UAB
Universitat Autònoma de Barcelona

Bioarchaeology

Code: 100714
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500241 Archaeology	OB	3

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

The course "Introduction to Archeology" should have been taken previously.

Objectives and Contextualisation

The course is part of the subject area "Field and Laboratory Methods and Techniques" of the degree in Archaeology. There are 36 ECTS of compulsory courses related to this subject area (Methods and field techniques in prehistoric archaeology, Methods and techniques in historical archaeology, Analysis of artifacts, Analysis and study of archaeological materials, Bioarchaeology and Quantitative Archaeology) aiming at providing basic knowledge on methodology and field and laboratory techniques in archaeology.

The Bioarchaeology course emphasizes those methods and techniques associated with archaeozoological, archaeobotanical and ancient human remains. The methods for describing and analysing the variability of the data are presented, introducing aspects such as the testing of statistical hypotheses or the analysis of qualitative and quantitative relationships. The contents of this subject are aimed at giving students the basic tools that are necessary in order to deal with archaeological materials as a category of historical documents.

The course relies in practical training and is designed to provide a problem-oriented approach with the help of practical sessions in the teaching lab.

Competences

- Carrying out and managing archaeology fieldwork: excavation and survey.
- Generating innovative and competitive proposals in research and professional activity.
- Managing the main methods, techniques and analytic tools in archaeology.
- Respecting the diversity and plurality of ideas, people and situations.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethic relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.

Learning Outcomes

1. Applying both knowledge and analytical skills to the resolution of problems related to their area of study.
2. Applying implementing protocols of fieldwork and sample collection.
3. Applying proper techniques and analytical tools in case studies.
4. Autonomously searching, selecting and processing information both from structured sources (databases, bibliographies, specialized magazines) and from across the network.
5. Combining technical resources from similar disciplines.
6. Establishing investigation protocols for original research projects.
7. Interpreting the archaeological fieldwork results by placing them into their historical context.
8. Mastering specific techniques and instrumental resources of archaeological laboratory analysis.
9. Organizing their own time and work resources: designing plans with priorities of objectives, calendars and action commitments.
10. Recognising and implementing the following teamwork skills: commitment to teamwork, habit of cooperation, ability to participate in the problem solving processes.
11. Recognising the importance of controlling the quality of the work's results and its presentation.
12. Submitting works in accordance with both individual and small group demands and personal styles.
13. Transmitting the results of archaeological research and clearly communicating conclusions in oral and written form to both specialised and non-specialised audiences.
14. Using computing tools, both basics (word processor or databases, for example) and specialised software needed in the professional practice of archaeology.
15. Using the specific interpretational and technical vocabulary of the discipline.

Content

Contents

Block 1.- Archaeobotany

- Nature and specificity of archaeobotanical remains

- Formation of the archaeobotanical record.

- Methods and techniques for recovering botanical remains

- The determination of archaeobotanical remains

- Seed and fruit remains: food resources and products, processing and consumption

- Anthracology and dendrology: the management of forest resources

- Palynology: the vegetal landscape

Block 2.- Archaeozoology

- Fauna analysis in the framework of archaeological research projects. Goals, trends and key concepts in archaeozoology. Integrating archaeozoological problems to archaeological research.

- The nature of the paleofaunistic record. Micromammals, fish, molluscs and birds. Other categories of remains: amphibians, reptiles, insects and mites

- The formation of fauna remains: archaeotaphonomy. The incorporation of animal remains to the archaeological sites: agents and conditions. Archaeotaphonomy assessment.

- The recovery of fauna remains: units and conditions. Representativeness of faunal assemblages: the problem of sampling.

- Anatomical and taxonomic classification of fauna remains. The reference collection. The handbooks. Problems with the determination of morphologically close species. Biometry. DNA. Categories and classification units used in archeozoology. Databases and recording methods.

- Determination of the structure of the slaughtered animal populations. The estimation of age: tooth wear and epiphyseal closure assessment. X-rays. Sex determination. Morphology and osteometric criteria.

