

**Gearchaeology and Archaeometry**

Code: 44064  
ECTS Credits: 6

Degree	Type	Year	Semester
4313137 Prehistory, Antiquity and the Middle Ages	OT	0	2

**Contact**

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**Use of Languages**

Principal working language: catalan (cat)

**Teachers**

Roberto Risch  
Antoni Palomo Pérez  
Anna Maria Gómez Bach  
Ignacio Soriano Llopis

**Prerequisites**

The established by the general rule of the màster

**Objectives and Contextualisation**

The aim of the module is to qualify the student to manage properly the study of the abiotic artefacts of prehistoric chronology. Of form more precise, will tackle the theoretical guidelines, the methodologies and the strategies of investigation that can develop in the study of the pottery, metallic materials and the lithic tools. They will tackle questions like the classification of archaeological materials, the analysis of the raw material, the identification of the processes of manufacture, the determination of the functionality and the study of trace of use of the categories of artefacts more usual in the prehistoric sites. It will do a particular emphasis in the analysis and discussion on the circulation and transfer of objects, ideas, forms to do ... In different zones of Europe during the Recent Prehistory.

**Competences**

- Analyse and summarise information from a critical perspective.
- Critically analyse the theoretical and methodological standpoints that have guided research in prehistory, ancient history and medieval history.
- Discuss and compare scientific opinions and issues in open academic debate.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
- Use the typical categories and vocabulary used in research and dissemination of prehistory, antiquity, and the Middle Ages.

- Work independently: solving problems and taking decisions.

## Learning Outcomes

1. Analyse and summarise information from a critical perspective.
2. Compare theoretical approaches in archaeology with those of related social disciplines in the case of shared objects of study.
3. Critically apply research techniques in prehistoric archaeology.
4. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
5. Relate theoretical approaches to their historical context and to research methods.
6. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
7. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
8. Use the specific technical vocabulary for interpretation in the field of prehistoric archaeology.
9. Work independently: solving problems and taking decisions.

## Content

THE ANALYSIS OF THE POTTERY PRODUCTION FROM THE ARCHAEOMETRY (Dr. Xavier Clop) (three sessions)

From the exhibition and discussion of different cases of study, will treat on how pose the necessary analytical roads to know of way detailed the different phases of the process of pottery production, from the procurement of the raw material to the determination of the social use of the pots. They will argue the pros and contras of the distinct strategies of analysis exposed and will evaluate the possibilities and the limits of the same. Likewise, and from a particularly critical vision, will put a particular emphasis in the theoretical approaches and the categories of analysis that use usually. Finally, it will treat on how pose socioeconomic readings with the data obtained, from the formulation of hypothesis on the possible circulation of the pottery and the social mechanisms that would explain it, the transmission of the "forms to do", durabilitys and changes in these "forms to do", etc.

1ª session. General presentation. The study of the raw material: open questions. Added temper: which? For what?. The circulation of the pottery: determination and discussion on the social mechanisms where would produce.

2ª session. The modelling: variability, social transmission of the craft. The study of the social use of the ceramic glasses: of the technical arqueológicas to the contextual analysis.

3ª session. The social structure of the pottery production: no specialisation versus specialisation. Global discussion.

ROCKS CHARACTERISATION AND METHODS OF STUDY OF THE CIRCULATION OF POLISHED AXES DURING THE RECENT PREHISTORY (Dr. Roberto Risch) (two sessions)

First they will tackle the main technical of rockscharacterisation, as well as the application of geological and geomorphological parameters in the identification of spaces of extraction of lithic raw material. Second they will test how make a socioeconomic reading of the circulation of polished axes during the recent prehistory. Related with this thematic can develop some of the individual works of the subject.

STUDY OF MANUFACTURES AND POTTERY CLASSIFICATION (Dr. Anna Gómez Bach) (two sessions)

Presentation of the main methods used for the study and classification of the prehistoric pottery. Use of the quantitative and qualitative variables for the description of the ceramic groups. Definition of the main pottery manufacture processes, *chaîne opératoire* and main systems of register. Characterisation of the morphometric and typological variables for the study of the prehistoric pottery of the Neolithic and Bronze Age in Europe and

Near East. Presentation of the concepts of geometry and volumetry and the variables of classification from studies of case. Characteristics of use and function and analytical variables that infer in the parameters of consumption and technological change in prehistoric societies. Assessment of the sample and processes of fragmentation and tafonomía that affect to the studies of ceramic groups. Approximation to the ethnographic studies and to the experimental archaeology through the study of the ceramic production.

