Course guide

310736 - 310736 - Conservation and Maintenance

Unit in charge: Barcelona School of Building Construction
Teaching unit: 753 - TA - Department of Architectural Technology.
Degree: BACHELOR’S DEGREE IN ARCHITECTURAL TECHNOLOGY AND BUILDING CONSTRUCTION (Syllabus 2019). (Compulsory subject).

Academic year: 2022 ECTS Credits: 4.5 Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Gibert Armengol, Vicente
Others: Gibert Armengol, Vicente Royano García, Verónica

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. FE-11 Ability to write manuals and maintenance plans and manage its implementation in the building.

Transversal:
2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

TEACHING METHODOLOGY

The directed learning hours consist of:
- Theoretical classes (large group) in which the teacher makes a presentation to introduce the general learning objectives related to the basic concepts of the subject. It also promotes the involvement of students in their learning, interspersing questions and / or practical exercises, motivating active participation in the classroom. Support material that is available to students through ATENEA is used: course programming, PDF presentations of the PowerPoint files projected in class and recommended bibliography.
- Practical classes (medium group) in which students work in groups of between 3 and 5 members by solving exercises related to the specific learning objectives of each of the contents of the subject. In these works, the transversal competence of Sustainability and Social Commitment is applied by incorporating these concepts into their subject matter.
- Autonomous learning is limited to assimilating and internalizing the topics of theoretical classes and recommended readings, as well as research and the use of computer applications related to maintenance and its management.

LEARNING OBJECTIVES OF THE SUBJECT

At the end of the course, the student should be able to:
- Understand and analyze the life cycle of the construction elements and subsystems which form the buildings.
- Identify and understand the legislation related with the maintenance field.
- Analyze and deduce/distinguish the most suitable intervention types for the preservation of the new property heritage from the design/project phases and the built.
- Develop use manuals, plan maintenance plans and manage its implementation in a building.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours large group</td>
<td>27,0</td>
<td>24.00</td>
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<tr>
<td>Hours medium group</td>
<td>18,0</td>
<td>16.00</td>
</tr>
<tr>
<td>Self study</td>
<td>67,5</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 112.5 h

CONTENTS

UNIT 1: CONSERVATION

Description:
This unit works on:
- Conservation Strategies: introduction to building conservation; CTE contributions to conservation; application of sustainability criteria.
- Study of the Life Cycle of the building: stages of the life cycle; Life cycle cost concepts, lifespan and substitutions; Methodology to estimate the useful life (ESL) and the reference values (RSL); Definition and application of modifying factors.
- Product Availability Building: concepts of durability, reliability, maintainability and availability; Identification of major degradation agents; Concept of failure and analysis of its consequences (fault); Evolution of the failure rate over time.

Specific objectives:
Be aware of the need for the conservation of buildings.
Identify and interpret legislation related to the areas of conservation and maintenance.
Classify the spaces of a building according to its using.
Identify, analyze and distinguish the more adequate typologies of intervention for the patrimonial real state conservation of new construction, from phases of design/project, to the construction.
Identify the critical elements of a building from the point of view of durability and reliability.
Identify the threats that favor the degradation of buildings.
Interpret and analyze the life cycle of the elements and the different construction subsystems that make up the buildings.
Calculate the estimated useful life of the elements that make up a building and the number of times they must be replaced over time.

Related activities:
Theoretical classes.
Evaluation partial. Individual partial test of continuous evaluation (unit 1).
Evaluation final. Individual final test of continuous evaluation (units 1 and 2).
Practices. Test in groups (unit 1).

Related competencies:
02 SCS N3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

Full-or-part-time: 68h 30m
Theory classes: 9h
Practical classes: 18h
Self study: 41h 30m
UNIT 2: MAINTENANCE

Description:
This unit works on:
· Maintenance Strategies: introduction to the maintenance of buildings, types and activities; Contributions of the CTE to the maintenance; Application of sustainability criteria.
· Design of the Maintenance Plan: concepts of the Building Book and Maintenance Plan; Structure of the Book of the Building; Documents for Use and Maintenance; Development of the Maintenance Plan and tools for its development.
· Maintenance Management: Introduction to Information Systems; Concept of CMMS and modular structure; Operational management and supervision of the maintenance service; Background data; Examples of CMMS and other management tools; BIM integration; Management models.

Specific objectives:
Identify the types of maintenance applicable to the building and its related activities.
Develop manuals of use, programme maintenance plans and manage its implantation in a building.
Create and evaluate work orders in monitoring a maintenance plan.

Related activities:
Theoretical classes.
Evaluation final. Individual final test of continuous evaluation (units 1 and 2).
Practices. Tests in groups (unit 2).

Related competencies:
FE-11. FE-11 Ability to write manuals and maintenance plans and manage its implementation in the building.
02 SCS N3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

Full-or-part-time: 43h
Theory classes: 6h
Practical classes: 12h
Self study : 25h

GRADING SYSTEM

The final grade is the sum of the following partial grades:
Qf (100%) = QAP (20%) + Qpr (40%) + QAF (40%)

Being:
Qf: final grade (100%)
QAP: partial assessment grade (20%)
Qpr: practical sessions grade (40%)
QAF: final assessment grade (40%)

EXAMINATION RULES.

Continuous evaluation: If any of the training activities is not carried out, it will be considered as not scored and not recoverable. In order to be eligible for the revaluation, the student must have been evaluated for the subject as a suspense (S) with a minimum grade of 3.5. In no case will a student who has passed the subject to raise grade or who has been evaluated or evaluated as Not Presented (NP) be allowed to present for the revaluation. In addition, the maximum mark that may be obtained in the revaluation shall be approved (5).
BIBLIOGRAPHY

Basic:

Complementary:

RESOURCES

Other resources:
Catalunya. Decret 67/2015, de 5 de maig, per a foment del deure de conservació, manteniment i rehabilitació dels edificis d'habitatges, mitjançant les inspeccions tècniques i el llibre de l'edifici. Catalunya: DOGC, 7 de maig de 2015, núm. 6866.