

Academic Year/course: 2022/23

28637 - Monument Restoration

Syllabus Information

Academic Year: 2022/23

Subject: 28637 - Monument Restoration

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 422 - Bachelor's Degree in Building Engineering

ECTS: 5.0

Year: 3

Semester: Second semester

Subject Type: Optional

Module:

1. General information

1.1. Aims of the course

Scientific aims:

To stimulate the interest of the student for the conservation of the architectural heritage through the study of the theory and history of the restoration as well as the most usual intervention techniques.

The correct knowledge and use of the specific terminology of the field of restoration and intervention techniques, as well as their differences.

Introduce the student in legislation, letters and international agreements on intervention on Architectural Heritage.

Introduce the student in the theories and techniques of intervention in heritage to develop and enhance the ability to decide conservation operations of historical buildings.

Teach the student to detect, analyze and decide intervention techniques on the different pathologies that can affect the materials and constructive systems present in a historical construction.

Professional aims:

Establish first contacts with the professional world of which he is going to be part and especially in the field of restoration, conservation and architectural rehabilitation, enhancing the capacity to project and direct conservation operations of historical buildings.

Start in the study of the theory and history of architectural restoration and learn about the latest trends in intervention on Architectural Heritage.

Be initiated in the knowledge of legislation, both state and regional, and international letters and agreements on Architectural Heritage, as well as in the maintenance of buildings.

Be initiated in the study and recognition of the pathologies of historical constructions, through their knowledge, and intervention techniques.

Specific aims of the degree:

Prepare technical projects and perform the direction of material execution of the restoration, rehabilitation and maintenance of buildings in the scope of their legal authorization.

Manage new building technologies in the field of restoration, rehabilitation and maintenance of buildings and participate in quality management processes.

Direct and manage the use, conservation and maintenance of the buildings, writing the necessary technical documents.

Advise technically in the manufacturing processes of materials and elements used in restoration works, rehabilitation and maintenance of buildings.

Teach in the disciplines corresponding to their academic training, in the terms established in the law.

Develop functions in Public Administrations in the field of regulations and management.

These approaches and objectives are in line with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the course learning outcomes provides training and competence to contribute to their achievement to some degree.

Goal 4: Quality Education.

4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

4.C By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

Goal 5: Achieve gender equality and empower all women and girls.

5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decisionmaking in political, economic and public life.

5.B Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy.

7.3 By 2030, double the global rate of improvement in energy efficiency.

Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all.

8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

Goal 10: Reduce inequality within and among countries.

10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

Goal 11: Make cities inclusive, safe, resilient and sustainable.

11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

Goal 12: Ensure sustainable consumption and production patterns

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

Goal 13: Take urgent action to combat climate change and its impacts.

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

1.2. Context and importance of this course in the degree

Monument Restoration is an optional subject that is taught in the Second Semester of the third year of the Bachelor's Degree in Building Engineering, with a teaching load of 5 ECTS credits.

It is part of the subject of Building, Maintenance and Architectural Constructions, within the module called Building Technologies and Technologies.

This subject is important in the correct formation of a Building Engineer. The contents and knowledge imparted expose the student to the criteria and techniques of intervention on the heritage buildings.

1.3. Recommendations to take this course

Sufficient prior knowledge about Building History, Materials and Construction

2. Learning goals

2.1. Competences

Ability to organize and plan

Ability to solve problems

Aptitude for oral and written communication of the native language

Capacity for analysis and synthesis

Information management skills

Ability to work in teams

Capacity for critical reasoning

Ability to work in an interdisciplinary team

Ability to work in an international context

Improvisation and adaptation capacity to face new situations

Leadership aptitude

Positive social attitude towards social and technological innovations

Ability to reason, discuss and present your own ideas

Ability to communicate through words and images

Ability to search, analyze and select information

Capacity for independent learning

Having and understanding knowledge in an area of study that starts from the general education base, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the vanguard of the field of study.