Subject 1. Presentation of the subject and of the main methods used for the study and classification of the prehistoric pottery. Presentation of groups and exemplification of the big typological variability and technological of the different material cultures. Brief historiography of the works made (teams and tendencies) and the current state of the research (methodologies, new lines and main results).

Subject 2. Presentation of the main technical of pottery manufacture, *chaîne opératoire* and systems of register used. Geometry and volumetry, morphometric and typological variables. Tendencies in the presentation of the morpho typological data and reading of the results. Brief presentation of the most used methodologies and main limitations in the investigation.

Subject 3. Statement of the concepts use and function and the technological variables used to infer in the social change. Characterisation of the studies around the assessment of the sample, patterns of fragmentation and taphonomic processes in pottery groups.

Subject 4. Theoretical session of cases of pottery production in ethnographic contexts. Presentation of proposals of experimental studies.

#### EXPERIMENTAL LITHIC ASSEMBLAGES (Dr. Antoni Palomo Pérez) (two sessions)

The field of the experimental lithic assemblages wants to deepen in base to concrete cases of study, as it poses the investigation of lithic groups of the recent prehistory. The cases that will analyse will allow to treat appearances like the characterisation of the raw material, the technological processes and the function of the instruments produced and that use often the archaeological experimentation like basic methodology of contrastación of hypothesis.

1 session. Introduction to the studies of lithic assemblages of the recent Prehistory. The experimental lithic assemblages in the initial neolithic: characterisation of the origin of the raw material, methods of size, technology used and function. Demonstration of methods and technical of size in the initial neolithic. The indirect percussion.

2 to session. The lithic assemblages middle neolithic, the "melado" flint and the thermal treatment. Characterisation of the origin of the raw material, methods of size, technology used and function. Demonstration of methods and technical of size in the half neolithic. The size by pressure. The lithic assemblages in the final neolithic, the production of big plates and the use of the pressure with crowbar. Characterisation of the origin of the raw material, methods of size, technology used and function.

#### CHARACTERISATION OF METALLIC MINERALS AND METHODS OF STUDY OF THE CIRCULATION OF METALS DURING THE RECENT PREHISTORY (Dr. Ignacio Soriano Llopis) (three sessions)

In this case it will make a critical review of the main technical of analysis of metallic minerals and metals. To continuation will tackle the interpretation of chemical and isotopic data in relation to the circulation of metals (copper, tin, silver and gold) and his process of production. Particular importance will give to the socioeconomic reading of the data obtained.

Related with this thematic can develop some of the individual works of the subject.

### **Methodology**

Directed activities directed: classes introductory about theoretical and methodological bases of the subject: seminars of discussion of cases of study and practical of laboratory.

Supervised activities: tutorial and ruled exercises of learning (individual or in groups reduced)

Autonomous activities: research of documentation, reading of texts, writing of works, study.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Theoretical classes, public presentation of works, seminars of discussion of texts, study and discussion of documentary and archaeological sources	37.5	1.5	4, 6, 7
Type: Supervised			
Tutorial and realisation of ruled exercises of learning (individual or in groups reduced)	37.5	1.5	2, 5
Type: Autonomous			
Research of documentation, reading of texts, writing of works, study	65	2.6	1, 9

## Assessment

Activities in the classroom: discussion of cases of study and practical activities 40%.

Realisation individual work of course: 60%. The work will have to choose as a priority of a listing proposed by the teaching staff of the module.

The practices are not recoverable.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Discussion of cases of study	20%	2	0.08	2, 4, 6, 5
Practices	20%	2	0.08	1, 7, 9
Work of course	60%	6	0.24	1, 3, 8, 4, 6

## Bibliography

THE ANALYSIS OF THE POTTERY PRODUCTION FROM THE ARCHAEOLOGY (Dr. Xavier Clop)

BRONITSKY, G.; HAMER, R. (1986). Experiments in ceramic technology: The effects of various tempering materials on impact and thermal-shock resistance. *American Antiquity*, 51, 1: pp 89-101.

