



Universitat de Lleida

DEGREE CURRICULUM **GRAPHIC EXPRESSION 3**

Academic year 2014-15

Subject's general information

Subject name	GRAPHIC EXPRESSION 3
Code	101410
Semester	1st Q Continuous Evaluation
Typology	Obligatory
ECTS credits	6
Groups	Big and medium
Theoretical credits	2
Practical credits	4
Department	Informàtica i Enginyeria Industrial
Teaching load distribution between lectures and independent student work	40% Face to face time 60% Individual work hours
Modality	Presencial
Important information on data processing	Consult this link for more information.
Language	Catalan and Spanish
Degree	Degree in Architectural Technology
E-mail addresses	jburgues@diei.udl.cat

Subject's extra information

Most practical course in which the study is based on the completion of at least all the exercises and practical requested, as well as consulting and performing other exercises in the bibliography.

It is considered highly recommendable that have adopted and achieved favorable subjects of Graphic Expression Graphic Expression 1 and 2.

Subject that race in the 1st semester of the 2nd year of teaching. It belongs to the module "Specific Training", specifically in the matter "Graphic Expression."

Learning objectives

Objectives:

1. Understand, interpret, develop and apply the different systems and construction elements existing in current techniques of building construction
2. Understand, interpret, develop and apply the different systems and construction elements existing historical construction techniques heritage
3. Understand, interpret, develop and learn properly resolved at the various graphic elements and constructive systems developed previously (1.2), in order to master effects and possible pathologies most common and usual building and the fundamental relationship between design and graphic expression sections and constructive details and the result of its success in building
4. Knowing how to interpret the various expression systems suitable graphics on various building systems developed theoretically (1,2,3)
5. Understand, interpret, develop and apply different concepts of scale applied to the graphic expression of the different systems and construction elements.
6. Draw sketches manuals sections and construction details of each building systems developed theoretically, to develop the student's ability to express themselves manually against various situations. Provided that they are understandable and that are properly zoned and appropriate symbolism.
7. Knowing how to graphically specify construction details and sections constructive solutions of different elements in the existing building systems developed (1,2,3) and determine the features and content of various construction details on the most common elements of a building.
8. Get regular representation systems different constructive elements, in order to apply them properly.
9. Develop construction details with existing CAD systems, learn to work in such systems simultaneously develop constructive solutions usual, even arranging it appropriately with the traditional systems of graphic expression.
10. Develop a general practice involves the generation of a "ATLAS" constructive solutions, to develop and effects of the ability to interpret edificación of existing building systems, and to transmit graphic expression normally.
11. Develop specific practices for each of the theoretical aspects developed in order to find constructive systems graphically express the content.
12. Allowing the students, from the above objectives, criteria based purchases to be able to solve the challenges professionals to develop sustainable construction approaches, know what materials are discretized on sustainable construction, making the flow of materials and analyzes life-cycle assessment.

Competences

University of Lleida strategic competences

- Master Information and Communication Technologies.

