



## **COURSE DESCRIPTION**

### **Architectural conservation and construction aspects of historical buildings**

**SSD: RESTAURO (ICAR/19)**

DEGREE PROGRAMME: ARCHITECTURE AND HERITAGE (P53)  
ACADEMIC YEAR 2022/2023

## **COURSE DESCRIPTION**

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## **GENERAL INFORMATION ABOUT THE COURSE**

INTEGRATED COURSE: U3991 - DESIGN STUDIO FOR ARCHITECTURAL HERITAGE  
MODULE: U3993 - Architectural conservation and construction aspects of historical buildings  
CHANNEL: A-Z  
YEAR OF THE DEGREE PROGRAMME: I  
PERIOD IN WHICH THE COURSE IS DELIVERED: SEMESTER I  
CFU: 4

### **REQUIRED PRELIMINARY COURSES**

None

### **PREREQUISITES**

None

### **LEARNING GOALS**

The course aims to provide students with the necessary knowledge to let them face the complexities of the restoration project throughout the adequate understanding of the historic built heritage, autonomously evaluating the processes which determine the built palimpsest, in order to transmit to the future the architecture heritage in its entirety and authenticity and to produce an intermediate-level architectural restoration project according to the current legislation. Students will be provided also with the necessary tools allowing them to analyze autonomously the built heritage and to evaluate the layers of the different interventions of transformation, conservation and restoration occurred during the centuries.

## **EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)**

### **Knowledge and understanding**

At the end of the course and after passing the exam, the student will be able to acknowledge the architectural restoration project methodology at different scales, to read and to portray a historical fabric, evaluating autonomously its historical and construction events, its materials and construction techniques, its collapse and decay phenomena, and also its tangible and intangible values, in order to transmit it to the further generations in its material integrity, defining the methodology approaches for its conservation. The student will be able to apply its knowledge in an architectural restoration project culturally aware and technically updated to the different scales of the built heritage.

The student must:

- Show to possess the methodology of the architectural restoration project at different scales, relating to the current disciplinary debate;
- Show the critical understanding methods of the built heritage relating to the historical transformation occurred during time; -Show to know and portray the cultural values, tangible and intangible, preceding the choices for safeguard, conservation, management and enhancement of the built heritage;
- Show to understand with critical and multidisciplinary approach the survey and diagnosis techniques on the built heritage aimed to the restoration and conservation;
- Show to possess the survey and representation techniques of the construction systems of the historical architecture;
- Show to know the survey and representation techniques of the collapse and decay phenomena on the built heritage; -Show to know the intervention techniques for restoration and conservation of the built heritage;
- Show to know the current legislation on protection of the built heritage;
- Show to be able to define the project strategies for the enhancement and improvement of use for the built heritage;

The training course, starting from the knowledge the evolving debate on architectural restoration –already studied into its historical aspects in the Theories and History of Restoration course –aims to convey to the student a methodology for the architectural conservation project in its many phases, of survey, of diagnosis, of concept and checking. Through this methods the students acquire the ability to draw up a culturally aware and technically updated project on built heritage.

### **Applying knowledge and understanding**

The student must show:

- To have developed a critical ability of the built heritage, relating to the history of urban architectural, restoration transformations.
- To be able to apply methods of visual and instrumental investigation for the knowledge of the material, morphological, typological, constructional and structural aspect of the built heritage;
- To know how to use the advanced computer techniques and tools for the critical representation of the heritage in its historical recognition and through its phenomena of instability and decay;

-To know how to develop a restoration, conservation, reuse, enhancement project of the built heritage culturally aware in the line with disciplinary and legislative orientations.

-The training course is aimed to transmit the operating abilities necessary to correctly apply the acquired knowledge by the student in the definition of project strategies for the conservation and restoration of the architectural heritage.

### **Autonomy of Judgement**

The student must be given the required means to re-elaborate and to apply the methodologies and the principles behind a culturally aware restoration project, and to define an autonomous manner to a design solution coherent with the aforementioned assumptions, evaluating the specificities of the single case study. The autonomy of judgement will be progressively checked and refined throughout the laboratories activities and the field activities, the collective reviews and the final exam.

