

Course guide

290102 - ANCON - Analysis, Consolidation and Reinforcement of Existing Structures

Last modified: 05/07/2024

Unit in charge: Vallès School of Architecture
Teaching unit: 753 - TA - Department of Architectural Technology.
Degree: DEGREE IN ARCHITECTURE STUDIES (Syllabus 2014). (Optional subject).
Academic year: 2024 **ECTS Credits:** 3.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Payola Lahoz, Jordi

Others:

PRIOR SKILLS

Distinció i diferenciació dels tipus d'esforços, càlculs bàsics, nocions de construcció tradicional i moderna. Ganes de reinterpretar i ordenar capacitats adquirides i reenfocar-les al món de la rehabilitació.

REQUIREMENTS

ESTRUCTURES DE FORMIGÓ ARMAT - Pre-requisit

TEACHING METHODOLOGY

Es desenvoluparan sessions amb parts teòriques amb caràcter participatiu, i part de desenvolupament de les pràctiques a realitzar. Hi haurà sessions públiques de correcció dels casos d'estudi desenvolupats en grup. També hi ha prevista visita al Monestir de Sant Cugat del Vallès, a l'empresa MAPEI, i fer una classe-visita a l'Escola de Mitjans AudioVisuals de Can Batlló (EMAV).

LEARNING OBJECTIVES OF THE SUBJECT

Establish basic design and pre-dimensioning criteria through numerical analysis to deal with an intervention to reinforce an existing structure by adapting it to current regulations.

Predimensioning, construction details and constructive process on site, of all possible reinforcement measures of an existing building's framework. Stress will be laid on: a) relation between constructive easiness and architectural result of the proposals and relation between cost and safety at work.

Medium level of structural calculation is required to be able to follow the subject.

Teaching language will be Catalan.



CONTENTS

Contens

Description:

1

Basic approaches to consider for the rehabilitation of pre-existing buildings and materials.

2

Interpretation of the set of structural elements and typologies. Main effort diagrams.

3

Foundation reinforcement techniques.

4

Wall consolidation operations.

5

Pillar reinforcement techniques.

6

Reinforcement techniques for beams and girders.

7

Forging reinforcement techniques.

8

Reinforcement techniques for elements that work 'for form'. Vaults and domes.

9

Flashing techniques for vertical load-bearing elements.

10

Provisional interventions to ensure stability in the work.

11

Final exam and delivery of cases

Site visit - Pending confirmation

Full-or-part-time: 30h

Theory classes: 10h

Laboratory classes: 20h



GRADING SYSTEM

- Questionnaires: a short questionnaire will be asked in order to develop the ability to describe complex cases with drawings and brief explanations. They will be returned solved with comments to improve.

OBJECTIVE: to develop capacities for the drafting of reports, opinions, and conclusions of studies or analyses.

- Development of cases: Two small cases are proposed, real and particular, which must be developed and defended in groups. A real solution will be given to each case.

OBJECTIVE: Develop group work on specific technical proposals for real cases, defend and justify them. Learning from real cases.

- Attendance: It is considered that the student who follows the course develops sufficient knowledge and obtains good grades for his record.

BIBLIOGRAPHY

Basic:

- Payola, Jordi. Apunts Estructures Grogues. Apunts Escola,
- Brufau, Robert. La Estació de Bellaterra : motivo para un curso de estructura. Barcelona: Universitat Politècnica de Catalunya. Departament d'Estructures a l'Arquitectura, 1985.
- Brufau, Robert. Rehabilitar con acero. Madrid: Asociación para la Promoción Técnica del Acero, 2010. ISBN 9788469230596.
- Engel, Heino. Sistemas de estructuras. Barcelona: Gustavo Gili, 2001. ISBN 8425218004.