

Artefact Analysis

Code: 106857
ECTS Credits: 6

2024/2025

Degree	Type	Year
2504611 Archaeology	OB	2

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

Have previously taken the subject of Introduction to Archeology.

Objectives and Contextualisation

The subject aims to introduce the basic concepts of the methodology and techniques of laboratory studies in Prehistoric Archaeology. It will introduce students to the Archaeometry of lithic materials, ceramics, metals, focusing particularly on how to plan and develop the study of primary materials, production techniques and consumption patterns. The continguts of this subject are aimed at donating to the students the basic instruments necessary to be able to work the archaeological materials in the category of historical documents.

Learning Outcomes

1. CM09 (Competence) Plan the work processes of archaeology, specifically information processing in the field and laboratory analysis activities, organising work teams and distributing different tasks among their members to achieve the expected goals.

2. KM12 (Knowledge) Analytically classify different movable and immovable archaeological materials and remains.
3. KM13 (Knowledge) Apply multidisciplinary techniques and methods to the processing and analysis of archaeological records and materials in laboratory and off-site work: analysis of ceramics, industry, archaeozoology, archaeobotany and osteoarchaeology, digital processing and treatment of archaeological images and data, statistics and quantification.
4. KM14 (Knowledge) Organise different laboratory activities in archaeology and the processing of archaeological information and images based on the characteristics and requirements of the proposed activity.
5. SM13 (Skill) Apply the main typological classification systems to archaeological materials from different chronologies, taking into account their morphological characteristics, the materials used and the processes of taphonomic alteration and decay.
6. SM14 (Skill) Apply the main methods, techniques and instruments of analysis in the field of archaeology (obtaining and processing images), and in off-site (digitisation of images, creation of databases) and laboratory work (analysis of different types of archaeological remains).
7. SM15 (Skill) Use technological equipment in field and laboratory work: total stations, binocular loupes and microscopes and imaging equipment.
8. SM16 (Skill) Employ the basic procedures for consolidation and preservation of archaeological materials in the laboratory, assessing their suitability and their impact on future analyses of the same materials.
9. SM17 (Skill) Use the typical digital and computer equipment and tools for research and professional practice in archaeology in order to represent and order archaeological records (total stations, cameras, specialised software) and to perform analyses of different types of materials (binocular loupes and microscopes, calipers and digital scales, specialised software).

Content

BLOCK A. GEOARCHEOLOGY I ARCHEOMETALURGY (Roberto Risch)

A.1.- SOME NOTIONS OF GEOLOGY

1.1.- The structure of the land

1.2.- The formation of rocks and dipsits

1.3.- Identification of minerals and rocks

A.2.- STUDY OF MACROLYTIC MATERIALS

2.1.- Study methods

2.2. Identification of macrolithic artifacts

2.3. Exploitation of primary materials in primary outcrops

2.4. Morpho-technical and functional analysis of macrolithic artifacts

2.5.- Socio-economic implications

A.3.- METAL·LÚRGIA I THE STUDY OF METALS

3.1. Metal mining

3.2. Reduction and air inflation

3.3. Pit, finish, us and maintenance

3.4. Archaeometric analysis techniques

BLOCK B.- STUDY OF LITICAL MATERIALS TALLATS (Antoni Palomo)

- 1.- Introduction: What explains the lithic materials?
- 2.- Technology (Origins, technological analysis and "operational chain")
- 3.- Technical modes (Mode 1, Mode 2, Mode 3, Mode 4)
- 4.- Remuntatges and retouched artifacts

BLOC C.- STUDY OF CERAMIC MATERIALS (Xavier Clop)

- 1.- The diversity of social materiality. Artifacts, products and Archaeometry
- 2.- Ceramics as a product
- 3.- Selection and processing of the first subject
- 4.- Modeling techniques
- 5.- Treatment of surfaces and decoration
- 6.- Assecat i cocció
- 7.- Function and social uses
- 8.- Forms and typologies

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classes	15	0.6	CM09, KM12, KM13, KM14, SM14, SM15, CM09
Practica lesson	30	1.2	CM09, KM12, KM14, SM14, SM15, SM17, CM09
Type: Supervised			
Commentary and discussion of practical dossiers (individually or in small groups)	15	0.6	KM12, KM13, SM14, SM17, KM12
Tutorials	5	0.2	CM09, KM13, KM14, CM09
Type: Autonomous			
Practical preparation	25	1	CM09, SM14, SM15, SM17, CM09
Reading and documentation	20	0.8	KM13, SM14, KM13

Directed activities

The subject focuses on the learning of the study of different types of archaeological materials based on theoretical-practical sessions carried out at the Laboratory.

