

COURSE DESCRIPTION TECHNOLOGIES FOR BUILDING RENOVATION

SSD: TECHNOLOGY OF ARCHITECTURE (ICAR/12)

DEGREE PROGRAMME: ARCHITECTURE (N14)
ACADEMIC YEAR 2022/2023

COURSE DESCRIPTION

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GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE: 15187 - DESIGN OF BUILDING SYSTEMS - TECHNOLOGIES FOR THE BUILDING REGENERATION
MODULE: 11328 - TECHNOLOGIES FOR THE BUILDING REGENERATION
CHANNEL: C
YEAR OF THE DEGREE PROGRAMME: IV
PERIOD IN WHICH THE COURSE IS DELIVERED: SEMESTER I
CFU: 4

REQUIRED PRELIMINARY COURSES

Architectural Construction Laboratory

PREREQUISITES

There are no prerequisites

LEARNING GOALS

The integrated course Design of Building Systems –Technologies for the building regeneration, provides principles, tools and methods to experiment the potential of technological innovation - process, design and product - in order to control the relationship between user needs, performance and technologies. In line with the objectives of the study course and with the training gained in previous years, Technologies for the building regeneration course aims to:

a) acquire knowledge and know-how to use basic methodological tools for analyzing the potential of innovation in relation to technological choices;

- b) identify interventions compatible with the preservation of material culture in compliance with the regulatory framework, resources and pre-existing constraints;
- c) independently evaluate the regeneration processes of the built environment, with reference to maintenance, reuse and redevelopment strategies;
- d) produce drawings and graphic-descriptive documents with clarity and rigor.

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Knowledge and understanding

The student must understand the issues related to the built environment regeneration project; check the relationship between services and technologies to manage the life cycles of settlement systems and prefigure new ones, starting from the behaviour of the building and the conditions of use. The training course aims to provide students with the knowledge and basic methodological tools necessary - in the regeneration and maintenance project - to analyze the potential of innovation in relation to compatible technological choices.

Applying knowledge and understanding

The student must be able to identify, starting from the reading of architecture as a system, the interventions compatible with the conservation of the material culture, solve problems for the recognition of obsolescence and failure processes. The student must know-how to prefigure design scenarios, according to the needs of users, in compliance with the regulatory framework, resources and pre-existing constraints. The training course is aimed at transmitting the operational skills to concretely apply the knowledge in the project outcomes, evaluated along the life cycle of the existing with reference to the maintenance, adaptive reuse and redevelopment strategies.

COURSE CONTENT/SYLLABUS

The teaching program of the course includes:

- the framing of the disciplinary field in the current scientific scenario;
- the knowledge of the principles, tools and strategies that govern the regeneration of settlement systems;
- the recognition of the conditions of obsolescence and failure for the construction of design alternatives;
- the definition of design scenarios according to the needs of users in respect of resources and constraints of the building;
- the control of the project outcomes, also in reference to the building life cycle and maintenance strategies.

READINGS/BIBLIOGRAPHY

Caterina G. (2016), *Strategie innovative per il recupero delle città storiche*, Techne Journal of Technology for Architecture and Environment, 12/2016 Firenze University Press, Firenze, pp.33-35.

De Medici S., Pinto M.R.(2012), *Valorizzazione dei beni culturali pubblici e strategie di riuso*, Techne Journal of Technology for Architecture and Environment, 03/2012, Firenze University Press, Firenze 2012, pp. 140-147.

Gasparoli P., Talamo C. (2006), *Manutenzione e Recupero. Criteri, metodi e strategie per l'intervento sul costruito*, Alinea, Firenze; selezione di capitoli.

Pinto M.R. (Ed) (2019), *Coordinare le conoscenze per la manutenzione del patrimonio culturale. Knowledge management for cultural heritage maintenance*, CLEAN Edizioni, Napoli.

Pinto M.R. (2004), *Il Riuso Edilizio. Procedure, metodi ed esperienze*, UTET Libreria, Torino; Cap. 4: pp. 87-101, 134-140.

Viola S., Diano D. (2019), *Repurposing the Built Environment: Emerging Challenges and Key Entry Points for Future Research*, Sustainability, 11(17), 46-69; <https://doi.org/10.3390/su11174669>

Refer to Wikitecnica.com for the following definitions:

"RECUPERO" di Gabriella Caterina al link <http://www.wikitecnica.com/recupero-tecnologia/>

"RIUSO EDILIZIO" di Maria Rita Pinto al link <http://www.wikitecnica.com/riuso-edilizio/>

"MANUTENZIONE, PIANO DI" di Vittorio Fiore al link <http://www.wikitecnica.com/manutenzione-piano-di/>

During the course of the lectures, references for each topic covered and in-depth bibliographical references will be provided in detail.

TEACHING METHODS OF THE COURSE (OR MODULE)

The course is divided into theoretical lessons and classroom exercises to outline the theoretical approaches dealt with and to experiment with fault diagnosis strategies and design of new performance levels compatible with the pre-existing. The teacher will use: a) frontal lessons for about 50% of the total hours; b) exercises to practically deepen theoretical aspects for approx. 12 hours; c) joint meetings with the teacher of the Design of Building Systems course with which the course is integrated for approx. 10% of the total hours; d) seminars to explore specific topics for approx. 3 hours.

EXAMINATION/EVALUATION CRITERIA

a) Exam type

- Written
- Oral
- Project discussion

Other : The evaluation of the results consists in an interview on the topics covered in the theoretical lessons and in the discussion of the project developed in the classroom. The evaluation will be aimed at verifying the student's acquisition of knowledge of regeneration principles, tools and strategies to ensure the feasibility of the intervention. The student must have acquired knowledge and ability to control the variables that guide the technological choices in the regeneration and maintenance project, in relation to the state of the efficiency and user needs.

In case of a written exam, questions refer to

- Multiple choice answers
- Open answers
- Numerical exercises

b) Evaluation pattern

The final evaluation will take into account 50% of the results obtained in the Technologies for the building regeneration course and 50% of the outcome of the integrated Design of Building Systems course. The final grade will be weighted on the CFU of each course and therefore composed as follows: Technologies for the building regeneration Module 4CFU-50%, Design of Building Systems Module 4CFU-50%.