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

**COURSE INFO**

| **Professor** |
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| Silvana Maria Grillo - Valentina Pintus |
| **Title of the course** |
| Archaeometric investigations for the knowledge of materials |
| **Scientific Disciplinary Sector** |
| GEO/09 - ICAR/19 |
| **Number of hours** |
| 20 |
| **Language** |
| Italian |
| **Objectives of the course** |
| The course aims to bring together the already-acquired knowledge and skills of dating architectures and characterizing natural and artificial stones, aimed at the conservation of cultural heritage.<br>On the one hand, the theoretical concepts will be recalled, and on the other, the principles underlying the methods of analysis and the operational tools used for analysis will be illustrated.<br>The skills achieved will provide the students with the ability to choose between the different analytical techniques and be able to evaluate the most suitable methods for the different sites investigated. This will allow to identify solutions to the different problems that the investigated sites present and to define objectively the state of conservation of the stones and the neogenesis of the minerals associated to stone decay (degradation phenomena). |
| **Any prerequisites** |
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| **Topics and contents of the course** |
| - Elements of Mineralogy. Aims and methods of modern mineralogy for the architectural heritage. Definition of mineral and crystal, amorphous state and crystalline state. Physical properties of minerals. Optical properties. Systematic mineralogy, classification of minerals<br>- Diagnostics. Optical microscopy in transmitted and reflected light. Principles of spectral analysis. X-ray diffraction. X-ray spectrometry. Electron microscopy (SEM-TEM), electronic microanalysis (EPMA). Elements of nuclear analytical techniques (IMMA-IBA, PIXE-PIGE-RBS). Authentication and localization of the origin of materials.<br>- Chronological and archaeometric analyses. Archival surveys and historical research, dating methods, archaeometry, stratigraphy. |
| **Methods of examination** |
| The exam is intended to verify, by means of an oral interview, the acquisition by the students of methodologies and skills proposed during the course and, by means of a practical laboratory test, the capacity to apply tools necessary for the dating of the architectures and the characterisation of stones. |
| **Essential bibliography** |
| S. Siegesmund, R. Snethlage, *Stone in Architecture*, 4th edition, Springer, Heidelberg 2011.<br>A. Boato, *L'archeologia in architettura. Misurazioni, stratigrafie, datazioni, restauro*, Marsilio, Venezia 2008. |
| **Further bibliographical information** |
| L. Lazzarini (a cura di), *Pietre e Marmi Antichi*, CEDAM, Padova 2004.<br>A. Castellani, M. Martini, E. Sibilia, Elementi di Archeometria, EGEA, Milano 2005.<br>G.P. Brogiolo, A. Cagnana, *Archeologia dell'architettura. Metodi e interpretazion*i, All'Insegna del Giglio, Borgo San Lorenzo (FI) 2012. |

| **Didactic materials** |
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| Links to thematic articles published in open access will be made available. |
| **External guests** |
| Prof. Daniele Chiriu (Department of Physics - UNICA)<br>- Seminary on *Diagnostics, conservation, and restoration in Cultural Heritage: seminary on optical spectroscopy as a non-destructive tool* (visits to the laboratories of the Physics department are planned);<br>Prof. Anna Boato (Department of Architecture and Urban Studies - UNIGE)<br>- Seminary on *Archaeology of architecture: case studies.* |