1.-Activitats al Laboratori. Theoretical-practical sessions will be carried out to combine the presentation of theoretical concepts, study and analysis systems, study variables, etc. with the realization of practical activities that allow us to put into practice and evaluate the capacity to obtain significant data of the acquired concepts. The practical activities will consist of the presentation and discussion of study cases, analysis of archaeological materials, etc.

2. Autonomous activity. From the introductory theoretical sessions and the subject dossiers, the students will work on the expansion and assimilation of the basic concepts involved in the study of archaeological materials. The application during the practices will facilitate the acquisition of the necessary skills required for the study of the different types of archaeological tract materials.

Activitats formative concretes

1. Laboratory practice (microscopy): Macro and microscopic identification of minerals and rocks

Additional documentation: Virtual campus: Rafael Sánchez López et al.:How to make the identification of minerals and rocks easier

2. Laboratory practice (microscopy): Macroscopic identification of metallic minerals and metallic remains

Additional documentation: Virtual Campus

3. Laboratory practice: Description and macroscopic analysis of useful substances related to metallurgy

Additional documentation: Virtual Campus

4.- Laboratory practice (microscopy): Analysis of production traces in lithic artifacts

Additional documentation: Virtual Campus

5.- Laboratory practice: presentation and discussion of study cases

Additional documentation: Virtual Campus

6.-Laboratory practice (microscopy): Identification of minerals, rocks and degreixants afegits

Additional documentation: Virtual Campus

7.- Technological analysis of lithic materials (Artifacts corresponding to technical modes)

Additional documentation: Virtual Campus

8.- Laboratory practice: description and macroscopic analysis of prehistoric ceramic materials

Additional documentation: Virtual Campus

9.- Laboratory practice: drawing of ceramic materials

Additional documentation: Virtual Campus

10.- Laboratory practice: identification of modeling techniques

Additional documentation: Virtual Campus

11.- Laboratory practice: identification of surface tractaments in ceramics to me.

Additional documentation: Virtual Campus

Note: 15 minutes of a class will be reserved, within the calendar established by the centre/degree, for the complementation by the students of the questionnaires for the evaluation of the professor's performance and the evaluation of the subject/module.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance and participation in theoretical-practical classes	10%	5	0.2	CM09, KM13, KM14, SM13, SM14, SM15, SM16, SM17
Course work	60%	20	0.8	CM09, KM12, KM13, KM14, SM14, SM15, SM17
Practice dossier	30%	15	0.6	KM13, SM14, SM15, SM17

Competencies will be evaluated through: work and evaluation of practical activities.

The evaluation system is organized as follows: Thematic pad A: 40%; Thematic pad B: 20% of the grade; Thematic pad C: 40% of the grade.

Class attendance is mandatory.

In each of the thematic modules they are available in the following way:

Assistance and participation in theoretical-practical classes (10% overall).

Module for delivery of internship dossiers (30% overall).

Course work or final exam (theoretical and practical continguts) (60% global weight)

The final grade will be half of the grade weighted out of 100 obtained in the different blocks.

To pass the subject, you must obtain an overall score of 5 on a scale of 10.

At the time of completion of each evaluable activity, the teacher will inform (Moodle, SIA) of the procedure and data for reviewing the qualifications.

To pass the subject it is essential to pass the three thematic blocks, both for the continuous assessment and for the reassessment test. Not passing one of the pads means not passing the subject.

The student who does not submit the practices and/or the corresponding assignments of 2 thematic pads will be considered non-assessable.

Reassessment: students who have not obtained a grade of 5 in any of the thematic pads may take the reassessment test for that or those thematic pads that they have failed. Proof of reassessment will consist of written proof.

In case the student performs any irregularity that could lead to a significant variation in the qualification of an evaluation act, it will qualify either this evaluation act, regardless of the disciplinary process that can be instructed. In cases where various irregularities occur in the evaluation acts of a subject, the final qualification of that subject will be 0.

This subject does not foresee the single evaluation system.

Bibliography

BLOCK A. GEOARCHAEOLOGY AND ARCHAEOMETALLURGY

1. Notions of geology.

Bauer, J. (1981). Guía básica de los minerales. Omega, Barcelona.

Bayly, B. Introducción a la petrología. (1982). Ed. Paraninfo, 2ª ed. Madrid.