- Anthropic modifications. Traces linked to processing, distribution and consumption of animal resources. Identification of work processes through the analysis of changes in bone surfaces. Techniques involved in the preparation of food for consumption: identification and characterization based on the analysis of thermal alterations. Analysis of fracture patterns and their relationship with the processing and consumption of animals and animal products.

- The spatial analysis of fauna remains. Bone breakage, refiting and anatomical articulations.

- Quantification and statistical treatment. Sample representativity. Number of remains and minimum number of individuals. Skeletal parts frequencies. Evaluation of potentially supplied biomass.

- The interpretation: management of animal resources. Different trends in Archaeozoology.

Block 3.- Human Osteoarchaeology (anthropology)

- Bone tissues, anatomical standards, human variability and osteological determination.

- Human bones of the axial skeleton

- Human bones of the appendicular skeleton

- Principles of demographic analysis (1): age-at-death estimation.

- Principles of demographic analysis (2): sex estimation.

- Tomb excavation & record: orientation, position, sequencing and funerary taphonomy.

- Human bones in funerary practices research.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes

Type: Directed			
Practical sessions	50	2	3, 2, 5, 8
Type: Supervised			
Exercices based on ICT	15	0.6	3, 1
Type: Autonomous			
Written assignment	80	3.2	3, 1, 7, 9, 12, 11, 13, 15, 14

The course is of a practical nature and it will be taught in the teaching laboratories of the Department of Prehistory.

Basic procedures for the analysis of archaeological remains will be learned by means of case study applications and practical exercises.

Distribution of hours per block:

- Archaeozoology: 21 hours

- Archaeobotany: 21 hours

- Human osteoarchaeology: 12 hours

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

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Delivery of practical exercices	64%	3	0.12	3, 2, 1, 4, 5, 8, 7, 9, 12, 11, 13, 15, 14
Exams	36%	2	0.08	6, 12, 10, 13, 15

Attendance to practical classes is compulsory; exercises and practical work will be required for each one of the three blocks.

Written tests will also be required for some of the contents of the course.

To pass the course it is mandatory to pass each one of the three tematic blocks.

Weighting evaluation activities:

Archaeobotany: delivery of practical exercises 24% (4 deliveries, each represents 6%), final written test 16%

Archaeozoology: delivery of practical exercises 20%, final written test 20%

Human osteoarchaeology: delivery of practical exercise 20%

Re-evaluation:

A second evaluation is foreseen for those students not having passed the first one if the following requirements are met:

- All tests for each one of the three blocks must have been taken.

- All practical sessions must have been attended.

At the time of completion/delivery of each assessment activity, the teacher will inform (Moodle, SIA) of the procedure and date of revision of the grades.

The student will be classified as Non-evaluable when he or she: 1.) has not passed all three tematic blocks; 2.) has not delivered at least 30% of the evaluation activities.

In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

This subject does not incorporate single assessment.

Bibliography

Bloc 1.- Arqueobotànica

Manuals i obres generals:

BERIHUETE-AZORIN, Marian; MARTIN SEIJO, Maria; LÓPEZ-BULTÓ, Oriol. PIQUÉ, Raquel (eds) 2022 The missing woodland resources: archaeobotanical studies of the use of plant raw materials. Eelde: Barkhuis Publishing. Series Advances in Archaeobotany

BUXÓ, R.; PIQUÉ , R. (dir.) 2003 La recogida de muestras en arqueobotánica: objetivos y propuestas metodológicas. Museu d'Arqueologia de Catalunya, Barcelona, 71 pp.

