# 1. BASIC INFORMATION

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| **Course** | Graphic Expression R+D |
| **Degree program** | Bachelor's in the Fundamentals of Architecture |
| **School** | Architecture, Engineering and Design |
| **Year** | Fifth |
| **ECTS** | 6 ECTS |
| **Credit type** | Compulsory |
| **Language(s)** | English |
| **Delivery mode** | Classroom |
| **Semester** | First |
| **Academic year** | 2024/25 |
| **Coordinating professor** | Macià Jorge Cerdà Inglés |

# 2. PRESENTATION

This subject develops the ability to improve the quality of design through a number of successive stages. This process is carried out through creative observation, conceptual development, graphic expression of mechanisms, systems and parts, three-dimensional digital design, and training in digital and graphic design workshops. Computers will be used, moving from one medium to another and incorporating manual prototyping processes within a digital environment. This subject integrates previous knowledge of design: the social and cultural context, morphology and technology, as a starting point to expand knowledge and apply it to a specific project. (Learning to observe, do and communicate). We will develop techniques to organize and transform design ideas through research and creating graphic and textual documentation. We will develop skills to manage forms and spaces while developing spatial vision using digital tools and create connections between reality and professional life: production and market processes, experimentation, trial and error. This subject promotes the advancement of technological design and digital production. We will learn the iteration process as a design tool to improve quality, how to approach the requirements of a problem and the relevance of the product obtained. We will correlate communication techniques based on design environments and digital production as well as those formulated in the project. We will practice techniques to critique the design process of a project both individually and as a team.

# 3. COMPETENCIES AND LEARNING OUTCOMES

**Core competencies:**

- CB1 Student has demonstrated knowledge and understanding in a field of study that is based on general secondary education, at a level which, although supported by advanced textbooks, imply some knowledge of the vanguard of their field of study.
- CB2 Student can apply knowledge to work or vocation in a professional way and has competences that can be displayed by means of elaborating and sustaining arguments and solving problems in their field of study.
- CB3 Student has the ability to gather and interpret relevant data (usually within their field of study) to make judgements that include reflection on relevant social, scientific or ethical issues.
- CB4 Student can communicate information, ideas, problems and solutions to both the specialist and non-specialist.
- CB5 Student has developed the necessary learning skills to undertake further studies with a high level of autonomy.

**Cross-curricular competencies:**

- CT02 Self-confidence.
- CT04 Communication skills in the native language (both oral and written) and in the English language, in accordance with the principles the Universidad Europea de Madrid, any concept or specification for the development of the regulated profession of architect. This includes learning the specific vocabulary of the degree as well as the ability to manage information.
- CT05 Interpersonal skills.
- CT06 Flexibility
- CT07 Teamwork: Ability to work in teams of architects, or in interdisciplinary teams (with shared responsibility in many cases), managing and planning work groups that are necessary in the scheme of competences and tasks that are defined for projects of a certain scale, in which several disciplines come together. This ability includes skills for interpersonal relations and team leadership.
- CT09 Planning and time management: Ability to plan work in order to comply with delivery times and to respect the limits imposed by budgets and building codes.
- CT10 Innovation and creativity: Creativity, imagination and aesthetic sensitivity applied to the design in order to satisfy the both the aesthetic and technical demands. This competence includes critical reasoning and historical culture.

**Specific competencies:**

- CE02 Ability to conceive and represent visual attributes to objects and master proportions and drawing techniques, including computer drawing applications.
- CE42 Ability to exercise architectural criticism.

**Learning outcomes:**

- RA1 Student shows responsibility for defining own goals and complying with the delivery of self-assigned work.
- RA2 Student shows initiative to search for basic bibliographic sources and relate different knowledge areas for a specific goal.
- RA3 Student has the ability to plan when tackling a project, both individually and in a team.
- RA4 Student improves their capacity to do research applied to a specific area.
- RA5 Student formulates own criteria and graphic language and is capable of self-criticism.
- RA6 Student is able to communicate, develop and express ideas and concepts coming from their own work and to generate a research document.
- RA7 Student improves their capacity for creativity and innovation.

The following table shows the relationship between the competencies developed during the course and the learning outcomes pursued:

| Competencies | Learning outcomes |
|---|---|
| CB1, CB2, CB3, CB5,<br>CT07 | RA1, RA2, RA4 |
| CB1, CB2, CB5,<br>CT02, CT05, CT06, CT07, CT09 | RA1, RA3, RA4 |
| CB4,<br>CT02, CT04, CT10 | RA5, RA6, RA7 |
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## 4. CONTENT

The subject is organised in two learning units, each with a single topic:

**UA1-Topic 1:** Develop a bio-inspired digital construction system project for a creative analysis and observation through a 3D drawing and prototype.

**UA2-Topic 2:** Design Project, development of a construction system and architectural application.

## 5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Master classes
- Guided studies, practical exercises, problem-solving
- Presentation of projects
- Teamwork
- Independent work
- Tutorials, follow-up and evaluations

## 6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

**Campus-based mode:**

| Learning activity | Number of hours |
|---|---|
| Master classes | 12,5 h |
| Guided studies, practical exercises, problem-solving | 50 h |
| Presentation of projects | 12,5 h |
| Teamwork | 12,5 h |
| Independent work | 37,5 h |
| Tutorials, follow-up and evaluations | 25 h |
| **TOTAL** | **150 h** |

## 7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

**Campus-based mode:**

| Assessment system | Weight |
|---|---|
| Activity 1 (Research submission) | 30% |
| Activity 2 (Final submission) | 70% |

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

## 7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10 (weighted average).

## 7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

# 8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

| Assessable activities | Deadline |
|---|---|
| Activity 1 (Research submission) | Delivery by the end of week 8 |
| Activity 2 (Final submission) | Delivery before the end of week 16. With an extension, until the end of the course |

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

# 9. BIBLIOGRAPHY

The recommended Bibliography is:


- Roccati, Anne- Line (editor). Fondation Louis Vuitton by Frank Gehry: A building for the 21st Century. Hyx, 2014.
- Joyce, Nancy. Building Stata: The design and construction of Frank O. Gehry's Stata Center at MIT. MIT PRESS, 2016.
- Hume, Nathan. Fresh Punches: Experimental Architecture Exhibition Catalogue. 2013.
- Fabricate. Achim Menges, Bob Sheil, Ruairi Glynn, Marilena Skavara. UCL Press, 2017.
- Fabricate. Bob Sheil, Ruairi Glynn, UCL Press, 2013.
- Fabricate. Fabio Gramazio, Matthias Kohler, Silke Langenberg. UCL Press, 2014.
- Digital Fabrication, Philip Yuan, Neil Leach, Achim Menges. Tongji University Press. 2017.
- Architectural Design, Wiley.

## 10. DIVERSITY MANAGEMENT UNIT

Students with specific learning support needs:

Curricular adaptations and adjustments for students with specific learning support needs, in order to guarantee equal opportunities, will be overseen by the Diversity Management Unit (UAD: Unidad de Atención a la Diversidad).

It is compulsory for this Unit to issue a curricular adaptation/adjustment report, and therefore students with specific learning support needs should contact the Unit at unidad.diversidad@universidadeuropea.es at the beginning of each semester.

## 11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.