CLOP, X. (2007). *Materia prima, Cerámica y Sociedad*. BAR Internacional Series 1660 (Oxford, Gran Bretanya).

GARCÍA ROSSELLÓ, J.; CALVO TRIAS, M. (2013). *Making Pots. El modelado de la cerámica y su potencial interpretativo*. BAR Internacional Series, 2540 (Oxford, Gran Bretanya).

ORTON, C., TYERS, P.; VINCE, A. (1997). *La cerámica en arqueología*. Ed. Crítica, Barcelona

RICE, P. M. (2015) *Pottery Analysis, Second Edition. A sourcebook.* University of Chicago Press; 2ª edició, revisada.

ROUX, V. (2016). *Des Céramiques et des Hommes. Décoder les assemblages archéologiques.* Presses Universitaires de Paris Ouest, Nanterre.

ROCKS CHARACTERISATION AND METHODS OF STUDY OF THE CIRCULATION OF POLISHED AXES DURING THE RECENT PREHISTORY (Dr. Roberto Risch)

BRADLEY, R. y EDMONDS, M. (1993), *Interpreting the axe trade: production and exchange in Neolithic Britain*, Cambridge University Press, Cambridge.

PETREQUIN, P.; CASWSEN, S.; ERRERA, M.; KLASSEN, L.; PETREQUIN, A. M. (2012). JADE. GRANDES HACHES ALPINES DU NÉOLITHIQUE EUROPÉEN, VE au IVe millénaires av. J.-C. Cahiers de la MSHE Ledoux, n° 17. Série « Dynamiques territoriales », n° 6.

RISCH, R. (2011), "Social and economic organisation of stone axe production and distribution in the western Mediterranean", en V.Davis y M. Edmonds (eds), *Stone Axe Studies III*, Oxbow Books, Oxford, pp. 99-118.

RISCH, R. & MARTÍNEZ FERNÁNDEZ, F. (2008), "Dimensiones naturales y sociales de la producción de hachas en el noreste de la península Ibérica", *Trabajos de Prehistoria*, vol. 65,1, pp. 47-71.

STUDY OF MANUFACTURES AND POTTERY CLASSIFICATION (Dr. Anna Gómez Bach)

Aldenderfer, M.S., 1987, *Quantitative Research in Archaeology. Progress and prospects*, Sage Publications Inc., Newbury Park.

Cruells, W.; Gómez, A.; Molist, M. 2008. Els estudis de la ceràmica: noves perspectives. Dossier Cota Zero, Revista d'Arqueologia i Ciència n. 23.

Gandon E., Casanova R., Sainton P., Coyle T., Roux V., Bril B., Bootsma R.J., 2011. A proxy of potters' throwing skill : ceramic vessels considered in terms of mechanical stress. *Journal of Archaeological Science*, 38, p. 1080-1089.

Gandon, E., Roux, V., Coyle, T., 2014. Copying errors of potters from three cultures: Predictable directions for a so-called random phenomenon. *Journal of Anthropological Archaeology* 33, 99-107.

Garcia Roselló, J. 2008. Adaptación, innovación y resistencia en la producción cerámica Mayurqa: revista del Departament de Ciències Històriques i Teoria de les Arts, , N° 32, 2008, págs. 183-211

Garcia Roselló, J. 2013. Análisis arqueológico de las macrotrazas de manufactura: las vasijas cerámicas del poblado del Puig de Sa Morisca como caso de estudio Bolletí de la Societat Arqueològica Lul·liana: Revista d'estudis històrics, N°. 69, 2013, págs. 43-64

Heimann, R. B., Maggetti, M., 2014, *Ancient and Historical Ceramics: Materials, Technology, Art, and Culinary Traditions*, Schweizerbart Science Publishers, Stuttgart

Hunt, A.(ed.), *Oxford Handbook of Archaeological Ceramic Analysis*, Oxford University Press. Oxford.

Jordan, P.; Zvelebil, M. 2010. *Ceramics before farming. The Dispersal of Pottery Among Prehistoric Eurasian Hunter-Gatherers.* Left Coast press.

Orton, C., 2000, *Sampling in Archaeology*, Cambridge Manuals in Archaeology, Cambridge University Press, Cambridge.