Applying their knowledge to their job or vocation in a professional way and having the competencies that are usually demonstrated by developing and defending arguments and solving problems within their area of study.

Ability to collect and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature.

Ability to transmit information, ideas, problems and solutions to a specialized and non-specialized audience.

Developing the necessary learning skills to undertake further studies with a high degree of autonomy.

Promoting entrepreneurship.

Ability to intervene in the rehabilitation of buildings and in the restoration and conservation of the built heritage.

2.2. Learning goals

At the end of the course, the student:

will have learnt to look at the buildings to be restored from the architect's perspective and identify existing problems.

will have the capacity to rule on the causes and manifestations of pathologies in buildings, to propose solutions to avoid or correct them, and to analyze the life cycle of elements and construction systems.

will have knowledge of the legislative and technical regulations and specific doctrine, applicable in the built heritage and will acquire fluency and practice in its management and interpretation.

will have the aptitude to intervene in the rehabilitation of buildings and in the restoration and conservation of built historical heritage.

will have the capacity to apply the specific evaluation procedures for the restoration of monuments.

will know the intervention techniques and procedures compatible with the different historical construction systems.

will have knowledge of the appropriate construction materials for each type of construction and aptitude for their application in the process of intervention on pre-existence.

will increase and reaffirm the technical language of the subject.

will develop a critical sense and will be able to propose alternatives based on observation and reasoning for solving constructive problems associated with the restoration and conservation of buildings.

will become aware of the responsibility for decision making.

will increase sensitivity towards Cultural Heritage.

will achieve a favorable disposition and search capacity to acquire new knowledge from various sources, even autonomously, and its continuous updating.

2.3. Importance of learning goals

This subject is important in the development of the Bachelor's Degree in Building Engineering for the training of students in this field of knowledge and its application in related activities.

3. Assessment (1st and 2nd call)

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

At the beginning of the course the student will choose one of the following two assessment methodologies:

-Face-to-face assessment system: characterized by the obligation to attend more than 80% of the hours. The teacher will evaluate the attendance and participation of the student in the lectures, the demonstration of acquired knowledge and the ability to solve the practical questions raised. Likewise, the practical exercises carried out by the student will be evaluated. Students who do not exceed 80% of attendance will automatically go to the non-attendance assessment model.

-Non-face-to-face assessment system: the student will have the option of a grading of the non-face-to-face assessment system that goes from the absolutely non-face-to-face assessment, in which the evaluation consists of a theoretical-practical test of the subject contents, to the quasi-face-to-face evaluation in which the student will enjoy almost all the benefits of the face-to-face assessment. It will be established by teacher/ student agreement. Throughout the course, the assessment system can be varied depending on the evolution of the student's personal situation. Even in the most unfavorable case, an absolutely non-face-to-face assessment, the student will be accompanied in the learning process, since there will be an on-line attention system, through the Moodle platform of the University of Zaragoza. It will consist of a single global final evaluation test.

Face-to-face assessment system

The students must demonstrate to have achieved the expected learning outcomes through the following assessment tasks:

-Individual activities in class: The active participation of the students will be taken into account, both in person (in the classroom) and virtual (on the Moodle platform), in addition to their fluency and oral expression when exhibiting in public, thus as their capacity of expression in the writing and in the drawings and diagrams. All activities will contribute in the same proportion to the total mark of this block, which will contribute 10%.

-Practical works in classroom: Throughout the course, the student will have to carry out various works to be solved in classroom, individually or in groups. The works must be turned in on time and the tutorials set by the teacher must be attended. This activity will contribute 50% to the final grade.

-Autonomous practical work: The student will have to develop a practice in which he demonstrates that he has achieved the marked learning goals. This practice will require the student to work partly independently and partly in the center, always supervised by the teacher. The deadline will be communicated by the teacher with adequate notice. This activity will contribute 40% to the final grade.