Coque, R. Geomorfología. Ed. Alianza Universidad. 1984.

Klein, C. (1982). Manual de Mineralogía de Dana. Reverté, Barcelona.

Maresch, W., Medenbach, O., Trochim, H.D. (1990): Rocas. 287 páginas, Blume (editorial).

Melendez, B., Fuster, J. (2003): Geología. -911 páginas; 9º edición; Thomson Editores, Madrid, España.

Pozo Rodríguez, M. et al. "Geología Práctica. Introducción al reconocimiento de materiales y análisis de mapas". (2004). Ed. Pearson Educación. Madrid.

Rogers, J. W.; Adams, A. S. (1969). Fundamentos de la geología. 446 páginas, Ediciones Omega (Barcelona).

Simons Robinson, E. (1990). Geología Física Básica. 699 páginas, Editorial Limusa (México).

Strahler, A. (1992). Geología Física. -629 páginas; Omega Ediciones, Barcelona.

Tar buck Edward J , Lutgens Frederick K "Ciencias de la Tierra. Una introducción a la Geología Física". (2005). Ed. Pearson-Prentice Hall, 8ª ed. Madrid.

Watt, A. (1986): Diccionario Ilustrado de la Geología Everest. 208 páginas; Editorial Everest, Madrid.

2. Study of macrolithic materials.

2.1. General works

AA.VV. (1996), La vie della pietra verde-L'industria litica levigata nella preistoria dell'Italia settentrionale. Omega, Turín.

ADAMS, J.L. (1999), "Refocusing the role of food-grinding tools as correlates for subsistence strategies in the U.S. Southwest", American Antiquity, 64(3), pp. 475-498.

ADAMS, J. L. (2002), Ground stone analysis, A technological approach, University of Utah Press.

ADAMS, J., DELGADO, S., DUBREUIL, L., HAMON, C., PLISSON, H. y RISCH, R. (2009), "Functional analysis of macro-lithic artefacts: a focus on working surfaces", en Farina Sternke, Lotte Eigeland y Laurent-Jacques Costa (eds), Non-Flint Raw Material Use in Prehistory: Old prejudices and new directions. BAR International Series 1939, Oxford, pp. 43-66.

BEAUNE, S.A. de (2000), Pour une Archéologie du geste, CNRS Editions, Paris.

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

CASTRO, P., CHAPMAN, R., GILI, S., LULL, V., MICÓ, R., RIHUETE, C., RISCH, R. y SANAHUJA, M.E. (1999), Proyecto Gatas 2. La dinámica arqueoecológica de la ocupación prehistórica, Junta de Andalucía, Consejería de Cultura, Sevilla.

DELGADO RAACK, S. y RISCH, R. (2009), "Towards a systematic analysis of grain processing technologies". In Araujo, M. de & Clemente, N. (eds), *Recent Functional Studies on Non-flint Stone Tools: Methodological Improvements and Archaeological inferences*, Lisboa (<http://www.workshop-traceologia-lisboa2008.com/>)

HAYDEN, B. (ed.) (1987), *Lithic studies among the contemporary Highland Maya*, The University of Arizona Press, Tucson.

RISCH, R. (1998), "Análisis paleoeconómico y medios de producción líticos: el caso de Fuente Alamo", en Delibes, G. (ed.), *Minerales y metales en la prehistoria reciente. Algunos testimonios de su explotación y laboreo en la península ibérica*, Universidad de Valladolid, Valladolid: 105-154.

RISCH, R. (2002), *Recursos naturales, medios de producción y explotación social. Un análisis económico de la industria lítica de Fuente Alamo (Almería), 2250-1400 ANE*, P. von Zabern, Mainz.

RISCH, R. (2008) "Grain processing technologies and economic organisation: a case study from the south-east of the Iberian Peninsula during the Copper Age", *The Arkeotek Journal*, vol.2, n°2 (www.thearkeotekjournal.org).

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., BOIVIN, N., PETRAGLIA, GÓMEZ-GRAS, D., KORISSETAR, R. y FULLER, D. (2011) "The prehistoric axe factory at Sanganakallu-Kugal (Bellary District), southern India", en V. Davis y M. Edmonds (eds), *Stone Axe Studies III*, Oxbow Books, Oxford, pp. 189-202.

PETREQUIN, P. y JEUNESSE, C. (1995), *La hache de pierre. Carrières vosgiennes et échanges de lames polies pendant le Néolithique (5400-2100 a.J.C.)*, Editions Errance, París.

