



Universitat de Lleida

DEGREE CURRICULUM

GRAPHIC EXPRESSION 2

Coordination: COMA ARPON, JULIÀ

Academic year 2019-20

Subject's general information

Subject name	GRAPHIC EXPRESSION 2			
Code	101404			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Architectural Technology and Building Construction	1	COMMON	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	3		3
	Number of groups	1		1
Coordination	COMA ARPON, JULIÀ			
Department	COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING			
Teaching load distribution between lectures and independent student work	Theoretical credits (2) Classroom 20h, 30h autonomous work (study) Practical credits (4) Classroom 40h, 60h autonomous work (practice)			
Important information on data processing	Consult this link for more information.			
Language	Catalan			
Office and hour of attention	Send an email in order to arrange a date Office 0.12 CREA building Campus Cappont			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
COMA ARPON, JULIÀ	julia.coma@udl.cat	6	

Subject's extra information

The activity of the Technical Architect takes place largely to the field of projects either in the drafting and development, in its execution or in its subsequent operation and maintenance.

Since in this area, projects, information expressed graphically is often prioritized, it is essential that technical architect has a good knowledge in this communication language.

Basically the graphical expression must be used by the Technical Architect for the following purposes:

- First, as the way of expression between the Architect and third parties.
- Moreover, as a means of communication with himself, in the processes of design, in the research of alternative solutions.
- Finally, as a means of description and analysis of reality (making sketches and drawings of the current state of constructions, etc.).

It can therefore deduce that Graphic Expression is configured as a true universal graphic language.

Students will then begin to control their spatial vision, to be able to make fluently transfers from the three dimensions (real objects) to the two-dimensional (flat) and vice versa.

Suggestions

Practical course in which the study is based on the realization of all the exercises and practices requested, as well as consulting and realization of other exercises given in the recommended bibliography.

Prerequisites:

There are no prerequisites for this subject.

Learning objectives

- Knowing the operating of tools, materials and techniques of graphic expression and use them correctly and in the right time.
- To know the current CAD systems and to learn working in this type of system, combining it appropriately with the traditional systems of graphic expression
- Understanding the geometry as a set of concepts related through properties and laws.
- Reason and solve problems in graph and technical representation, using the standards established in a correct way.
- Representation of perspectives to facilitate the interpretation of three-dimensional forms and spaces projected and / or designed.
- Value the graphic language (Expression Graphic) as a means of communication in the work environment of the Building Engineer
- Express them fluently and property with the terminology of Graphic Expression, knowing at all times use the most appropriate graphic resource.
- Purchase the habit of working in an orderly, organized and accurate way.
- Developing the spatial vision and learn to represent three-dimensional shapes and spaces.
- Draw shapes and spaces, making transfers from the three-dimension to the two-dimension, and in the same two-dimension.
- Correctly apply the regulations governing the technical graphic expression (standardized lettering, dimensioning, etc.)
- Correctly apply the concept of scale of drawing, in order to spend from most general to details without loss of rigor

in the transmission of information

- To learn the use of the freehand drawing and sketching as a fundamental means of expression in the creative process and in the realization of ideas and forms
- To do sketches of uprisings, both for sites and existing buildings as well as of construction details, which represent the most important and significant elements. They must be understandable and proportionate as well as properly dimensioned and using the appropriate symbology.
- To know and to graphically specify the constructive solutions of different elements as well as the details of construction of a building project.

Competences

Significant competences

University of Lleida strategic competences

- UdL3. Mastering ICT's.

Degree-transversal competences

- EPS5. Capacity of abstraction and of critical, logical and mathematical thinking.

Degree-specific competences

- GEE3. Capacity to apply the spatial representation methods, the development of the sketch, the proportionality, the language and the techniques of graphic representation of the elements and constructive processes.

Subject contents

- **Introduction**

Theme 1. Freehand drawing. The sketch

This theme introduces students to the freehand drawing as a means of immediate expression of ideas, as well as analysis and description of reality, both essential in the first stages of creation as well as during field collection data. Firstly a more free and artistic representation will be faced, the sketch, very useful in the creative phase in order to use a quickly transmission of ideas.

