

**COURSE DATA****Data Subject**

Code	43113
Name	Introduction to archaeometry
Cycle	Master's degree
ECTS Credits	2.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. Period	year
2143 - Master's Degree in Archaeology	Faculty of Geography and History	1	First term

Subject-matter

Degree	Subject-matter	Character
2143 - Master's Degree in Archaeology	2 - Archaeological materials	Obligatory

Coordination

Name	Department
ROLDAN GARCIA, CLODOALDO	175 - Applied Physics and Electromagnetism

SUMMARY

The main objective of this course is to make known to students with the basic principles and possibilities of different analytical techniques applied to the characterization of cultural property, with particular reference to the archaeological. It aims to promote technical and scientific rigor and the need for multidisciplinary work between archaeologists, historians, physicists, chemists and professionals related areas.

This subject is a matter in which it is intended to familiarize students working with archaeological material (lithic ceramic, metal, painting, etc.) as well as with the tools necessary for their physicochemical characterization. A theoretical approach which reflects on the potential and uses of different analytical techniques as support for the characterization of archaeological materials and place them in their particular historical context, determine their origin or commercialization routes, or meet the technological process followed is done its preparation. The course is complemented by a practical part aims to introduce students to the analysis of archaeological materials by non-destructive analytical techniques.

**PREVIOUS KNOWLEDGE****Relationship to other subjects of the same degree**

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

No prerequisites are required except those set to access the Masters.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)**2143 - Master's Degree in Archaeology**

- Capacidad para emitir informes adecuados de los resultados de la actividad arqueológica.
- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- Integrarse en el trabajo arqueológico en equipo, considerando la diversidad de campos de actuación y la formación que implica la labor de campo o la investigación arqueológica.
- Conocer y utilizar las herramientas de información de otras áreas de conocimiento (Geoarqueología, Cartografía, Topografía, Estadística y Arqueometría), recurriendo adecuadamente a ellas en relación con las necesidades que plantee el trabajo en Arqueología.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

Basically, it is intended that the students taking this course:

- 1) Acquire a general understanding of the basic principles of the different analytical techniques available to characterize the archaeological materials. For this purpose the techniques described are illustrated with examples applied to the characterization of stone, metal, ceramic, pigment materials, etc.
- 2) Have a clear understanding of the advantages and disadvantages of each technique in relation to the interaction between the process and methodology of analysis and the analyzed object, establishing distinction between invasive techniques that modify the physicochemical state of the object or require sampling of altering its integrity and non-invasive techniques that do not physically assault the object analyzed and therefore not compromise its integrity.
- 3) they are aware of the information that can be obtained with each of the techniques, as regards the quantitative and qualitative aspects. Some of the techniques are far from providing quantitative data on the nature of the materials tested, but often the qualitative approach is sufficient to effectively deal with problems archaeometric.



Ultimately it comes to preparing students for their future professional development is capable of working in multidisciplinary teams, employ the technique that best suits the information you want and the characteristics of object you want to analyze.

DESCRIPTION OF CONTENTS

1. Intrioduction to Archaeometry

1. Analytical Tecnichs in Archaeology. Archaeometry. Summary of techniques. Acronyms.

2.

3.

4.

5.

6.

7.

8. Unit 8 Practical session

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	10,00	100
Laboratory practices	2,00	100
Study and independent work	20,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	3,00	0
Resolution of case studies	2,00	0
TOTAL	62,00	

TEACHING METHODOLOGY**A. The classes:**

The course will be taught by combining the exposure of the theoretical program with application examples described in the study of archaeological materials analytical techniques. The practical session will be developed in the classroom using portable analytical techniques.

In the lectures, the professor will develop the program with audiovisual media support, ensuring the participation of students through simple approach situations and problems. They propose that students take readings to complement the exhibition by teachers of a particular subject. The readings are usually of articles or a chapter of the manuals indicate.

In practical laboratory classes students will be in direct contact with analytical instrumentation involved in the preparation process, measurement and analysis of archaeological samples. It is intended to discuss and delve into designing a study archaeometric special relevance in the field of archeology.

B. Tutorials:

If the development of Matter requires scheduled so that students can pose problems or questions about the development of responsible teaching himself or the respective materials tutorials are established. In any case, students may attend regular tutorials, established in the teaching faculty calendar for all kinds of questions related to the content of the agenda or any other matter relating to the matter.



EVALUATION

The methodological approach outlined above has the objective to encourage continued teacher and frequent contact with students so that it is possible to know the progress of their learning and carry out an assessment of it at various levels and according to several aspects.

Thus, the evaluation of matter consist of a continuous assessment complemented with objective data from the work done by students:

- Attendance at least 80% of classes. Class participation will be valued.
- a test with multiple choice items where the knowledge acquired by the / students will be assessed during the course will be conducted. The score for this test will be a 90% overall rating. Complementary activities and continuous evaluation conducted during classes contribute up to 10% of the overall grade.

It is considered that the matter is passed when the student obtains greater or equal to 5 overall rating of 10.

REFERENCES

Basic

- CASTELLANO, M. MARTINI, E. SIBILA (Eds.). Elementi di Archeometria, EGEA Edizioni, Milano, 2002.
- FILIBERTO, E., SPOTO, G. (Eds.). Modern analytical methods in Art and Archaeology. Volume 155 in Chemical Analysis, Wiley Interscience, New York, 2000.
- FERRETTI, M. Scientific Investigations of Works of Art. ICCROM, Roma, 1993.
- GIGANTE, G., DIANA, M. (Eds.) Metodologie fisiche non distruttive per le indagini sui Beni Culturali. Universita di Roma La Sapienza, 2006.
- GÓMEZ GONZÁLEZ, M. L., Exámen científico aplicado a la conservación de obras de arte, Ministerio de Cultura, Dirección General de Bellas Artes y Archivos, Instituto de Conservación y Restauración de Bienes Culturales, Madrid 1994.
- VV.AA. La Ciencia y el Arte. Ciencias experimentales y conservación del Patrimonio Histórico. Edita: Instituto del Patrimonio Histórico Español (IPHE), Ministerio de Cultura. ISBN: 978-84-8181-359-3. Depósito legal: M-3807-2008. Madrid, 2008.

Additional

- Referencia c1: FILIBERTO,, E., SPOTO, G. (Eds.). Modern analytical methods in Art and Archaeology. Chemical Analysis , Volume 155 , Wiley Interscience, New York, 2000.
- Referencia c2: FERRETTI, M. Scientific Investigations of Works of Art. ICCROM, Roma, 1993.
- Referencia c3: GIGANTE, G., DIANA, M. (Eds.) Metodologie fisiche non distruttive per le indagini sui Beni Culturali. Universita di Roma La Sapienza, 2006.
- Referencia c4 CASTELLANO, M. MARTINI, E. SIBILA (Eds.). Elementi di Archeometria, EGEA Edizioni, Milano, 2002.