PETREQUIN, P. y PETREQUIN, A.-M. (1993), *Ecologie dun outil: la hache de pierre en Irian Jaya (Indonésie)*. CNRS, Monographie du CRA 12, París.

SEMENOV, S.A. (1981), *Tecnología prehistórica. Estudio de las herramientas y objetos antiguos a través de las huellas de uso*, Akal, Madrid.

ZIMMERMANN, A. (1988), "Steine", en U. Boelcke et al., *Der bandkeramische Siedlungsplatz Langweiler 8, Gemeinde Aldenhoven, Kr. Düren, Rhein. Ausgrab. 28*, Bonn.

2.2. Characterization studies

BARRERA MORATE, J.L., MARTINEZ NAVARRETE, M.I., SAN NICOLAS DEL TORO, M. y VICENT GARCIA, J.M. (1987), "El instrumental lítico pulimentado calcolítico de la comarca noroeste de Murcia: algunas implicaciones socio-económicas del estudio estadístico de su petrología y morfología", *Trabajos de Prehistoria*, 44: 87-146.

COONEY, G. y MAUDAL, S. (1995), "Getting to the core of the problem: petrological results from the Irish Stone Axe project", *Antiquity*, 69: 969-980.

DELGADO RAACK, S.; GÓMEZ-GRAS, D.; RISCH, R. (2008), "Las propiedades mecánicas de los artefactos macrolíticos: una base metodológica para el análisis funcional", en Rovira S., Montero Ruiz I. & García Heras M. (eds.), *Actas del VII Congreso Ibérico de Arqueometría (Madrid, 8-10 octubre de 2007)*. Madrid, Digital publication of the CSIC: 330-345.

MARTINEZ, F. y RISCH, R. (1999), "Caracterización y procedencia de los recursos líticos de Gatas", en Castro et al., "PROYECTO GATAS, 2", Junta de Andalucía, Consejería de Cultura, Sevilla: 326-337.

OROZCO-KÖHLER, T. (2000), *Aprovisionamiento e intercambio: análisis patológico del utillaje pulimentado en la Prehistoria Reciente del País Valenciano (España)*, B.A.R. Int. Ser., Oxford.

RICQ-DE BOUARD, M. (1996), *Pérogaphie et sociétés néolithiques en France méditerranéenne. L'outillage en pierre polie*, Monographies du CRA, 16, Editions du CRNS, París.

RICQ-DE BOUARD, M. y FEDELE, F.G. (1993), "Neolithic rock resources across the western Alps: circulation data and models", *Geoarchaeology*, 8,1: 1-22.

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.47-71.4.3. Análisis funcional:

ADAMS, J.L. (1989), "Methods for improving ground stone artifacts analysis: experiments in manowear patterns", en D.S. Amick y R.P. Mauldin (eds), *Experiments in Lithic Technology*, B.A.R., Int.Ser., 528, Oxford: 259-281.

ADAMS, J.L. (1993), "Mechanisms of wear of ground stone surfaces", *Pacific Coast Archaeological Society Journal*, Quarterly, 29(4): 60-73.

CLEMENTE, I., RISCH, R. y ZURRO, D. (2002), "Complementariedad entre el uso de residuos y rastros de uso para la determinación de los instrumentos de producción: su aplicación a un ejemplo etnográfico del país Dogón (Mali)", en CLEMENTE, I., RISCH, R. y GIBAJA, F. (eds.), *Análisis funcional: su aportación al conocimiento de las sociedades prehistóricas*. British Archaeological Reports, 1073, Archaeopress, Oxford: 87-96.

DELGADO RAACK, S. y RISCH, R. (2006b) "Lithic perspectives on metallurgy: an example from Copper and Bronze Age south-east Iberia", en

L. Longo y N. Skakun (eds), "Prehistoric Technology" 40 years later: Functional Studies and the Russian Legacy. Proceedings of the International Congress, Verona (20th-23rd April 2005), B.A.R. IS1783, Archeopress, Oxford (2008), pp. 235-251.

IBÁÑEZ, J.J. y GONZÁLEZ, J.E. (1995), "Utilización de algunos cantos rodados en el yacimiento magdaleniense de Laminak II (Berriatua, Bizkaia)", *Kobie*, 21: 172-193.

MENASANCH, M., RISCH, R. y SOLDEVILLA, J.A. (2002), Las tecnologías del procesado de cereal en el sudeste de la Península Ibérica durante el III y II milenio ANE, en Procopiou, H. y Treuil, R.(ed.), *Mouldre et Broyer*, Publications du C.R.N.S., Paris: 81-110.

