COURSE DATA

DATA SUBJECT

Code: 43113
Name: Introduction to archaeometry
Cycle: Master's Degree
ECTS Credits: 2
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
2143 - Master's Degree in Archaeology	Facultat de Geografia i Història	1	First quarter

SUBJECT-MATTER

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

COORDINATION

GALLELLO - GIANNI

SALAZAR GARCIA DOMINGO CARLOS

SUMMARY

The main objective of this subject is to introduce students to the basic principles and possibilities of several analytical techniques applied to different types of archaeological materials, both organic and inorganic. It will aim as well to promote scientific and technical rigour, and emphasise the need for multidisciplinary work between professionals in archaeology, history, biology, anthropology, geology, physics, chemistry and related areas. Throughout the course, students will familiarize with a variety of tools necessary to characterize biogeophysicochemicaly archaeological material. The potential and uses of different analytical techniques will be discussed, portraying how they can help to shed light on aspects so diverse of the human past such as diet, raw material procurement or population migrations.

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 / LEARNING OUTCOMES

2143 - Master's Degree in Archaeology

Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.

Capacidad para emitir informes adecuados de los resultados de la actividad 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.

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.

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.

DESCRIPTION OF CONTENTS

1. Introduction to Archaeometry (2 hours)

1. Analytical techniques in the archaeological context. Concept of Archaeometry. Classification of analytical techniques. Acronyms.
2. Characteristics of analytical instrumentation. Calibration, sensitivity, accuracy, precision. Detection limits.

2. Module II: Dating Methods (2 hours)

1. Radiocarbon analysis
2. Other dating methods

3. Module III: Characterization of Materials (4 hours)

1. Archaeological materials. Sampling strategy. Pretreatment of samples for analysis.
2. Methods of elementary analysis.
3. Methods of molecular analysis.
4. Morphological analysis methods and crystal structure.

4. Module IV: Biomolecular Archaeology (4 hours)

1. Isotopic analysis and subsistence patterns.
2. Isotopic analysis, provenance and territorial mobility.
3. Proteomic and organic residue analysis.
4. Ancient DNA analysis in Archaeology.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	10,00
Laboratory	2,00
Total hours	**12,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	0,00
Independent study and work	25,00
Preparation of lessons	13,00
Preparation for assessment activities	10,00
Resolution of case studies	2,00
Total hours	**50,00**

TEACHING METHODOLOGY

1. Lectures:

The subject will focus on presenting the different analytical techniques, illustrated with case studies. During the theoretical classes, the teaching staff will develop the program of the subject with the support of audiovisual means, seeking the participation of the students through the presentation of simple situations and problems. Students will read lectures (scientific articles and handbook chapters) that complement the topics taught. Where possible, laboratory practice will be carried out in the classroom using portable analytical techniques. In these cases, students will be in direct contact with analytical instrumentation, participating in the process of preparation, measurement and analysis of archaeological samples.

1. Tutorials:

If the development of the subject requires it, scheduled tutorials will be established so that students can pose problems or questions that might arise throughout the course. In any case, students may attend the ordinary tutorials, as reflected in the teaching staff calendar, for all kinds of queries related to the content

of the syllabus or any other matter related to the subject.

EVALUATION

The methodological approach mentioned above pursues the objective of promoting frequent and continuous contact between teachers and students that allow to know the progress of their learning and carry out an assessment at various levels. Thus, the evaluation of the subject will consist of a continuous assessment complemented by objective data from the work carried out by the students.

-100% of the overall grade will be based on complementary activities, as well as on continuous assessment and student participation throughout the course.

Students need to obtain at least 5 out of 10 to pass the course. Furthermore, it is required to attend at least 80% of the classes to pass the course.

REFERENCES

- FILIBERTO, E., SPOTO, G. (Eds.). Modern analytical methods in Art and Archaeology. Volume 155 in Chemical Analysis, Wiley Interscience, New York, 2000.
- GÓMEZ GONZÁLEZ, M. L., Examen 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.
- LALUEZA FOX, C., La forja genética de Europa. Una nueva visión del pasado de las poblaciones humanas. Universitat de Barcelona, 2018. -
- POLLARD, A.M., HERON, C., ARMITAGE, R.A. (Eds.). Archaeological Chemistry. Royal Society of Chemistry, 2016.
- RICHARDS, M.P., BRITTON, K. (Eds.). Archaeological Science: An Introduction. Cambridge University Press, 2020. -VV.AA. La Ciencia y el Arte. Ciencias experimentales y conservación del Patrimonio Histórico. Edita: Instituto del Patrimonio Histórico Español (IPHE), Ministerio de Cultura.