

2S_FB_Systemsof representation 2

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

Subject: Languages and representation techniques

Type: Basic Training

Credits: 6 ECTS

Total hours: 150 h

Course: 1

Hours/week: 9,4 h

Semester: 2

Face-to-face hours/week: 4,5 h

Language in which it is taught: Catalan / Spanish

Self-employed hours/week: 4,9 h

Prerequisites: equivalent to Technical Drawing of 1st of Baccalaureate. Plane and descriptive geometry of the 1st semester of ESDAP Catalonia. (Material if you have not taken Technical Drawing
[l: http://www.xtec.cat/~mjjuvant2/dibuixtecnic/temari/dtindextemarigeneral.htm](http://www.xtec.cat/~mjjuvant2/dibuixtecnic/temari/dtindextemarigeneral.htm))

1. Presentation of the subject

The focus of the subject is geometry applied to design and its objective is to create a drawing for analysis and standardized representation – by hand and digitally – of objects of medium-high complexity and spaces in standardized representation systems.

The subject proposes training activities aimed at the knowledge, identification, analysis, classification and construction of geometric elements of surfaces and volumes. Students will learn to sketch objects of medium-high complexity, as well as with the dihedral and conical representation systems without forgetting the organization of the elements of the digital drawing and their corresponding printing.

2. Course contents

C_ STANDARDIZED REPRESENTATION SYSTEMS (dihedral) OF MEDIUM-HIGH COMPLEXITY OBJECTS (by hand and digitally).

- Surface analysis. Surface classification. Shape generation.
- Operational fundamentals of the dihedral system: elements, relationships and movements.
- Standardized representation of objects by hand and through 2D and 3D computer-aided drawing.

D_ NORMALIZED REPRESENTATION SYSTEMS (dihedral and conic) OF SPACE (by hand and digitally)

Diedric:

- Sketch of a space. Sketch of details.
- Significant views and sections of the space.
- Standardized representation of objects and spaces by hand and through 2D computer-aided drawing.

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Three-dimensional modeling:

- Digital three-dimensional modeling of space based on its standardized representation.

Conic Perspective:

- Fundamentals and elements of conic perspective.
- Resolution methods for its technical representation.
- Analysis and restoration of the elements of perspective from conical representations or photographs.

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

Transversal skills		Subject	Subject
CT-01	Organize and plan work in an efficient and motivating way.	X	X
CT-04	Use information and communication technologies efficiently	X	X

General skills		Subject	Subject
CG-02	Master the languages and expressive resources of representation and communication.	X	X

4. Subject learning outcomes

SUN	Description of the learning outcome	Skills
RA1	Identify, analyze, classify and construct - by hand and digitally - geometric elements for the representation of surfaces and volumes and their generation process in design examples.	CG-02, CT-01, CT-04
RA2	Skillfully sketch objects and spaces of medium-high complexity.	CG-02, CT-01
RA3	Representation of objects and spaces of medium-high complexity -with drawing tools and digitally- in standardized representation systems.	CG-02, CT-01, CT-04
RA4	Properly organize the elements of the digital drawing and its printing.	CG-02, CT-01, CT-04

5. Teaching methodologies applied to the subject

Get up	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.	X
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,	X

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		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.	X
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.	X
MD11	Collaborative work	Joint construction of knowledge through interaction and collaboration between students. The teacher has a guiding and dynamizing role.	X

6. Training activities of the subject

Get up	Description	Duration	Weighting
AF1	Set of activities for representing objects of medium-high complexity in a dihedral system	4-12 weeks	30-70%
AF2	Set of activities for representing space in the dihedral and conical system	4-12 weeks	30-70%
AF3	Timed theoretical/practical exercise	0-2 weeks	0-20%

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.