RISCH, R. (2008), "From production traces to social organisation: towards an epistemology of Functional Analysis", en L. Longo y N. Skakun (eds), "Prehistoric Technology" 40 years later: Functional Studies and the Russian Legacy. Proceedings of the International Congress, Verona (20th-23rd April 2005), B.A.R., IS 1783, Archeopress, Oxford (2008), pp. 513-521.

RISCH, R. (2003), "Los artefactos macrolíticos del yacimiento talayótico y postalayótico de Son Ferragut (Sineu, Mallorca)", en P. Castro, T. Escoriza y M.-E. Sanahuja (eds), *Mujeres y hombres en espacios domésticos: trabajo y vida social en la Prehistoria de Mallorca (c. 700-500 cal ANE)*, B.A.R., Oxford: 306-319.

3. Metallurgy and study of metals

3.1.-General works

Frère-Sautot, M-Ch. (dir.) (1998). *Paléometallurgie des cuivres*. Actes du colloque de Bourg-en-Bresse et Beaune 17-18 octobre 1997. Éditions Monique Mergoïl, Monographies Instrumentum 5, Montagnac.

Hauptmann, A. (2020). *Archaeometallurgy - Materials Science Aspects*. Springer, Natural Science in Archaeology, Cham.

Mohen, J.P. (1992). *Metalurgia prehistórica. Introducción a la paleometalurgia*. Masson, Barcelona.

Montero Ruiz, I. (coord.) (2010). *Manual de arqueometalurgia*. Comunidad del Madrid, Museo Arqueológico Nacional, Madrid.

Roberts, B.W., Thornton, Ch.P. (ed.). (2014). *Archaeometallurgy in Global Perspective. Methods and Syntheses*. Springer, New York.

Tylecote, R.F. (1986). The prehistory of metallurgy in the British Isles. The Institute of Metals, London.

Tylecote, R.F. (1992). A history of metallurgy (2nd ed.). Maney for the Institute of Materials, London.

3.2 The first metallurgies of copper and bronze

Ambert, P., Vaquer, J. (dir.) (2005). La première métallurgie en France et dans les pays limitrophes. Actes du colloque international, Carcassonne 28-30 septembre 2002. Mémoire XXXVII de la Société Préhistorique Française.

Chernykh, E.N. (1992). Ancient metallurgy in the USSR: the Early Metal Age, Cambridge University Press, Cambridge.

Craddock, P.T. (1995). Early metal mining and production. Edinburgh. University Press, Edinburgh.

Delibes de Castro, G., Montero Ruiz, I. (coord.) (1999). Las primeras etapas metalúrgicas en la Península Ibérica II. Estudios regionales. Instituto Universitario Ortega y Gasset, Madrid.

O'Brien, W. (2015). Prehistoric copper mining in Europe: 5500-500 BC. Oxford University Press, Oxford.

Radivojević, M., Rehren, Th. (2016). Paint It Black: The Rise of Metallurgy in the Balkans. Journal of Archaeological Method and Theory 23, 200-237.

Roberts, B.W., Thornton, Ch.P. (ed.). (2014). Archaeometallurgy in Global Perspective. Methods and Syntheses. Springer, New York.

3.3 Archaeometric analyses

AAVV. (2009). Lead isotopes and archaeometallurgy. Edited by F. Cattin, B. Guénette-Beck, M. Besse and V. Serneels. Archaeological and Anthropological Sciences. Special Issue 1(3)

Dolfini, A., Crellin, R.J. (2016). Metalwork wear analysis: The loss of innocence. Journal of Archaeological Science 66, 78-87.

Jungmans, S., Sangmeister, E., Schröder, M. (1968). Kupfer und Bronze in der frühen Metallzeit Europas. Romisch-Germanisches Zentralmuseum, Studien zu den Anfängen der Metallurgie 2, Berlin.

Radivojević, M., Roberts, B.W., Pernicka, E., Stos-Gales, Z., Martínón-Torres, M., Rehren, T., Bray, P., Brandherm, D., Ling, J., Mei, J., Vandkilde, H., Kristiansen, K., Shennan, S.J., Broodbank, C. (2019). The provenance, use, and circulation of metals in the European Bronze Age: The state of debate. Journal of Archaeological Research 27, 131-185.

Rovira Llorens, S., Gómez Ramos, P. (2005). Las primeras etapas metalúrgicas en la Península Ibérica III. Estudios metalográficos. Madrid.

