PhD programme in Earth, Environmental and Resources Sciences

Instructor	Alberto De Bonis, DiSTAR - UNINA
Course Title	Clayey raw materials for archaeological and traditional ceramics and firing processes
Total Number of Hours	12
Contact Email	alberto.debonis@unina.it

Course Description

The course offers an overview of how clay resources have been used in ceramic manufacturing across history, with particular emphasis on the Campania region, renowned for its rich archaeological record. It will explore the processes involved in making ceramics for different uses in ancient times, including selecting raw materials and managing the supply chain, to clay processing, shaping, and firing. The course will introduce geoscience methods for characterising and assessing the technological properties of raw materials and ceramics. It will demonstrate how to define local ceramic production through key examples from archaeometric studies of provenance and technology conducted over the years by the DiSTAR research team, which have offered a comprehensive view of production and circulation patterns in the region across a broad time span.

Course Contents

1. Topic 1 (4 hours) – Clayey raw materials for archaeological and traditional ceramics from the Campania Region of Italy: Origin, composition, and technological features. Sampling strategy of raw materials (geological, historical, and ethnographic approaches). Mineralogical and petrophysical assessment of the technological potential of raw materials.

2. Topic 2 (2 hours) – Investigation of firing processes and technological features of ceramic products using mineralogical-petrographic techniques (polarized light microscopy, chemical analysis, mineralogical analysis, scanning electron microscopy and microanalysis) and physical-mechanical tests (i.e., resistance, pore system, hydric properties, thermal behaviour, colour).

3. Topic 3 (2 hours) – In-lab preparation of ceramic replicas via experimental firing.

4. Topic 4 (4 hours) – Archaeometric studies: sourcing raw materials, provenance and circulation of ceramics and production techniques.

Learning Outcomes

By the end of the course, doctoral students will be able to:

• Understand the main criteria for identifying and characterising the different types of clayey raw materials used in ancient times.
• Know the mineralogical and petrographic techniques for characterising ceramic materials.
• Understand the steps involved in producing ceramics for various end uses: from selecting raw materials and managing the supply chain, to processing, shaping, and firing.
• Understand geoscience-based methods used in archaeometric studies of ancient pottery.

Teaching Format

Lectures, discussion of scientific papers, practical exercises.

Essential Bibliography

• Cuomo di Caprio, N., Ceramica in archeologia. Vol. 2: Antiche tecniche di lavorazione e moderni metodi di indagine. Studia Archaeologica 144, 2007, L'Erma di Bretschneider: Roma.
• De Bonis, A., Grifa, C., Cultrone, G., De Vita, P., Langella, A., Morra, V., Raw materials for archaeological pottery from the Campania region of Italy: A petrophysical characterization. *Geoarchaeology* 2013, 28, 478–503.
• De Bonis, A., Cultrone, G., Grifa, C., Langella, A., Morra, V, Clays from the Bay of Naples (Italy): New insight on ancient and traditional ceramics. *Journal of the European Ceramic Society* 2014, 34, 3229-3244.
• De Bonis, A., Cultrone, G., Grifa, C., Langella, A., Leone, A. P., Mercurio, M., Morra, V., Different shades of red: The complexity of mineralogical and physicochemical factors influencing the colour of ceramics. *Ceramics International* 2017, 43, 8065–8074.
• Maniatis, Y., Tite, M.S., Technological Examination of Neolithic–Bronze Age Pottery from Central and Southeast Europe and from the Near East. *Journal of Archaeological Science* 1981, 8, 59–76.

Assessment Method

In-class discussion, active participation.