral defense of the activity will be held in person. In the case described in the previous section "*Specific recovery criteria outside of continuous assessment*"A written test will be conducted in person.