### **Communication Skills**

The student must be able to communicate and argue his or her project proposals collaborating with his or her colleagues, with the professor and his or her collaborators and also with other teachers during the intermediate and final juries. The student must be able to expose his or her project proposals thanks to his graphic and technical works and using effective digital presentation also clear for non-expert audiences.

### **Learning Skills**

The student must acquire an adequate learning skill allowing him or her to broaden his or her knowledge via the consultation of bibliographical sources, the participation in seminars, conferences, international workshops provided by the Department or abroad. At the end of the training path the student must be able to continue his or her studies through third level training programs (School of Specialization, Masters, Ph.D. programs) or to update his knowledge by himself or herself.

## **COURSE CONTENT/SYLLABUS**

### **THE CONTEMPORARY DEBATE ON CONSERVATION AND PROTECTION OF ARCHITECTURAL HERITAGE (1 CFU)**

- The passage from the notion of historical-artistic monument to that of cultural heritage: the contribution of the Franceschini-Papaldo Commission. The evolution of the concept of protection from the single monument to the environment. Historical instance, Aesthetical instance, Psychological instance. The contribution of Cesare Brandi and Roberto Pane. The definition of the architectural, urban, environmental heritage and the object of protection. Theoretical knots: the respect of authenticity, the treatment of the lacuna, the relationship between permanence and transformation in restoration. The current orientations: the critical restoration, the pure conservation, the maintenance-restoration. General criteria of the modern protection of the cultural heritage and the evolution of the concept of conservation. The insertion of the protection in the urban planning. The participation of citizens and local authorities in the integrated conservation. The social cost of the requalification and restoration operations. The Charter of Venice (1964). The European Charter of the Architectural Heritage (1975). The Declaration of Amsterdam (1975). The Convention for the safeguard of the European Architectural heritage. The Institution and the

organization of the Ministry of Culture (D. Lgs. 368/1998 and DPR 173/2004).

### **PROJECT METHODOLOGY OF ARCHITECTURAL RESTORATION (1,5 CFU)**

The project methodology of architectural restoration. The concepts of minimum intervention, reversibility, compatibility and durability of the materials. The methods of survey in the architectural restoration project: geometric survey, material survey, representation of decay in stone materials via Lessico Normal 1/88. Analysis tools, Non-destructive tests and monitoring of masonry. Issues related to archeological restoration: maintenance, reconstruction, anastylosis. The restoration of archaeological heritage and architecture in state of ruins.

### **CONSERVATION TECHNIQUES ON CULTURAL HERITAGE (1,5 CFU)**

The role of structural consolidation in the architectural restoration project: hypothesis, project, checking, monitoring, maintenance. The knowledge of materials and pre-industrial techniques and modern techniques and related methods of consolidation:

- History of traditional foundations. Ground, foundations structures, deep subsidence, consolidation of ground and foundations.
- History of traditional masonry. Analysis and diagnosis of instability. Instruments for detection of cracks. Methods of consolidation for vertical structures above ground.
- Notes on shoring of masonry
- Wooden slabs: analysis of decay and consolidation methods.
- Vaults and masonry arches: understanding the crack pattern and methods of consolidation. - Conservation techniques on reinforced concrete and steel elements.
- The humidity issue on buildings: instruments of analysis and intervention techniques.
- The conservation project of architectural surfaces: criteria and intervention techniques.

### **READINGS/BIBLIOGRAPHY**

- C. BRANDI, Teoria del restauro, Einaudi, Torino 1977.
  - S. CASIELLO, A. PANE, V. RUSSO (a cura di), Roberto Pane tra storia e restauro. Architettura, città, paesaggio, Marsilio, 2010.
  - G. CARBONARA, Gli orientamenti di metodo attuali del restauro architettonico, in S. Casiello, (a cura di), Restauro. Dalla teoria alla prassi, Electa Napoli, Napoli 2000.
  - R. PICONE, 'Restauro' e de-restauro. Il caso della cattedrale di Troia in Puglia, in S. Casiello (a cura di), Restauro dalla teoria alla prassi cit., pp. 76-102.
- AA. VV., Che cos'è il Restauro? Nove studiosi a confronto, Marsilio, 2005
- R. PICONE, Il pensiero di Roberto Pane come contributo al moderno criterio di tutela ambientale, in "Napoli nobilissima", n.s., vol. XXVI, fasc. I-IV, gennaio-dicembre 1987.

