Universidad Zaragoza

**Year : 2020/21**

# 29986 - History of Technology and Architecture

## Syllabus Information

**Academic Year:** 2020/21
**Subject:** 29986 - History of Technology and Architecture
**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura
**Degree:** 436 - Bachelor's Degree in Industrial Engineering Technology
440 - Bachelor's Degree in Electronic and Automatic Engineering
434 - Bachelor's Degree in Mechanical Engineering
558 - Bachelor's Degree in Industrial Design and Product Development Engineering
435 - Bachelor's Degree in Chemical Engineering
438 - Bachelor's Degree in Telecomunications Technology and Services Engineering
470 - Bachelor's Degree in Architecture Studies
476 -
430 - Bachelor's Degree in Electrical Engineering
581 - Bachelor's Degree in Telecomunications Technology and Services Engineering
439 - Bachelor's Degree in Informatics Engineering
**ECTS:** 4.0
**Year:** 4
**Semester:** 430 - First semester
434 - First semester
435 - First semester
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440 - First semester
470 - First semester
470 - First semester
476 - First semester
558 - First semester
581 - First semester
**Subject Type:** Optional
**Module:** ---

# 1.General information

## 1.1.Aims of the course

The main objective is the knowledge and mentalization of the importance, in each of the steps that have been carried out throughout the technical and constructive history, have starred in builders and technologists. This reinforces the attraction to

the profession by noting its fundamental role in the reflection and application of the most appropriate materials and energy.

Likewise, the progress of technology and architecture is presented as a fundamental basis in improving human living conditions, and developing this line to achieve the Sustainable Development Goals (SDGs) under the 2030 Agenda.

### 1.2.Context and importance of this course in the degree

The need for this subject derives from the importance of the knowledge for the technical profession of how the technology available in our times has been reached and the role played by innovators and builders throughout the history of humanity, using the available materials, the energy of each epoch and through the transmission of the necessary information, showing the collaboration between technologists and architects. All this throughout the different historical stages. It is worth highlighting the differences between classical and technological history, because its references are the great steps taken in the progress of humanity: fire, tools, canals, ships, printing press, steam, terrestrial communications, etc. It is also an analyzing social changes' question through improvements in working conditions and tools used, in the line of the eighth SDGs.

### 1.3.Recommendations to take this course

This subject requires basic knowledge of History, Art History, Science, Technology and Architecture. It reviews the technological evolution of tools, appliances, machines, manufacture and transport of goods, construction of public and private buildings, agricultural production and available energies. Design and manufacture of precision utensils, social revolutions, work organization and its conflicts.

## 2.Learning goals

### 2.1.Competences

**By passing the subject, the student will be more competent to...**

**General Competencies:**

Ability to bring together the demands of research, development and innovation aimed at the design and development of products in relevant areas of economic, industrial, professional and academic activity.

**Basic Competencies:**

Apply the knowledge acquired and its problem-solving ability in new or little-known environments within broader (or multidisciplinary) contexts related to the area of study.

**In addition, the student will be able to...**

Analyze and assess the social impact of technical solutions.

Collect historical information on processes for obtaining goods and services.

Organize and synthesize information.

Research in scientific-technical culture.

Deepen the technician's knowledge as an agent of change.

Know how technical and architectural progress is in improving the quality of human life.

### 2.2.Learning goals

Acquires a knowledge base on the stages of obtaining goods and infrastructure.

Identifies difficulties in obtaining goods based on the technical situation.

It values new discoveries that meet old demands and are subject to scientific-technical progress.

Interpret the results of social changes.

It takes a critical attitude to solutions already used.

Learn about the evolution of production systems and the energies, materials and spaces used.

It raises awareness of the need for scientific, technological and architectural progress to be useful to the entire population, respecting habitat, equality among human beings - including explicitly gender-,..., and, in general, all SDG proposals.

### 2.3.Importance of learning goals

**The results are important for...**

Understand the role that materials, energy and information play in technological change processes.

Analyze the impact of production factors on technological evolution.

Know the milestones that have marked the great technological leaps.