Each part will be evaluated on 10 points, and it will be necessary to obtain a minimum grade of 5 in each part to average with the rest. The course will be approved with an average grade equal to or greater than 5.

Non-face-to-face assessment system

The students must choose this modality when they cannot adapt to the pace of work required in the face-to-face assessment system, have failed or would like to increase their grade.

The students must demonstrate that they have achieved the expected learning results through a single written test, which will include theoretical or practical questions. The quality of the writing and the drawings or diagrams required in the test will be assessed.

The test will be passed with a grade equal to or greater than 5.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, fieldwork, conferences, tutorials, visits, and autonomous work and study.

A strong teacher/student interaction is promoted. This interaction becomes a reality through a division of work and responsibilities between the students and the teacher.

For the learning process, the student will have the basic contents available through lectures given by the teacher. These contents will give rise to both the questions considered in the practice sessions and the work that students must develop autonomously, always monitored by the teacher.

The approach, methodology and assessment of this guide are intended to be the same for any teaching scenarios. They will be adapted to the social-health situation at any particular time, as well as to the instructions given by the authorities concerned.

4.2. Learning tasks

This 5 ECTS (125 hours) course is organized as follows:

- **Lectures:** Theoretical activities carried out mainly through explanation by the teacher, where the theory contents of the course are given, highlighting the basics, structuring them into topics and/or sections, interrelating them. The lecture is supported by the projection of audio visual presentations, including different images and videos. The student, through the educational platform Moodle, is provided with both the notes prepared by the teacher to support lessons and the recommended bibliography.
- **Practice sessions:** The weight of these classes are shared between teacher and students. The teacher solves practical cases for teaching purposes. This type of teaching complements the theory shown in the lectures with practical aspects. At times these lessons will be given by guest lecturers or experts in the field being dealt with at the time.
- **Fieldwork, visits and conferences:** Visits to historical buildings in the process of renovation or renovated are particularly useful, accompanied by the experts in charge of their management, to visualize the constructive solutions used and deal with real problems. The attendance to courses or conferences related to the course is also considered, in both the University of Zaragoza and other institutions.
- **Tutorials:** Tutorials will be carried out giving individual, personalized attention with a teacher from the department. They may be online or through Moodle/email.
- **Autonomous work and study**
 - Study and understanding of the theory taught in the lectures.
 - Understanding and assimilation of the cases solved in the practical classes.
 - Preparation of solutions to proposed practice tasks, etc.
 - Preparation of the written tests.
 - Reinforcement activities: Activities that reinforce the basics of the course are assigned from Moodle. The

monitoring of these activities is carried out in a personalized way. This kind of activities provides the teacher with attitude, effort and performance evaluation of the student learning.

4.3. Syllabus

This course will address the following topics:

T.01. INTRODUCTION

- VOCABULARY AND BASIC CONCEPTS
- LEGISLATION

T.02. HISTORY OF RESTORATION: THE FOUNDATIONS OF CONTEMPORARY THEORY

T.03. RESTORATION IN THE CURRENT TIME IN SPAIN

T.04. RESTORATION PROJECT

- PREVIOUS STUDIES
- Historical research
- Architectural-constructive survey: traditional techniques and new technologies
- Material degradation Study
- Structural damage Study
- Stratigraphy
- CRITERIA AND PROJECT DECISIONS. INTERVENTION TECHNIQUES

4.4. Course planning and calendar

Schedule sessions

Week	Content
1	Introduction. T.01. Vocabulary and basic concepts
2	T.01. Legislation
3	T.01. Legislation
4	T.02. History of restoration
5	T.02. History of restoration
6	T.03. Current restoration in Spain
7	Practical visit
8	T.04. The restoration project. Introduction
9	T.04. Architectural survey
10	T.04. Architectural survey: new technologies
11	T.04. Material degradation study
12	T.04. Structural damage study
13	T.04. Intervention techniques
14	Presentation of case studies
15	Introducing group practices

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of EUPLA website and Moodle.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28637>