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- Class attendance is essential in order to guarantee 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 control it. The student who does not attend a minimum of 80% of the face-to-face hours of the subject loses 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 in order to be qualified. 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 will have to be resubmitted as a recovery.
- 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 student or a first-degree relative, coincidence with an official language level or driving license ex inexcusable duties before the administration or death of a first- or second-degree relative. It must be requested in an argued 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 must be informed and published in writing at the beginning of the course to all students enrolled in their subject.

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

- Correct interpretation of the geometric elements of the three-dimensional shape; precision and geometric rigor in solving the activities. (RA1-RA2-RA3) 20-30%
- Correct application of the representation language technique. (RA1 - RA2 - RA3 - RA4) 20-30%
- Quality of the line (handwritten and/or printed) and proportions, correct arrangement of the

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elements in the format and differentiated application of line values for a good understanding of the drawing. (RA4) 20-30%

- Clarity and exigency in the presentation: cleanliness and neatness. (RA1 - RA2 - RA3 - RA4) 10-20%
- Correct use of techniques and procedures. (RA1 - RA2 - RA3 - RA4) 10-20%

Evaluation instruments within continuous evaluation

- Practice folder: hand and digital representation exercises
- Prova o examen (Optional)

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 teaching staff in their teaching guide and classroom schedule within the same semester. In the event that the teaching staff has not established a recovery calendar, the student may submit the recovery activities during the last school week of the semester.

Specific recovery criteria within continuous assessment

The same ones that apply to continuous assessment.

Specific recovery criteria outside of continuous assessment

The same ones that apply to continuous assessment.

Instruments of retake of the subject outside of continuous evaluation

Handwritten and digital practice portfolio, delivered during the course (30%)

Exam and/or supplementary practices (70%)

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

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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)

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. 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, recommended whenever it is used as an assistant during the research process or as another source. In both cases, it must comply with the [citation regulations established by the APA](#).

For their part, students undertake to follow the instructions of the ESDAPC when carrying out the evaluation activities and citing the tools used and, specifically, to identify the texts or images generated by AI systems, which they may not present as their own.

Misuse of this tool can seriously affect the evaluation of the assessment activities. If in doubt, it is recommended that, before submitting the activity, a consultation be sent to the teacher.

For the evaluation, students are responsible for any possible errors that Artificial Intelligence may make.

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11. Sources of information and teaching resources

Basic bibliography

Cabezas, L. (2002) Graphic analysis and geometric representation. UAB Publishing.

Reference bibliography and other resources

Elam Kimberly. (2014). The geometry of design. Studies on proportion and composition. Barcelona: Gustavo Gili.

Francis D. K. Ching, Steven P. Juroszek. (2012 -2nd edition, 3rd printing-). Drawing and Project. Barcelona:

Gustavo Gili. Bruno Munari. (1975). Design and Visual Communication. Barcelona: Gustavo Gili.

ALREADY. Sánchez Gallego, Lluís Villanueva Bartrina. (2002). Technical drawing. Barcelona: UPC Editions.

Webography

surfaces:

<http://www.edificacion.upm.es/geometria/JPA/Poliedros%20regulares.html>

conical:

<http://conica.joseantoniocuadrado.com/index3.htm>

Audiovisuals

www.dibujotecnico.com

www.mongge.com

<https://www.youtube.com/c/ArturoGeometria>

TUTORIALS SKETCHUP: <https://iscarnet.com/tutoriales-gratuitos/>

<https://www.youtube.com/playlist?list=PLIQO-TCdIGfUiXkTo1FxIrCfqclYylGJW>

TUTORIALS AUTOCAD: <https://youtube.com/playlist?list=PLp8i2zvx3AyLy2KOUWXYZRIge8kjtISA>

TUTORIALS RINHOCEROS:

https://youtube.com/playlist?list=PLutl_CTKFxQOM8zjAAyqGsE8qXWq2Pk24

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12. Training activity sheets

ACTIVITY 1	Duration: 4-12 weeks	Weighting: 30%-70%
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Description of the activity

C_Set of activities representation of objects of medium-high complexity: hand-drawn sketches and printed technical plans (dihedral views) using CAD (AutoCAD or similar).