BUXÓ, Ramon.; PIQUÉ, Raquel. 2008.Arqueobotànica. Los usos de las plantas en la Península Ibèrica. Barcelona: Ariel

HARDY, Karen. AND KUBIAK-MARTENS, Lucy (Eds) 2016. Wild Harvest: Plants inthe Hominin and Pre-Agrarian Human Worlds. Oxbow Books

HASTORF Christine; POPPER (Eds) *Current paleoethnobotany: analytical methods and cultural interpretations of achaeological plant remains.* Chicago, University Press: 72-85

LITYŃSKA-ZAJĄC, Maria 2018. A Man and a Plant: Archaeobotany. In: Pişkin, E., Marciniak, A., Bartkowiak, M. (eds) Environmental Archaeology. Interdisciplinary Contributions to Archaeology. Springer, Cham. https://doi.org/10.1007/978-3-319-75082-8_5

MARTÍN SEIJO, María; RICO REY, Aldara; TEIRA BRIÓN, Andrés, PICÓN PLATAS, GARCÍA GONZÁLEZ, Israel Ignacio; ABAD VIDAL Emilio 2010. Guía de Arqueobotánica. Xunta de Galicia. Consellería de Cultura e Turismo Dirección Xeral do Patrimonio Cultural. Guia_de_Arqueobotanica.pdf (cultura.gal)

PEARSALL, Deborah M. 2015. Paleoethnobotany. A handbook of procedures (3rd ed.). Walnut Creek, CA: Left Coast Press.

VAN ZEIST, W.; WASYLIKOWA, K. i BERHE, K.E. 1991 *Progres in Old World Palaeoetnobotany*. Rotterdam: Balkema.

Carpologia

ANTOLÍN, Ferran 2016.: Local, intensive and diverse? Early farmers and plant economy in the North-East of the Iberian Peninsula (5500-2300 cal BC). Barkhuis, Gröningen.

JACOMET, Stéphanie. 2006. Identification of cereal remains from archaeological sites. (2nd edition, 2006) IPNA, Universität Basel / Published by the IPAS, Basel University. Download from http://pages.unibas.ch/arch/archbot/pdf/index.html

ALONSO, Natàlia. 1999 *De la llavor a la farina. Els processos agrícoles protohistòrics a la Catalunya Occidental*, *Monographies d'Archéologie Meditérranéenne*, 4, CNRS.

ALONSO, Natàlia. 2000 "Cultivos y producción agrícola en época ibérica", a III Reunión d'Economía Ibérica, Saguntum, Saguntum, extra 3, Valencia, 2000, pp. 25-46.

ANDERSON P. (dir.), 1992 *Préhistoire de l'Agriculture. Nouvelles Approches expérimentales et ethnographiques*, Monographie du CRA, nº6, p.321-339

COLLEDGE, Sue., CONOLLY, J.W., SHENNAN, S.J. 2004. Archaeobotanical evidence for the spread of farming in the East Mediterranean. Current Anthropology, 45 (4), 35-58. doi:10.1086/42208

HILLMAN, Gordon. 1981 "Reconstructing Crop Husbandry Practices from Charred Remains of Crops", a R. Mercer (ed.), *Farming Practice in British Prehistory*, p.123-162.

HILLMAN, Gordon.C. 1984a "Interpretation of archaeological plant remains: the aplication of ethnographic models from Turkey" a W. van Zeist - W.A. Casparie (ed.), *Plants and Ancient Man. Studies in Palaeoethnobotany*, Rotterdam, p.1-41

JONES, G.E.M. 1984 "Interpretation of archaeological plant remains: Ethnographic models from Greece", aW.van Zeist i W.A. Casparie (ed.), *Plants and Ancient Man.Studies in Palaeoethnobotany*, Rotterdam, p.43-61.

ZOHARY, D., HOPF, M. AND WEISS, E. 2012. Domestication of Plants in the Old World, 4th edition. Oxford: Oxford University Press.

Fitòlits

PIPERNO, Dolores. 2006. Phytoliths: a comprehensive guide for archaeologists and paleoecologists. Lanham: AltaMira Press.

PIPERNO,Dolores. 1988 *Phytolith analysis. An archaeological and geological perspective*. Academic Press. San Diego.