Rovira Llorens, S., Montero Ruiz, I., Consuegra Rodríguez, S. (1997). Las primeras etapas metalúrgicas en la Península Ibérica I. Análisis de materiales. Instituto Universitario Ortega y Gasset, Madrid.

Scott, D.A., Schwab, R. (2019). Metallography in Archaeology and Art. Springer, Cultural Heritage Science, Cham.

Wang, Q., Ottaway, B.S. (2004). Casting experiments and microstructure of archaeological relevant bronzes. BAR International Series 1331, Oxford.

BLOCK B. Study of flint materials.

Andrefsky jr, W. (2007). "The application and misapplication of mass analysis in lithic debitage studies." Journal of Archaeological Science 34: 302-402.

Andrefsky jr, W., Ed. (2008). Lithic Technology. Cambridge, Cambridge University Press.

Andrefsky jr, W. (2009). "The Analysis of Stone Tool Procurement, Production, and Maintenance." *J Archaeol Res* 17: 65-103.

Andrefsky, J. W. (2000). *Lithics. Macroscopic approaches to analysis*, Cambridge University Press.

Williams, J. P. y Andrefsky Jr, W. (2011). "Debitage variability among multiple flint knappers." *Journal of Archaeological Science* 38(4): 865-872.

Boëda, E., J. M. Geneste, et al. (1990). "Identification des chaînes Operatoires lithiques du Paléolithique Ancien et Moyen." *Paleo* 2: 43-80.

Boëda, E. (1994). *Le concept Levallois: Variabilité des méthodes*. Paris, CNRS.

Breizillon, M. (1977). *La denomination des objets de pierre taillée. Matériaux pour un vocabulaire des préhistoriens de langue française*. Paris, CNRS.

Debénath, A. and H. Dibble (1994). *Paleolithic Typology. Lower and Middle*

Paleolithic of Europe. Philadelphia, University of Pennsylvania.

Demars, P.-Y. and P. Laurent (1992). *Types d'outils lithiques du Paleolithique superieur en Europe*. Paris, CNRS Plus.

Gibson, K. R. and T. Ingold (1993). *Tools, language and cognition in human evolution*. Cambridge, University Press.

Inizan, M. L., M. Reduron, et al. (1995). *Technologie de la pierre taillée. Prehistoire de la pierre taillée*. Meudon, Cercle de recherches et d'etudes préhistoriques.

Inizan, M.-L., M. Reduron, et al. (1995). *Technologie de la pierre taillée*. Meudon Cedex. France, Cercle de Recherches et d'Etudes Préhistoriques. CNRS.

Karlin, C., Ed. (1992). *Connaissances et savoir faire: Comment analyser un processus technique en Prehistoire: Introduction. Tecnologia y Cadenas Operativas Líticas*. Bellaterra, UAB.

Laplace, G. (1972). "La typologie analytique et structurale: Base rationnelle d'étude des industries lithiques et osseuses."

Laplace, G. (1974). "De la dynamique de l'analyse structurale ou la typologie analytique."

Leakey, M. D. (1971). *Olduvai Gorge. Excavations in Beds I and II, 1960-1963*.

Merino, J. M. (1994). *Tipologia Lítica*. San Sebastian, Munibe.

Mora, R., X. Terradas, et al. (1992). *Tecnologia y Cadenas Operativas Líticas*. Bellaterra, UAB.

Mora, R., J. Martínez-Moreno and J. Casanova (2008). "Abordando la noción de "variabilidad musteriense" en Roca dels Bous (Prepirineo suroriental, Lleida)." *Trabajos de Prehistoria* 65(2): 13-28.

Piel-Desruisieux, J. L. (1989). *Instrumental Prehistórico. Forma, fabricación, utilización*. Paris, Masson.

Revillion, S. and A. Tuffreau (1994). *Les industries laminaires au Paléolithique moyen*. Paris, CNRS-CRA.

Sonneville-Bordes, D. and J. Perrot (1955). "Lexic typologique du Paléolithique Superieur." *B. S. P. F. L-LI-LII*.

Tixier, J., M. L. Inizan, et al. (1980). *Préhistoire de la pierre taillée. Terminologie et technologie*. Valbonne.

Tixier, J. (1984). *Prehistoire de la Pierre Taillée. Economie du débitage laminaire*. Valbonne, Cercle de recherches et d'études préhistoriques.

Tixier, J. (1988). *Technologie Prehistorique. Journée d'etudes technologiques en préhistoire*, CNRS.