Understand the great social revolutions.

Know the evolution of the technical formation of humanity.

Know the stages in the production processes for obtaining goods.

Analyze how technique and architecture have improved the conditions of human life, observing the differences in impact

between different social classes and the influence on environmental deterioration.

# 3.Assessment (1st and 2nd call)

## 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

**The student must demonstrate that he or she has achieved the expected learning outcomes through the following assessment activities**

Continuous evaluation:

By carrying out an individual subject work or, exceptionally, in pairs, whose approval is mandatory for the overcoming of the subject.

The continuous evaluation is completed by the delivery of the practice reports, which can sometimes be replaced by thematic tests through Moodle.

In addition, active participation in the development of classes and practices will be taken into account.

Those students, who do not wish to carry out the continuous evaluation process, should take the final written exam of the whole subject (theory and practices).

The weight of each of these activities in the final summative evaluation is shown in the following table:

| Evaluation type | Evaluation sub-type | Percentage on the final grade |
|---|---|---|
| Continuous evaluation | Work | 50% |
| | Practice reports | 20% |
| | Thematic tests | 15% |
| | Active participation | 15% |
| | | |
| Theoretical examination | | 100% |

**Standards for evaluation**

In the work of the subject will be evaluated:

Structuring.

Application of the contents of the subject matter.

Presentation.

Bibliographical references.

# 4.Methodology, learning tasks, syllabus and resources

## 4.1.Methodological overview

**The learning process that has been designed for this subject is based on the following:**

The proposed methodology seeks to promote retrospection in the technological and scientific fields to understand the evolution of materials and available energies, and their application to the progress of humanity.

The sessions with the whole group discuss the most theoretical aspects in the form of master class and are completed with discussions on the social effects of technical changes.

Practice sessions provide a view of objects and facilities for better understanding.

## 4.2.Learning tasks

The activities to be carried out focus on the exhibitions and subsequent discussion for the entire group of the class, to foster the critical spirit and link with the current situation.

Teachers will present schematics, powerpoint images, and videos to focus the content of each specific topic.

Original pieces are also presented to illustrate and contextualize the topic to the maximum, especially in practice sessions.

## 4.3.Syllabus

The Program offered to the student to help you achieve the expected results includes:

Introduction: Prehistory. Mesopotamia and Egypt.
Science and Technology in the Classic world: Greece and Rome.
The medieval revolution: tools and energies.. The knowledge transmission. Alchemy.
The engineers and architects of the Renaissance. Mining and machinery.
Proto-industrialization and the scientific revolution.
The steam. The industrial revolution.
Energy, transports and steel.
Applications to Chemistry and construction.
Technological development and communications.
Industry and arquitecture in Aragon.
History of specific topics.

## 4.4.Course planning and calendar

**Calendar of face-to-face sessions and presentation of work**

The theoretical classes will be carried out in person with the schedules provided by the EINA.

Type 4 (field practices in small groups)
Visits to Museums: Roman Theatre, Forum and Baths. Museum of Zaragoza.
Visits to churches: San Pablo, San Felipe, San Carlos, Santa Engracia.
Visits to Patio Infanta, Imperial Canal, University Paraninfo.
Visits to historical companies.
Visit to the Palace of the Aljafería
Attendance at exhibitions with technical or architectural interest from different entities (Caixa Forum Zaragoza, Ibercaja,...).

Visits to industries, buildings, museums and churches will take place on Wednesdays from 18 to 20 hours or on Saturday mornings.
The work will be presented on paper or pdf via email or Moodle before the date set by the teacher.

The course will begin on the start date of the semester in which this course is scheduled.
The theoretical sessions will be performed in the physical space fixed by the EINA Directorate.
Visiting museums and churches will take place on Wednesdays from 18 to 20 hours or on Saturday mornings.

See the school's website https://eina.unizar.es/ for information about:
Academic calendar (class period and non-school periods, festivities, exam period).
Schedules and classrooms.
Dates on which the exams of the official calls of the subject will take place.
Teacher tutoring hours in Moodle.

## 4.5.Bibliography and recommended resources