Dendrocronologia

BEHRE, K.-E. i S. JACOMET 1991 "The Ecological Interpretation of Archaeobotanical Data" a: VAN ZEIST, W.; K. WASYLIKOWA; K.-E. BEHRE *Progress in Old World Palaeoethnobotany*, Rotterdam, A.A. Balkema, 1991:81-108

BILLAMBOZ, A. 1996. "Tree-rings and pile dwellings in southwestern Germany: Following in the footsteps of Bruno Huber". In Dean, J. S., Meko, D. M., and Swetnam, T. S. (eds.), *Tree-Rings, Environment, and Humanity: Proceedings of the International Conference,* Tucson, 1994, Radiocarbon, Tucson, AZ, pp. 471-483.

DOMÍNGUEZ-DELMÁS, Marta 2020. Seeing the forest for the trees: new approaches and challenges for dendroarchaeology in the 21st century. Dendrochronologia, 62, [125731]. https://doi.org/10.1016/j.dendro.2020.125731

Antracologia

CHABAL, Lucie. 1988 "Pourquoi et comment prélever les charbons de bois pour la période antique: les méthodes utilisées sur le site de Lattes (Hérault)" *Lattara* 1:187-222

CHABAL, Lucie. 1992 "La représentativité paléo-écologique des charbons de bois archéologiques issus du bois de feu" *Les Charbons de Bois, les Anciens Écosystèmeset le rôle de l'Homme. Bulletin de la Société Botanique de France*, 139, Actualités Botaniques, 1992-2/3/4:213-236

DAMBLON Frederic. (ed.). 2013. Proceedings of the Fourth International Meeting of Anthracology. British Archaeological Records International Series 2486: 1-251.

LUDEMANN, T. 2002. Anthracology and forest sites: the contribution of charcoal analysis to our knowledge of natural forest vegetation in south-west Germany. In: Thièbault, S. (ed.). Charcoal analysis: methodological approaches, palaeoecological results and wood uses. British Archaeological Reports International Series 1063: 209-217.

MARGUERIE, Dominic; HUNOT, J.-Y. 2007. Charcoal analysis and dendrology: data from archaeological sites in north-western France. Journal of Archaeological Science 34: 1417-1433.

PIQUÉ, Raquel. 1999 *Producción y uso del combustible vegetal: una evaluación arqueològica*. Treballs d'Etnoarqueologia 3, Consejo Superior de Investigaciones Científicas, Madrid (1999)

THÉRY-PARISOT, Isabel; CHABAL, Lucie. & CHRZAVZEZ, J. 2010. Anthracology and taphonomy, from wood gathering to charcoal analysis: a review of the taphonomic processes modifying charcoal assemblages, in archaeological contexts. Palaeogeography, Palaeoclimatology, Palaeoecology 291: 142-153.

THIÉBAULT, Stéphanie. (Ed.). 2002. Charcoal analysis: methodological approaches, palaeoecological results and wood uses. British Archaeological Reports International Series, 1063: 1-284.

Pol·len

DIMBLEDY, G.W. 1985 *The palinology of archaeological sites*. Academic Press, London.

Atles anatomia plantes

SCHWEINGRUBER, Fritz. H. 1978 *Mikroskopische holzanatomie* Zürcher A.G. Zug

SCHWEINGRUBER, Fritz. H. 1990 *Anatomie europäischer Hölzer*. Bern und Stuttgart

SCHWEINGRUBER, Fritz. H. 1996 *Tree rings and environment dendroecology*. Birmensdorf: Swiss Federal Institute for Forest, Snow and Landscape Research- Berne: Haupt.

RECURSOS DIGITALS

http://www.wsl.ch/land/products/dendro/

http://seeds.eldoc.ub.rug.nl/

http://http//www.plantatlas.eu

https://ipna.unibas.ch/archbot/pdf/index.html

http://http//insidewood.lib.ncsu.edu

http://http//www.wodancharcoal.ie

BEKKER, R.M., CAPPERS, R. T.J AND NEEF, R. 2011. Digital Atlas of Economic Plants in Archaeology. The Digital Atlas series

Revistes digitals:

Vegetation History and Archaeobotany. https://www.springer.com/journal/334/

Bloc 2. Arqueozoologia

BIBLIOGRAFIA

TEMA 1. Les anàlisis de fauna en el marc dels projectes d'investigació arqueològica:

DAVIS, S.J.M. (1989). *La arqueología de los animales*, Barcelona, Ediciones Bellaterra S.A.