Van Peer, P. (1992). The Levallois reduction strategy. Madison, Prehistory Press.

BLOCK C. Study of pottery

1. The analysis of pottery: general works

AA.VV. 1992. Tecnología de la cocción cerámica desde la Antigüedad a nuestros días, Asociación de Ceramología, Alicante: 19-38.

Arnold, D.E. 1985. Ceramic Theory and Cultural Process, Cambridge University Press, Cambridge.

Balfet, H.; Fauvet, M. F.; Monzon, S. (1989). Lexique et typologie des poteries. Presses du CNRS; 1ª ed.; París.

Bey, G.J. y Pool, C.A. (eds) 1992, Ceramic production and distribution-an integrated approach, Westview Press, Boulder.

Cumberpatch, C.G. y Blinkhorn, P.W. (eds) 1997. Not so much a pot, more a way of life, Oxbow Monograph 83, Oxford.

Dedet, B.; Py, M. (1975). Classification de la céramique non tournée protohistorique du Languedoc méditerranéen. Supplément 4; Revue Archéologique de Narbonnaise. París.

Miskowski, J.-C. (Ed.) (2002). Géologie de la Préhistoire: méthodes, techniques, applications. GéoPré; 1ª ed.; París.

Orton, C., Tyers, P. y Vince, A. 1997. La cerámica en arqueología, Ed. Crítica, Barcelona

Rice, P. (1987). Pottery analysis-a sourcebook, University of Chicago Press, Chicago.

Rice, P. (1996a). Recent Ceramic Analysis: 1. Function, Style and Origins. Journal of Archaeological Research, vol 4, nº 2: pp 133-163.

Rice, P. (1996b). Recent Ceramic Analysis: 2. Composition, Production and Theory. Journal of Archaeological Research, vol 4, nº 3: pp 165-202.

Rye, O. S. (1988). Pottery technology. Principles and reconstruction. Manuals on Archaeology, 4; Ed. Taraxacum; 2ª ed.; Washington.

Shepard, A. 1980/1954. Ceramics for the archaeologist, Carnegie Institution of Washington, Washington.

2. Characterization studies

Aguiar, P.; Barahona, E.; Garrido, O.; Padial, B. (1998). Estudio preliminar de los depósitos de arcilla utilizados para la elaboración de cerámicas arqueológicas en la depresión natural de Ronda. In Bernabeu, J.; Orozco, T.; Terradas, X. (eds) (1998). Los recursos abióticos en la prehistoria. Caracterización, aprovisionamiento e intercambio: pp 173-188. Col·lecció Oberta, 2; 1ª ed.; Universitat de València.

Arnal, G.-B.; Gril, C.; Lalanne, J.-F. (1986). Caractérisation des céramiques préhistoriques par l'étude du dégraissant. Experimentation et analyses en céramologie préhistorique. Archéologie Expérimentale. Cahier 2: pp 69-82; Association pour la promotion de l'archéologie de Bourgogne; Meursault-Archéodrome.

Clop, X. (2007). Materia prima, Cerámica y Sociedad. BAR International Series 1660 (Oxford, Gran Bretanya).

Convertini, F. (1996). Production et signification de la céramique campaniforme à la fin du 3ème millénaire av. J.-C. dans le Sud et le Centre-Ouest de la France et en Suisse Occidentale. BAR International Series, 656; 1ª ed.; Oxford.

Courtois, L. (1976). Examen au microscope pétrographique des céramiques archéologiques. Notes et Monographies techniques, 8; C.R.A.; C.N.R.S.; 1ª ed.; París.

Echallier, J.-C. (1984). Elements de technologie céramique et d'analyse des terres cuites archéologiques. Documents d'Archéologie Méridionale; Methodes et Techniques, 3; 1ªed; Association pour la Diffusion de l'Archéologie Méridionale; Lambesc.

Eiland, M. y Williams, Q. (2000), "Infra-red spectroscopy of ceramics from Tell Brak, Siria", *Journal of Archaeological Science*, 27: 993-1006.

Gómez-Gras, D. y Risch, R. 1999. "Análisis petrográficos de cerámicas de la Cova des Càrritx", en Lull, V., et al., *La Cova des Càrritx y la Covades Mussol-Ideología y sociedad en la prehistoria de Menorca*, Consell Insular de Menorca, Barcelona: 567-580.

