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

**COURSE INFO**

| **Professor** |
|---|
| Giorgio Pia |
| **Title of the course** |
| Advanced materials for restoration |
| **Scientific Disciplinary Sector** |
| ING-IND/22 |
| **Number of hours** |
| 30 |
| **Language** |
| Italian |
| **Objectives of the course** |
| Several approaches in restoration practice need to be replaced by systematically addressing conservation issues through the development of advanced materials for the preservation of Architectural Cultural Heritage.<br>The course aims to provide an overview of innovative technologies and materials in the restoration of architectural heritage and is focused on the formulation and application of materials and methodologies for the cleaning, protection and consolidation. Several types of case studies of ancient and modern buildings will be presented. Systems such as nanoparticles, gels, composites, bio-materials and other functional materials will be presented and tested in the lab during practical activities.<br>The compatibility and durability of the advanced conservation materials tested will be analysed to improve the restoration works' quality.<br>Future perspectives will also be highlighted, outlining open issues and trends in this challenging and exciting field**.** |
| **Any prerequisites** |
| Preparatory courses are already indicated in the general degree plan of the courses.<br>A good level of knowledge of Material Science is required; knowledge acquired from studying Maths, Physics and Chemistry. |
| **Topics and contents of the course** |
| Advanced Materials and Methodologies for cultural heritage conservation. |
| **Methods of examination** |
| The evaluation consistsing an oral part at the end of the course will highlight the acquired knowledge by students on:<br>- advanced materials for Cleaning, Consolidation and Surface Protection;<br>- advanced methods for characterisation, application and compatibility evaluation of conservation materials.<br>Practice-laboratory tests focused on developing direct experiences and abilities in this field. |
| **Essential bibliography** |
| G. Amoroso, *Trattato di scienza della conservazione dei monumenti*, Alinea Editrice, Firenze 2002.<br>G. Torraca, *Porous building materials: materials science for architectural conservation*, ICCROM, Roma 2005.<br>H. Khamseh, A. Ershad Langroudi, *Materials Science in Restoration and Conservation of Historical Objects*, SAMT, 2017.<br>H. Majid, I. Karapanagiotis (eds.), *Advanced materials for the conservation of stone*, Springer, Cham, Switzerland 2018.<br>P. Garside, E. Richardson, *Conservation Science. Heritage Materials*, Royal Society of Chemistry, 2021. |

| **Further bibliographical information** |
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| Recent scientific papers published in specialised journals. |
| **Didactic materials** |
| The textbooks might be integrated by slides of the lectures, links to websites and material from other case studies.<br>The attendance to lectures is recommended, especially for laboratory activity. |
| **External guests** |
| Prof.ssa Elisa Franzoni, PO, UNIBO;<br>Prof. Enrico Sassoni, PA, UNIBO;<br>Prof. Carola Esposito Corcione, PA, UNISALENTO;<br>Dr. Marta Cappai, RTD-A, UNICA. |