### **PROJECT METHODOLOGY IN THE ARCHITECTURAL RESTORATION**

- R. PICONE, Conservazione e accessibilità. Il superamento delle barriere architettoniche negli edifici e nei siti storici, Arte Tipografica, Napoli 2004.
- Linee guida per il superamento delle barriere architettoniche nei luoghi di interesse culturale, a cura di, Ministero per i Beni e le Attività Culturali, Direzione Generale per i Beni Architettonici,

Storico-Artistici ed Etnoantropologici, Gangemi editore, Roma 2008.

- R. PICONE, Pompei Accessibile. Per una fruizione ampliata del sito archeologico, L'Erma di Bretschneider, Roma 2013.
  - R. PICONE –V. Russo, L'Arte del costruire in Campania tra Restauro e sicurezza strutturale, ed. Clean, Napoli 2018..
  - R. PICONE - M. Osanna, Restaurando Pompei, L'Erma di Bretschneider, Roma 2018.
  - R. PICONE- A. Di Luggo –M. Campi - P. Scala, Palazzo Penne a Napoli tra conoscenza, Restauro e valorizzazione, Arte'm, Napoli 2018.
  - G. CARBONARA, Restauro dei monumenti. Guida agli elaborati grafici, ed. Liguori, Napoli 1990.
  - M. ROSI, Il restauro del Partenone, in S. CASIELLO, (a cura di), Restauro, criteri, metodi, esperienze, Electa Napoli, 1990.
- Rivista 'Tema', numero monografico 'Un rilievo per il restauro?', nn. 3-4, 1996.

### **CONSERVATION TECHNIQUES ON CULTURAL HERITAGE**

- R. PICONE, Archeologia e contesto: il ruolo del restauro, in "Materiali e strutture", 13, 1, Edizioni Quasar, 2018.
- R. PICONE, Il rudere architettonico nella storia del restauro, in "Confronti", 0, arte'm, 2012.
- A. DEFEZ, Il consolidamento degli edifici, Liguori, Napoli 2002.
- A. BELLINI, (a cura di), Tecniche della conservazione, Franco Angeli, Milano 2003.
- G. TAMPONE, Il restauro delle strutture in legno, Hoepli, Milano 1996.
- S. DELLA TORRE, Como, Palazzo Natta: la copertura, in 'Tema', n. 3, 1998.
- F. LANER, Connettori a secco continui per il recupero di solai in legno, in 'ANAG KH, n. 7, settembre 1994.
- G. CIGNI, B. CODACCI PISANELLI, Umidità e degrado negli edifici. Diagnosi e rimedi, Kappa, Roma 1987. Rivista 'Tema', numero monografico 'Umidità nelle murature', n. 2, 1999.
- B. TORSELLO, S. MUSSO, Tecniche di restauro architettonico, UTET, 2003.
- D. FIORANI (a cura di), Restauro e tecnologie in architettura, Carocci, 2009.

### **TEACHING METHODS OF THE COURSE (OR MODULE)**

The course is divided into frontal lectures (40% ), applicative practices (40% ) and construction site inspections (20%), focused on themes explained during the course. The practices are aimed to elaborate the restoration project of a building or an architectural complex, also modern or archeological, whose historical layering is widely recognized and the conservations issues make a restoration intervention necessary.

Bibliographical researches and investigations, are conducted on the field also via instrumental surveys and tools of the departmental laboratories (for example mLAB –Monitoring Laboratory Technology for monitoring the environmental heritage). There will be also numerous sites inspection.

Collective practices are the instruments for monitoring the degree of understanding of the topics covered and their effective outcome. The graphic works required for the practice of groups of 3-4 students must follow the example provided on the professor website.

### **EXAMINATION/EVALUATION CRITERIA**

**a) Exam type**

- Written
- Oral
- Project discussion
- Other

**In case of a written exam, questions refer to**

- Multiple choice answers
- Open answers
- Numerical exercises

**b) Evaluation pattern**

The final evaluation, based on the results and skills demonstrated in the discussion of the project as well as the themes and elaborated by the different modules, will be weighted on the CFU of each course and thus composed: Architectural design for heritage 25%; Architectural conservation and construction aspects of historical buildings 17%; Statics and stability of historical buildings 17%; Technological design for architecture 17%; Energy optimization for built heritage use 25%