Contents

- Surface analysis. Surface classification. Shape generation.
- Operational fundamentals of the dihedral system: elements, relationships and movements.
- Standardized representation of objects by hand and through 2D and 3D computer-aided drawing.

*The appropriate grouping can be made at the discretion of the teaching staff.

Skills

CG02	Master the languages and expressive resources of representation and communication.
CT04	Use information and communication technologies efficiently
CT01	Organize and plan work in an efficient and motivating way.

Applied teaching methodologies

MD1	Conference and/or master class
MD5	Workshops and/or internships
MD9	Guided practice
M11	Collaborative work

Learning outcomes

RA1	Identify, analyze, classify and construct - by hand and digitally - the geometric elements for the representation of surfaces and volumes and their generation process in design examples.
RA2	Skillfully sketch objects and spaces of medium-high complexity.
RA3	Representation of objects and spaces of medium-high complexity -with drawing tools and digitally- in standardized representation systems.
RA4	Properly organize the elements of the digital drawing and its printing.

Continuous evaluation

Specific evaluation criteria within continuous evaluation

- Correct interpretation of the geometric elements of the three-dimensional shape; precision and geometric rigor in solving the activities. (RA1-RA2-RA3) 20-30%
- Correct application of the representation language technique. (RA1 - RA2 - RA3 - RA4) 20-30%

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- Quality of the line (handwritten and/or printed) and proportions, correct arrangement of the elements in the format and differentiated application of line values for a good understanding of the drawing. (RA4) 20-30%
- Clarity and exigency in the presentation: cleanliness and neatness. (RA1 - RA2 - RA3 - RA4) 10-20%
- Correct use of techniques and procedures. (RA1 - RA2 - RA3 - RA4) 10-20%

Evaluation instruments within continuous evaluation

Block C: Activity folder representation of objects of medium-high complexity: hand-drawn sketches and printed technical plans (dihedral views) using CAD (AutoCAD or similar).

Specific recovery criteria within continuous assessment

The same ones that apply to continuous assessment.

Recovery outside of continuous assessment

Specific recovery criteria outside of continuous assessment

The same ones that apply to continuous assessment.

Recovery instruments outside of continuous assessment

Handwritten and digital practice portfolio, delivered during the course (30%)

Exam and/or supplementary practices (70%)

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ACTIVITY 2	Duration: 4-12 weeks	Weighting: 30%-70%
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Description of the activity

D_Set of activities for representing space in a dihedral and conical system.

Contents

Dihedral system:

- Sketch of a space. Sketch of details.
- Significant views and sections of the space.
- Standardized representation of objects and spaces by hand and through 2D computer-aided drawing.

Three-dimensional modeling:

- Digital three-dimensional modeling of space based on its standardized representation.

Conic Perspective:

- Fundamentals and elements of conic perspective.
- Resolution methods for its technical representation.
- Analysis and restoration of the elements of perspective from conical representations or photographs.

*The appropriate grouping can be made at the discretion of the teaching staff.

Skills

CG02	Master the languages and expressive resources of representation and communication.
CT04	Use information and communication technologies efficiently
CT01	Organize and plan work in an efficient and motivating way.

Applied teaching methodologies

MD1	Conference and/or master class
MD5	Workshops and/or internships
MD9	Guided practice
M11	Collaborative work

Learning outcomes

RA1	Identify, analyze, classify and construct - by hand and digitally - the geometric elements for the representation of surfaces and volumes and their generation process in design examples.
RA2	Skillfully sketch objects and spaces of medium-high complexity.
RA3	Representation of objects and spaces of medium-high complexity -with drawing tools and digitally- in standardized representation systems.
RA4	Properly organize the elements of the digital drawing and its printing.

