Universidad de Navarra

***Construction Systems (GEA)***
*Guía docente 2026-27*

# INTRODUCTION

**Brief description**:

The students are introduced to the knowledge of the construction systems and the proper use of basic terminology for the building. Various materials (construction products) composing the different construction systems, together with their main characteristics (physical, chemical, technological proprieties), are studied in a complementary manner. All this refers to conceptual aspects grounded in building physics. In this way, sufficient knowledge is obtained to deepen the following years, in a good building practice development, aimed at building without pathology.

- **Degree**: Architectural Studies
- **Module/Subject**: Technical Module - Building Construction
- **ECTS**: 3 ECTS
- **Year, semester**: 1st year, 2nd semester
- **Type of course**: Basic
- **Instructors**:
  - Joaquín Torres Ramo (RA) (jtorram@unav.es),
  - Marina Vidaurre Arbizu (mvidaurre@una.es),
  - Elena Aparicio González (maparicio@unav.es),
- **Language**: English
- **Classroom, Timetable**: Aula 4, Thursday 12.00 - 14.00

# LEARNING OUTCOMES (Competencies)

### BASIC COMPETENCES

- **BC02** Students must know how to apply their knowledge professionally to their job or career and have the skills that usually demonstrated by writing and supporting their arguments, and problem-solving within their area of study.
- **BC04** Students are able to convey information, ideas, problems and solutions to specialist and non-specialist audiences.
- **BC05** Students have developed the learning skills necessary to undertake further studies with a high degree of autonomy.

### GENERAL COMPETENCES

- **GC01** Understand the history and theories of architecture and related arts, technologies and human sciences.
- **GC04** Understand the structural, construction and engineering design problems associated with building design as well as the techniques for solving them.
- **GC05** Understand the physical problems, technologies and function of buildings so as to provide them with internal conditions of comfort and protection against the climate.
- **GC06** Understand the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning.

### SPECIFIC COMPETENCES

- **SC13** Ability to apply technical and construction standards.
- **SC15** Ability to preserve finished works.
- **SC17** Ability to conceive, calculate, design, integrate into buildings and urban complexes, and execute building structures (T).

- **SC18** Ability to conceive, calculate, design, integrate into buildings and urban complexes, and execute interior partitioning systems, carpentry, stairs and other finished works (T).
- **SC19** Ability to conceive, calculate, design, integrate into buildings and urban complexes, and execute cladding systems, roofing and other framing (T).
- **SC25** Adequate knowledge of conventional building systems and their pathology.
- **SC26** Adequate knowledge of the physical and chemical characteristics, production procedures, pathology and use of construction materials.
- **SC27** Adequate knowledge of industrialised construction systems.
- **SC67** Use of English, level B2, to a sufficient level for the scientific and academic terminology typically used in architecture.

## PROGRAM

*A. How buildings work*

1. Building as an integrated systems unit + Building in relationship with the physical environment

*B. Passive systems*

2. Soil

3. Structural systems and foundations

4. Envelope systems

5. Partitions systems

6. Stairs and ramps

7. Finishes

*C. Active systems*

8. Building facilities and services

## EDUCATIONAL ACTIVITIES

| ***Educational activities*** | | | **(Total: 75 hours)**<br>**Hours for Educational activities** |
|---|---|---|---|
| AF1 | Theoretical classes | X | 17 |
| AF2 | Practices and workshops | X | 20 |
| AF3 | Directed works (individual or group) | X | 20 |

| | | | |
|---|---|---|---|
| AF5 | Tutorials | X | 1 |
| AF6 | Individual student study and work | X | 17 |

## ASSESSMENT

### ORDINARY EVALUATION

The grades obtained in each of the training activities, affect the final grade of the course as follows:

- The final grade for the course is calculated based on:

| GRADING SYSTEM | | |
|---|---|---|
| SE1<br>10-20% | Attendance and participation<br>(Theoretical classes, practices and workshops) | 10% |
| SE2<br>20-60% | Practical works | 40% |
| SE4<br>30-60% | Exams | 50% |

### SUPPLEMENTARY EVALUATION

The grade of the retake exam is calculated as follows:

- (theoretical and practical) Retake-exam: 100%.

## OFFICE HOURS

**Prof. Joaquín Torres Ramo.....(jtorram@unav.es)**

- Office A1115..... School of Architecture
- Tuesday 16:30 - 18:00

Universidad de Navarra

To help students resolve problems or receive more detailed and personal explanations of concepts that could be found difficult, students are strongly encouraged to visit me during my office hours outside of class time. Either individually or in small groups.

If date or time causes any inconvenience for you, please, contact us by mail to book an interview at another time.

## BIBLIOGRAPHY AND RESOURCES


**Edward Allen**

*How buildings work: the natural order of architecture,* Oxford; New York: Oxford University Press, 2005. 3rd ed.

Find it in the Library Electronic Version Find it in the Library Print Version

**Edward Allen and Joseph Iano**

*Fundamentals of building construction: materials and methods,* Hoboken, New Jersey: John Wiley & Sons, cop. 2014. 6th ed.

Find it in the Library Electronic Version Find it in the Library print version

**Staib, Dörrhöfer, Rosenthal**

*Components and systems: modular construction: design structure new technologies, Basel: Detail, 2008*

Find it in the Library

**Andrea Deplazes**

*Constructing architecture : materials, processes, structures, a handbook,* Basel; Boston: Birkhäuser-Publishers for Architecture, 2005

Find it in the Library