Theme 2. freehand drawing. The sketch

In a second stage of freehand representation, it will deepen learning sketch, a more technical freehand drawing, which can realize more accurately the designs as well as the existing reality, and it is usually used prior to the final representation.

Moreover, the student begins the representation of constructive elements, typical of architectural constructions, specifying different solutions and details, while put into practice the knowledge acquired in previous stages of representation.

Theme 3. Projects. CAD 3D (Revit)

In parallel to the development of the above mentioned agenda, two of the four hours per week of the course, will be dedicated throughout the whole semester to learn a BIM system (Building Information Modeling), specifically REVIT, because it is the most widespread software in the field of architecture.

The educational project imply that during the first weeks of the semester, coinciding with the themes of freehand drawing, will be engaged to know and learn REVIT drawing tool.

Once acquired the basic knowledge on REVIT, the two hours will be connect to the other two hours in order to carry out all the practice exercises by mean REVIT.

The educational project envisages that all classes of the subject will be made in computer classroom, since the practices of different themes (sketches, representing construction elements, and plans) will be completed in electronic format.

Methodology

The classes have both a theoretical component, in which the program items will be followed, and also a practical component in which the exercises will be performed on traditional drawing board, related to corresponding theory in each class.

Since the time available is limited, students will have some printed course notes in which they will find all the theoretical concepts covered in class.

Each chapter will be followed by series of exercises that will help the students to further practice the different concepts and techniques explained in class.

For the realization of by hand drawing practices, for example dihedral views exercises, axonometric representations as well as freehand and technical sketches; the work format will be primarily in A3 and A4.

For practical training by means computer drawing, in either 2D or 3D, students can work in the computer lab digital, which will have the necessary software updated.

The software currently used within the subjects of graphic expression, for the Degree in Architectural Technology and Building Construction, are AutoCAD and Revit, both from Autodesk.

Learning of these digital representation technologies requires many hours of practice, which is why many of the practices that should be developed by students must be done regardless of the hours of work available in the classroom, in understanding that this commitment involves already learning and therefore some time to study the subject.

Different deadlines for the practices will be established, in order to ensure a progressive learning of the subject, thus fulfilling the continuous training and evaluation.

TEACHING METHODS

Training activities

1. Lectures: In the lectures the contents of the subject are presented orally by a lecturer without the active participation of students.
2. Practices classroom / laboratory: Let you apply and configure a practical level, the theory of a field of knowledge in a particular context.
3. Assessment tests (examination)
4. Work: Individual and group
5. Study: Independent work of students to consolidate the concepts of the subject.

Evaluation systems

1. Written tests
2. Practical tests
3. Practices

Development plan

Week	9-11 h	11-13 h	PR	Deliverables
1	Theory: Freehand drawing. Sketch. Previous concepts	Theory: Freehand drawing. Sketch	PR2.1. Sketch	
2	Theory: Freehand drawing. Technical sketches	PR3.1. Technical sketches	PR2.2. Sketch PR3.1. Technical sketches	PR2.1. Sketch
3	PR3.2. Technical sketches	PR3.1. Technical sketches PR3.2. Technical sketches	PR3.2. Technical sketches	PR2.1. Sketch PR3.1. Technical sketches
4	PR3.1. Technical sketches PR3.2. Technical sketches	PR3.1. Technical sketches PR3.2. Technical sketches		PR2.2. Sketch

5	BIM_Revit_CH1	PR3.2. Technical sketches	PR3.3. Sketch-Technical sketches	PR2.2. Sketch
6	BIM_Revit_CH2	PR3.3. Sketch-Technical sketches		PR3.2. Technical sketches PR3.3. Sketch-Technical sketches
7	BIM_Revit_CH3	PR3.3. Sketch-Technical sketches		PR3.3. Sketch-Technical sketches PR3.2. Technical sketches
8	BIM_Revit_CH5	PR3.3. Sketch-Technical sketches	PR4_BIM project	PR3.3. Sketch-Technical sketches
9	Assessment activity 1			
10	BIM_Revit_CH6	PR4_BIM project		PR3.3. Sketch-Technical sketches
11	BIM_Revit_CH7	PR4_BIM project		PR4_BIM project (First review)
12	BIM_Revit_CH8	PR4_BIM project		
13	PR4_BIM project	PR4_BIM project		PR4_BIM project (Second review)
14	PR4_BIM project	PR4_BIM project		
15	PR4_BIM project	PR4_BIM project		PR4_BIM project (Final)
16,17	Assessment activity 2			
18				
19	Recovery			

Evaluation

Evaluation

Monitoring and evaluation will be conducted according to a system of continuous assessment, where the final grade will consist of the sum of the percentages of different evaluation activities.