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Continuous evaluation

Specific evaluation criteria within continuous evaluation

- Correct interpretation of the geometric elements of the three-dimensional shape; precision and geometric rigor in solving the activities. (RA1-RA2-RA3) 20-30%
- Correct application of the representation language technique. (RA1 - RA2 - RA3 - RA4) 20-30%
- Quality of the line (handwritten and/or printed) and proportions, correct arrangement of the elements in the format and differentiated application of line values for a good understanding of the drawing. (RA4) 20-30%
- Clarity and exigency in the presentation: cleanliness and neatness. (RA1 - RA2 - RA3 - RA4) 10-20%
- Correct use of techniques and procedures. (RA1 - RA2 - RA3 - RA4) 10-20%

Evaluation instruments within continuous evaluation

Block D: Activity folder representation of objects of medium-high complexity: hand-drawn sketches and printed technical plans (dihedral views) using CAD (AutoCAD or similar).

Specific recovery criteria within continuous assessment

The same ones that apply to continuous assessment.

Recovery outside of continuous assessment

Specific recovery criteria outside of continuous assessment

The same ones that apply to continuous assessment.

Recovery instruments outside of continuous assessment

Handwritten and digital practice portfolio, delivered during the course (30%)

Exam and/or supplementary practices (70%)

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ACTIVITY 3	Duration: 0-2 weeks	Weighting: 0-20% (optional)
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Description of the activity

Timed theoretical/practical exercise.

Contents

C_ STANDARDIZED REPRESENTATION SYSTEMS (dihedral) OF MEDIUM-HIGH COMPLEXITY OBJECTS (by hand and digitally).

- Surface analysis. Surface classification. Shape generation.
- Operational fundamentals of the dihedral system: elements, relationships and movements.
- Standardized representation of objects by hand and through 2D and 3D computer-aided drawing.

D_ NORMALIZED REPRESENTATION SYSTEMS (dihedral and conic) OF SPACE (by hand and digitally)

Dihedral:

- Sketch of a space. Sketch of details.
- Significant views and sections of the space.
- Standardized representation of objects and spaces by hand and through 2D computer-aided drawing.

Three-dimensional modeling:

- Digital three-dimensional modeling of space based on its standardized representation.

Conic Perspective:

- Fundamentals and elements of conic perspective.
- Resolution methods for its technical representation.
- Analysis and restoration of the elements of perspective from conical representations or photographs.

*The appropriate grouping can be made at the discretion of the teaching staff.

Skills

CG02	Master the languages and expressive resources of representation and communication.
CT04	Use information and communication technologies efficiently
CT01	Organize and plan work in an efficient and motivating way.

Applied teaching methodologies

MD4	Tests and/or exams
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Learning outcomes

RA1	Identify, analyze, classify and construct - by hand and digitally - the geometric elements for the representation of surfaces and volumes and their generation process in design examples.
RA2	Skillfully sketch objects and spaces of medium-high complexity.
RA3	Representation of objects and spaces of medium-high complexity -with drawing tools and digitally- in standardized representation systems.

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RA4 Properly organize the elements of the digital drawing and its printing.

Continuous evaluation

Specific evaluation criteria within continuous evaluation

- Correct interpretation of the geometric elements of the two-dimensional shape; precision and geometric rigor in solving the activities. (RA1-RA2-RA3) 20-30%
- Correct application of the representation language technique. (RA1 - RA2 - RA3 - RA4) 20-30%
- Quality of the line (handwritten and/or printed) and proportions, correct arrangement of the elements in the format and differentiated application of line values for a good understanding of the drawing. (RA4) 20-30%
- Clarity and exigency in the presentation: cleanliness and neatness. (RA1 - RA2 - RA3 - RA4) 10-20%
- Correct use of techniques and procedures. (RA1 - RA2 - RA3 - RA4) 10-20%

Evaluation instruments within continuous evaluation

Exam

Specific recovery criteria within continuous assessment

The same ones that apply to continuous assessment.

Recovery outside of continuous assessment

Specific recovery criteria outside of continuous assessment

The same ones that apply to continuous assessment.

Recovery instruments outside of continuous assessment

Exam and/or supplementary practices