Degree-specific competences

- Ability to interpret and elaborate the graphical documentation of a project, perform data collection, plan preparation and geometrical control of work units.
- Knowledge of the computer graphics and cartographic methods in the field of building.
 - Without Translate - 1. Conèixer, saber interpretar, desenvolupar i aplicar els diferents sistemes i elements constructius existents en les tècniques actuals de construcció de l'edificació 2. Conèixer, saber interpretar, desenvolupar i aplicar els diferents sistemes i elements constructius existents en les tècniques històriques de construcció patrimonial 3. Conèixer, saber interpretar, desenvolupar i saber resoldre adequadament a nivell gràfic els diferents sistemes i elements constructius desenvolupats anteriorment (1,2), a fi i efectes de dominar les possibles patologies més comunes i habituals en edificació, i la relació fonamental entre el disseny i l'expressió gràfica dels detalls i seccions constructives i el seu èxit en el resultat de l'edificació 4. Conèixer i saber interpretar els diferents sistemes d'expressió gràfica adequats sobre els diferents sistemes constructius desenvolupats teòricament (1,2,3) 5. Conèixer, saber interpretar, desenvolupar i aplicar els diferents conceptes d'escala aplicats a l'expressió gràfica dels diferents sistemes i elements constructius. 6. Elaborar croquis manuals de seccions i detalls constructius de cadascun dels sistemes constructius desenvolupats teòricament, per desenvolupar la capacitat de l'alumne per expressar-se manualment enfront de diverses situacions professionals. Que siguin entenedors i proporcionats, que estiguin correctament acotats i amb la simbologia adequada. 7. Conèixer i saber concretar gràficament en detalls constructius i seccions les solucions constructives dels diferents elements existents en les sistemes constructius desenvolupats en (1,2,3), així com determinar les característiques i el contingut dels diferents detalls constructius sobre els elements més habituals d'una edificació. 8. Conèixer els sistemes de representació habituals dels diferents elements constructius, per tal d'aplicar-los adequadament. 9. Desenvolupar els detalls constructius amb els sistemes de CAD actuals, aprendre a treballar en aquest tipus de sistemes alhora de desenvolupar les solucions constructives més habituals, tot compaginant-ho adequadament amb els sistemes tradicionals d'expressió gràfica. 10. Desenvolupar una pràctica general consistent en la generació d'un "ATLAS" de solucions constructives, a fi i efectes de desenvolupar la capacitat d'interpretar els sistemes constructius d'edificacions existents, i transmetre'ls a l'expressió gràfica amb normalitat. 11. Desenvolupar pràctiques concretes sobre cadascun dels aspectes teòrics desenvolupats, per tal de saber expressar gràficament els sistemes constructius del contingut

Degree-transversal competences

- Ability to plan and organise the personal work.
- Ability to work in situations where information is lacking or you are under pressure.

Subject contents

Contents: Theoretical part

1. Introduction: Graphic Expression of the elements and building systems through the details and building sections
 - 1.1. Concept and purpose of the construction detail.
 - 1.2. Concept of scale in construction and the construction detail section.
 - 1.3. Representation systems: manual, technological, etc ..
 - 1.4. Application of the systems of representation to different building systems from the world of construction.
 - 1.5. The intrinsic link between the graphic expression of the construction detail and commissioning work.
2. Expression Graphic, Construction and Building
 - 2.1. The construction of the building hardware: Introduction to construction techniques i their relationship with the graphic expression.
 - 2.2. Construction techniques and materials shaped.
 - 2.3. The movements construction and external agents: the living building.
 - 2.4. Theoretical approach to the classification of construction elements: the wraps of built space.
 - 2.4.1. The support wrap.

- 2.4.2. The sealed envelope.
- 2.4.3. Thermal protection sheath.
- 2.5. Theoretical approach to the classification of construction elements: the construction elements.
 - 2.5.1. The walls.
 - 2.5.2. The ceilings.
 - 2.5.3. Porches.
 - 2.5.4. The cover.
 - 2.5.5. The facade.
 - 2.5.6. The partition
- 3. The graphic expression of the building construction systems: the construction details and building sections
 - 3.1. The buildings and graphic expression of the constructive systems: strategic vision
 - 3.2. Construction elements and contact with outsiders: the terrain, the climate and gravitational actions.
 - 3.3. Characterization of constructive solutions and its representation.
 - 3.4. Foundation systems and graphic expression.
 - 3.4.1. Soils.
 - 3.4.2. Excavations for foundations.
 - 3.4.3. Classes foundations.
 - 3.5. Protection systems of buildings and their graphic expression.
 - 3.5.1. Protection against humidity.
 - 3.5.2. Impermeabilitzación materials.
 - 3.5.3. Thermal protection.
 - 3.5.4. Regulating the environment climate.
 - 3.5.5. Solar protection.
 - 3.5.6. Fire protection.
 - 3.5.7. It protecció against the Rays.
 - 3.5.8. Protection, insulation and sound absorption. Noise, impact and vibration.
 - 3.6. Wall systems of buildings and their graphic expression.
 - 3.6.1. Masonry walls, appliances and ejecución.
 - 3.6.2. Masonry natural stone.
 - 3.6.3. Masonry of ceramic bricks.
 - 3.6.4. Brick masonry agglomerates.
 - 3.6.5. Reinforced masonry work.
 - 3.6.6. Concrete walls.
 - 3.6.7. Walls against the ground (underground).
 - 3.6.8. Exterior walls.
 - 3.6.9. Light partitions.
 - 3.7. Systems of openings and holes in the buildings and their graphic expression.
 - 3.7.1. Openings for windows.
 - 3.7.2. Openings in doors.
 - 3.7.3. Construction starts saving elements.
 - 3.8. Systems of building structures and graphic expression.
 - 3.8.1. Structures of bearing walls.
 - 3.8.2. Masonry structures.
 - 3.8.3. Reinforced concrete structures.
 - 3.8.4. Steel structures.
 - 3.8.5. Wooden structures.
 - 3.9. Forged systems of buildings and their graphic expression.
 - 3.9.1. Construction requirements of the slabs.
 - 3.9.2. Forged in building typology based on concrete, steel and ceramic elements.
 - 3.9.3. Wooden floors.
 - 3.10. Ladder systems of buildings and their graphic expression.
 - 3.10.1. Concrete stairs.
 - 3.10.2. Steel stairs.
 - 3.10.3. Wooden stairs.
 - 3.10.4. Stair railings.
 - 3.11. Roofing systems buildings i your graphic expression.
 - 3.11.1. Pitched roofs.