Recovery:

During the 19th week it can be recover / improve the grade of the subject, following the guidelines of the Academic Degrees Framework of EPS, through a recovery test, which will have equal value and content to the theoretical contents (50%).

Assessment activity	%	Dates
PR2.1. Sketch + PR 2.2. Sketch	10	Week 2,3,4,5
PR3.1. Technical sketches	10	Week 3
PR3.2. Technical sketches	10	Week 6
PR3.3. Technical sketches- Sketch	20	Week 7,8,9,10
PR4_BIM project	50	Week 11,13,15

Bibliography

- **Geometria Descriptiva. Sistema DièdricDirecte. Fonaments i exercicis. Volum 1/ Josep Bertran Guasp/ Ed. Donostiarra,1995.**

- El Sistema Dièdric Directe. Propostes pel COU i per l'Ensenyament Secundari/ Josep Bertran i Guasp/ Ed. Il·lustre Col·legi Oficial de Doctors i Llicenciats en Belles Arts i Professors de Dibuix de Catalunya, 1993.
- El Sistema Dièdric / Ramon Comasòlivas Font/ Ed. UPC, Quaderns Aula, 1993.
- Dibujo Técnico (Expresión Gráfica de la Ingeniería) / Vicente Collado / Ed. Tébar, 1996.
- Geometría Paso a Paso. Volumen I. Elementos de geometría métrica y sus aplicaciones en Arte, Ingeniería y Construcción. / Álvaro Rendón / Ed. Tébar, 2001.

- Temes clau de dibuix tècnic/ Juan Antonio Sánchez i Lluís Villanueva Bartrina/ Ed. UPC, 1991.
- Geometría Paso a Paso. Volumen II Geometría Proyectiva y Sistemas de Representación / Álvaro Rendón / Ed. Tébar, 2001.
- Geometría Descriptiva Aplicada / Kathryn Holliday / Ed. Thomson, 2000.

- Dibujo a mano alzada para arquitectos / Magali Delgado Yanes i Ernest Redondo Domínguez / Ed. Parramón.
- Cómo se proyecta una vivienda / J.L. Moia / Ed. GG, 1968.
- Normas Tecnológicas de la Edificación NTE / Ed. Ministerio de Obras Públicas, Transportes y Medio Ambiente
- Arte de proyectar en arquitectura / Ernst Neufert / Ed. GG.
- Col·lecció Tectònica. ATC Ediciones S.L.
- Diccionari visual de la construcció / Ed. Departament de Política Territorial i Obres Públiques de la Generalitat de Catalunya, 2000.
- AutoCAD básico / Sham Tickoo/ Ed. Paraninfo, 2000.

- Manual de técnicas gráficas para arquitectos, diseñadores y artistas 1 / Tom Porter i Sue Goodman / Ed. GG, 1984.
- Manual de técnicas gráficas para arquitectos, diseñadores y artistas 2 / Tom Porter i Sue Goodman / Ed. GG, 1984.
- AutoCAD avanzado/ Sham Tickoo/ Ed. Paraninfo, 2000.
- Dibujos y planos de obras / Ed. CEAC, 1986
- Guía metodológica y práctica para la realización de proyectos / Ignacio Morilla / Ed. Colegio de Ingenieros de Caminos, Canales y Puertos de Madrid, 1996.
- Nuevas Monografías de la construcción / Ed. CEAC
- Revit 2013. James Vandezande, Eddy Krygiel, Phil Read. ANAYA. I.S.B.N: 978-84-415-3354-7
- Revit 2015. Yolanda López Oliver. ANAYA. I.S.B.N: 978-84-415-3667-8