

UNIVERSITY OF CAGLIARI
SCHOOL OF SPECIALISATION IN ARCHITECTURAL AND LANDSCAPE HERITAGE
aa.yy. 2022-23 and 2023-24

COURSE INFO

Professor
Luigi Fenu
Title of the course
Retrofitting design of historical structures
Scientific Disciplinary Sector
ICAR/09
Number of hours
30
Language
English
Objectives of the course
The course aims to give the attendees an overview of the retrofit interventions required by the defects of the building and the technical background required by the need of updating the structure performances according to new modes of use and/or new norm prescriptions.
Any prerequisites
The course exam "Analisi del comportamento strutturale e dei dissesti delle costruzioni storiche" already passed.
Topics and contents of the course
<ul style="list-style-type: none">- Structures of historical buildings.- Conservation and structural safety.- Building survey and diagnosis of building defects.- Structure defects and retrofit measures.- Balancing improvement of building performances and restoration quality through using invasive and non-invasive retrofit measures.- Structural defects due to foundations.- Structural defects due to vertical loads.- Structural defects due to horizontal loads, with particular reference to earthquake loads.- In-plane response of historical buildings with the equivalent frame approach.- Out-of-plane response of the masonry walls and verification of local mechanisms.- Foundation retrofit; Masonry walls' retrofit using scuci-cuci technique, mortar injections, reinforced plaster, TRM (Textile Reinforced Mortar) etc.- Improvement of the connection between walls.- Retrofit of timber floors.- Arch and vault strengthening.
Methods of examination
Written.
Essential bibliography
E. Giuriani, <i>Consolidamento degli edifici storici</i> , UTET scienze tecniche, Torino 2012. M. Vinci, <i>Metodi di calcolo e tecniche di consolidamento per edifici in muratura</i> , Flaccovio Editore, Palermo 2018. A. Defez, <i>Il consolidamento degli edifici</i> , Liguori Editore, Napoli 1998. N. Augenti, F. Parisi, <i>Teoria e tecnica delle strutture in muratura</i> , Hoepli, Milano 2019.
Further bibliographical information
G. Rocchi, <i>Istituzioni di restauro dei beni architettonici e ambientali</i> , Hoepli, Milano 1995. P. Rocchi, <i>Trattato sul consolidamento</i> , Edizioni Mancosu, Roma 2003.

G. Cigni, *Il consolidamento murario*, Edizioni Kappa, Roma 2006.

S. Mastrodicasa, *Dissesti statici delle strutture edilizie*, Hoepli, Milano 2003.

Didactic materials

Slides.

External guests

Humberto Varum, University of Porto, Portugal.