Hoard, R.J., O'Brian, M.J., Ghazavy, M. y Gopalaratnam, V.S. (1995), "A materials-science approach to understanding Limestone-tempered Pottery from the Midwestern United States", *Journal of Archaeological Science*, 22: 823-832.

Hunt, P.N. y Griffiths, D.R. 1989. "Optical petrology in the field", *World Archaeology*, 21 (1): 165-172.

Kilikoglou, V., Vekinis, G., Maniatis, Y. y Day, P.M. (1998), "Mechanical performance of quartz-tempered ceramics: part I, strength and toughness", *Archaeometry*, 40.2: 261-279.

Levi, S.T. y Loschi Ghittoni, A. (1997), "Gli impasti ceramici di siti terramaricoli del territorio modenese", en Bernabó Brea, M. et al. (eds), *Le Terramare: La più antica civiltà Padana*. Electa, Milano, pp. 487-497.

Lindahl, A. y Stilborg, O. (eds.) (1995), *The aim of laboratory analyses of ceramics in Archaeology*, Konferenser 34, Vitterhets, Lund. London, G. 1981. "Dung tempered clay", *Journal of Field Archaeology*, 8: 189ss.

Magetti, M. y Schwab, H. (1982), "Iron age pottery from Châtillon-S-Glâne and the Heuneburg", *Archaeometry*, 24, 1: 21-36.

Middleton, A. y Freestone (eds) 1991. *Recent developments in ceramic petrology*, British Museum Laboratory, London.

Navarrete, Mª. S.; Capel, J.; Linares, J.; Huertas, F.; Reyes, E. (1991). *Cerámicas neolíticas de la provincia de Granada. Materias primas y técnicas de manufacturación*. Monográfica Arte y Arqueología, 9; 1ª ed.; Universidad de Granada.

Olaetxea, C. 2000, *La tecnología cerámica en la protohistoria vasca*, Munibe-Suplemento nº 12, Donostia.

Rye, O.S. (1976), "Keeping your temper under control: materials and manufacture of Papuan pottery", *Archaeology and Physical Anthropology in Oceania*, 11: 106-137.

Stimmell, C. (1978), "A preliminary report on the use of salt in shelltempered pottery of the upper Mississippi Valley", *The Wisconsin Archaeologist* 59: 226-274.

3. Function and use of pottery

Braun, D. P. (1983). *Pots as tools*.

Moore, J. A.; Keene, A. S. (Eds.) (1983). *Archaeological hammers and theories*: pp 107-134. Academic Press; 1ª ed.; New York.

Bronitsky, G. (1986). *The Use of Materials Science Techniques in the Study of Pottery Construction and Use*. In Schiffer, M. B. (1986). *Advances in Archaeological Method and Theory*, vol 9: pp 209-276. Academic Press; Orlando.

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.

DeBoer, W.R. 1974. "Ceramic longevity and archaeological interpretation", *American Antiquity*, 39: 335-343.

Dugay, L. 1996, "Specialised pottery production on Bronze Age Cyprus and pottery use-wear analysis", *Journal of Mediterranean Archaeology*, 9.2: 167-192.

Ericson, J.E. y Stickel, E.G. 1973. "A proposed classification system for ceramics", *World Archaeology*, 4 (3):357-367.

Evershed, R.P. 1995. "Analysis of organic residues from ceramic vessels", en Shennan, S.J., *Bronze Agecopper producers of the Eastern Alps-excavations at St.Veit-Klingberg*, Rodolf Habelt, Bonn.

Hagstrum, M.B. y Hildebrand, J.A. 1990. "The two-curvature method for reconstructing ceramic morphology", *American Antiquity*, 55: 388-403.

Henrickson, F.E. y McDonald, M.M. 1983. "Ceramic form and function: an ethnographic search and an archaeological application", *American Anthropologist*, 85: 630-643.

Juhl, K. (1995). *The Relation between Vessel Form and Vessel Function. A methodological Study*. AmS-Skrifter 14; Arkeologisk museum i Stavanger.

Lesure, R.G. 1998. "Vessel form and function in an Early Formative ceramic assemblage from coastal Mexico", *Journal of Field Archaeology*, 25: 19-36.

Mills, B.J. 1989. "Integrating functional analyses of vessels and sherds through models of ceramic assemblage formation", *World Archaeology*, 21: 133-147.

Skibo, J.M. 1992 *Pottery Function: a use alteration perspective*, Plenum Press, Nueva York. Whalen.

Software

No specific software is required.

Language list

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	1	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	2	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	3	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	1	Catalan/Spanish	second semester	morning-mixed