- 3.11.2. Flat roofs.
- 3.11.3. Special elements of cover.
- 3.11.4. Cover-contact building facades.
- 4. The graphic expression of the building construction systems: heritage, traditional construction and historical solutions
 - 4.1. Building typologies of historical and traditional construction.
 - 4.2. Construction techniques and materials in the form of historical and traditional construction.
 - 4.3. Evolution of traditional construction systems: construction related to the advancement of technology.
 - 4.4. Historical representation systems in traditional construction.
 - 4.5. Construction systems of traditional historical building: roofs and structural systems, foundations, facades.
- 5. The graphic expression of the building construction systems: pathology and relationship building with external agents.
 - 5.1. The building and its related packaging Immediate environment: climate, terrain and weather.
 - 5.2. Origin and classification of the main pathologies in buildings.
 - 5.3. Graphic expression of pathological states and diagnosis work. "Preventive" design constructive solutions regarding pathologies.
 - 5.4. Common examples of preventive design.

Contents: Hands-on

- 1. PRACTICE OF COURSE CONSTRUCTION SOLUTIONS ATLAS
- 2. PRACTICE OF COURSE CONSTRUCTION SOLUTIONS ATLAS

Part One: (INDIVIDUAL) Photo ID minimum of Elements and Construction Solutions for Chapter 3 Visual Dictionary GENCAT building: building construction elements: Structures and engineering structures; Foundations, roofs and facades; Internal divisions. (Nothing facilities, which affects only Civil Works - Building)

* THIS PART OF THE PRACTICE OF COURSE BE DELIVERED IN THE FIRST ROUND OF EVALUATION
PRACTICE COURSE

Part II: (INDIVIDUAL - GROUP) photographic and graphic Development (manual and CAD development in Sketch) constructive sections and details of the shell (profiles of land-basics-facade-openings-closings-cover) of one of these types of buildings (Assignment of teachers in class):

Mixed metal building structure - reinforced concrete facades and various technological solutions. Passable inverted roof or flat, or slightly inclined slope (CREA - Centre of Cultures - Auditori the Centre of Cultures).

* THIS PART OF THE PRACTICE OF COURSE BE DELIVERED IN THE SECOND TEST SUBJECT
ASSESSMENT PRÁTICA

- 2. PR 1: CONSTRUCTION SOLUTIONS MONOLITHIC BUILDING WALLS AND WORK BEARING FACTORY (I)
- 3. PR 2: STRUCTURAL SOLUTIONS MONOLITHIC BUILDING BEARING STRUCTURE AND CLOSURES (I)
- 4. PR 3: CONSTRUCTIVE SOLUTIONS FACADES I (I / G)
- 5. PR 4: CONSTRUCTION SOLUTIONS FACADES II (I / G)
- 6. PR 5: STRUCTURAL SOLUTIONS COVERS II (I / G)
- 7. PR 6: STRUCTURAL SOLUTIONS COVERS II (I / G)

Bibliography

Without translate-

1.-Bibliografia bàsica-.

- Paricio Ansuategui, Ignacio. Els elements. A: ParicioAnsuategui, Ignacio. 'La construcció de l'arquitectura'. 3^a ed. rev. Barcelona:Institut de Tecnologia de la Construcció de Catalunya, 1995-1996, vol. 2.