Roux V. (coll. M.A. Courty), 2016. *Des Céramiques et des Hommes. Décoder les assemblages archéologiques*. Presses Universitaires de Paris Ouest, Nanterre.

Roux V. 2010. Lecture anthropologique des assemblages céramiques : Fondements et mise en œuvre de l'analyse technologique. *Les Nouvelles de l'Archéologie*, n°119, p. 4-9.

Roux, V. 2003. Intensity of production and ceramic standardization: quantifying degrees of specialization. *American Antiquity*, Vol 68, n°4.

Roux, V. 2007. Ethnoarchaeology: a non historical science of reference necessary for interpreting the past. *Journal of Archaeological Method and Theory*, Vol. 14, No. 2, June 2007, 153-178.

Roux, V., 2015. Standardization of ceramic assemblages: transmission mechanisms and diffusion of morpho-functional traits across social boundaries. *Journal of Anthropological Archaeology*, vol.40, 1-9.

Scarcella, S. (ed.), *Archaeological Ceramics: A Review of Current Research*. B.A.R International Series 2193, Oxford, Archaeopress.

#### EXPERIMENTAL LITHIC ASSEMBLAGES (Dr. Antoni Palomo Pérez)

BRIOIS, F. (2005), Les industries de pierre taillée néolithiques en Languedoc Occidental. Nature et évolution des outillages entre les 6eme et 3eme millénaires av. J.-C., Publication de l'UMR 5140 du CNRS.

GIBAJA, J.F. (2003). Comunidades Neolíticas del Noreste de la Península Ibérica. Una aproximación socio-económica a partir del estudio de la función de los útiles líticos. *British Archaeological Reports* (International series) S1140. Oxford, Hadrian Books Ltd, 318 p.

GIBAJA, J.F., PALOMO, A., TERRADAS, X., (2008). Les industries taillées des IV et IIIe millénaires du Nord-Est de la Péninsule Ibérique. Premiers résultats obtenus de l'analyse des matières premières, de la technologie et de la fonction a Les industries taillées des IV et IIIe millénaires en Europe Occidentale. Dias-Merino, Lea, Gernigon, Foure, Briois & Bailly (eds). BAR series, 275-290.

GIBAJA, J.F., PALOMO, A., TERRADAS, X., CLOP, X., (2009) Las grandes láminas de sílex documentadas en contextos funerarios del Neolítico Final-Bronce Inicial en el Nordeste Peninsular, a GIBAJA, J.F., PALOMO, A., TERRADAS, X., CLOP, X. (ed) (2009) Europa al final de la prehistòria. Les grans fulles de sílex. Monografies 13. MAC, Barcelona. 63-68

JUAN CABANILLES, J. (2008). El utillaje de piedra tallada en la prehistoria reciente valenciana. Aspectos tipológicos, estilísticos y evolutivos, Diputación de Valnecia, Serie de Trabajos Varios, núm. 109.

#### CHARACTERISATION OF METALLIC MINERALS AND METHODS OF STUDY OF THE CIRCULATION OF METALS DURING THE RECENT PREHISTORY (Dr. Ignacio Soriano Llopis)

BLAS CORTINA, de M.A., DELIBES, G., VILLA, A. Y SUÁREZ, M. eds. (2010), *Cobre y Oro - Minería y metalurgia en la Asturia prehistórica y antigua*. Real Inst. de Estudios Asturianos, Oviedo.

ESCANILLA, N. 2016. *Recursos minerales de cobre y su explotación prehistórica en el sudeste peninsular. El valle del Guadalentín*. Barcelona: Universitat Autònoma de Barcelona.

LULL, V., MICÓ, R., RIHUETE-HERRADA, CH. & RISCH, R. (2014), Social value of silver in El Agar, in H. Meller, R. Risch & E. Pernicka (eds.) 2014, *Metalle der Macht - Frühes Gold und Silber. Metals of Power - Early Gold and Silver*. Landesmuseums für Vorgeschichte 11, Halle, 557-575.

SORIANO, I. (2013) *Metalurgia y sociedad en el nordeste de la Península Ibérica (finales del IV - II milenio cal ANE)*. Archaeopress, British Archaeological Reports International Series 2502, Oxford,

During the teaching of the different thematic blocks, will expand the bibliography of the different questions that treat.