- Paricio Ansuategui, Ignacio. Les tècniques. A: Paricio Ansuategui, Ignacio.'La construcció de l'arquitectura'. 3^a ed. rev. Barcelona: Institut deTecnología de la Construcció de Catalunya, 1995-1996, vol. 1.
- Schmitt, Heinrich; Heene, Andreas. 'Tratado deConstrucción'. Gustavo Gili, 1998. ISBN 8425217296.
- Beinhauer, Peter. 'Atlas de detalles constructivos: conmás de 400 ejemplos '. Barcelona: Gustavo Gili, 2006. ISBN 9788425220579.
- Ching, Frank; Adams, Cassandra. 'Guía de construcción ilustrada'. 3^a. ed.México: Limusa Wiley, 2004. ISBN 9681862929.
- Araujo, Ramón. Superficies. A. Araujo, Ramón. 'Laarquitectura como técnica'. Madrid: A.T.C. Ediciones, 2007-, vol. 1.
- Dibujo a mano alzada para arquitectos / Magali DelgadoYanes i Ernest Redondo Domínguez / Ed. Parramón.
- AutoCAD básico / Sham Tickoo/ Ed. Paraninfo, 2000.
- AutoCAD avanzado/ Sham Tickoo/ Ed. Paraninfo, 2000.
- Modelado 3D con AutoCAD / John E. Wilson / Ed. Anaya, 2002

2-Terminologia i comprensió-.

- 'Diccionari visual de la construcció'[Recurs electrònic].3a ed. Barcelona: Generalitat de Catalunya. Departament de Política Territorial Obres Públiques, 2001. ISBN 84-393-5046-5.

Disponible a:

<http://www10.gencat.net/ptop/AppJava/cat/documentacio/llengua/terminologia/diccvisual.jsp>

- 'Diccionari visual de la construcció'. 6a ed. Barcelona: Generalitat de Catalunya, Departament de Política Territorial i Obres Públiques, 2004. ISBN8439365098.
- Fullana Llompart, Miquel. 'Diccionari de l'art dels oficis i de la construcció'. 6a ed. augmentada. Palma de Mallorca: Moll, 1995. ISBN84-273-0743-8.
- Paniagua Soto, José Ramón. 'Vocabulario basico de arquitectura'. Madrid:Cátedra, 1978.
- Arte de projectar en arquitectura / Ernst Neufert / Ed.GG.

3- Webs normatives i de legislació aplicable-.

- CTE (Código Tècnico de la Edificación).

Disponible a:

<http://www.codigotecnico.org>

- CTE: Catàleg de solucions constructives aplicables.

Disponible a:

http://www.codigotecnico.org/fileadmin/Ficheros_CTE/Documentos/CTEFeb08/CAT-EC-v05.0_MAYO08.pdf

- Normas Tecnológicas de la Edificación NTE /Ed. Ministerio de Obras Públicas, Transportes y Medio Ambiente.

4-.Publicacions especialitzades-

- Revista TECTÒNICA.

Disponible a:

<http://www.tectonica.es>

- Revista DETAIL.

Disponible a:

<http://www.detail.de>

5-. Institucionsrelacionades -.

- Institut de Tecnologia de la Construcció de Catalunya

Disponible a:

<http://www.itec.cat>

- Instituto de Ciencias de la Construcción Eduardo Torroja.

Disponible a:

<http://www.ietcc.csic.es>

- Arxiu Docent de la UPC (Universitat Politècnica de Catalunya).

Disponible a:

<http://www.upcommons.upc.edu/>

- Arxiu Digital de la UPM (Universitat Politècnica de Madrid).

Disponible a:

<http://oa.upm.es/pfc.html>

6-. Webs d'interès-.

<http://www.asuni.es/>

Web on trobarem tots els productes de la família d'Autodesk.

<http://www.cype.es/>

Web que inclou tots els materials de cype, referents a detalls constructius, bases de detalls, càlculs de pressupostos, bibliografia d'interès, etc.

<http://www.buscadorarquitectura.com/>

Buscador general sobre aspectes d'arquitectura.

<http://www.nemetscheck.es/>

Web dels fabricats d'All Plan.

<http://www.constructalia.com/>

Buscador general sobre aspectes d'arquitectura i construcció.

<http://www.soloarquitectura.es/>

Buscador general sobre aspectes d'arquitectura.