CHAIX, L., MÉNIEL, P.(2005). *Manual de arqueozoología*. Editorial Ariel, Barcelona.

ESTÉVEZ, J. (1991). "Cuestiones de fauna en arqueologia". *Arqueologia, nuevas tendencias*: 57-81, Madrid, CSIC.

HESSE, B., WAPNISH, P. (1985). *Animal bone Archaeology. From objectives to analysis*. Manuals on Archaeology, 5. Washington, Taraxacum.

PERES,TANYA M. (2010). Methodological Issues in Zooarchaeology, in: A.M. VanDerwarker and T.M. Peres (eds.), *Integrating Zooarchaeology and Paleoethnobotany:A Consideration of Issues, Methods, and Cases*, Springer Science,

REITZ, ELIZABETH J., I ELIZABETH S. WING. (2008). *Zooarchaeology*, 2nd edition. Cambridge University Press, Cambridge, U.K.

TEMA 2. La naturalesa del registre paleofaunístic:

BAKER, ANNE S. (2009). Acari in archaeology. *Exp Appl Acarol*.,49:147-160.

BOUCHET, F. (1997). "La parasitologie: une discipline biologique au service de l'archéozoologie". *Anthropozoologica*, nº 25-26: 61-64.

BRINKHUIZEN, D.C. & CLASON, A.T. (eds.) (1986). Fish & Archaeology. Oxford: BAR International Series 294.

GILBERT, B. M., L. D. MARTIN, H. G. SAVAGE (1985). *Avian Osteology*. Flagstaff: B. Miles Gilbert.

KENWARD, H., CARROTT, J. (2006). Insect species associations characterize past occupation sites. *Journal of Archaeological Science* 33: 1452-1473.

SHAHACK-GROSS, R. (2010). Herbivorous livestock dung: Formation, taphonomy, methods for identification, and archaeological implications, *Journal of Archaeological Science*, doi: 10.1016/j.jas.2010.09.019

STAHL, P.W. (1996). The recovery and interpretation of microvertebrate bone assemblages from archaeological contexts. *Journal of Archaeological Method and Theory* 3:31-75.

WHEELER, A., JONES, A.K. (1989). *Fishes*. Cambridge University Press, Cambridge.

TEMA 3. La formació dels conjunts de restes de fauna: l'arqueotafonomia:

BLASCO, M.F. (1992). *Tafonomia y Prehistoria. Métodos y procedimientos de investigación*, Zaragoza, Universidad de Zaragoza.

GISELA GRUPE (2007). Taphonomic and Diagenetic Processes,in: HENKE i TATTERSALL (Edt.): *Handbook of Paleoanthropology*, Pages: 241-259, Springer, Berlin.

LYMAN, R. L. (1994). *Vertebrate taphonomy*. Cambridge University Press, Cambridge, U.K.

O'CONNOR, T. (Edt.) (2004). *Biosphere to Lithosphere: New Studies in Vertebrate Taphonomy*, Oxbow Books.

TEMA 4. La recuperació de les restes de fauna: unitats i condicions:

CLASON, ANTJE TRIENTJE, AND WIETSKE PRUMMEL. 1977. Collecting, Sieving, and Archaeozoological Research. *Journal of Archaeological Science* 4:171-175.

GORDON, ELIZABETH A. 1993. Screen Size and Differential Faunal Recovery: A Hawaiian Example. *Journal of Field Archaeology* 20(4):453-460.

JAMES, S.R. (1997). Methodological issues concerning screen size recovery rates and their effects on archaeofaunal interpretations. *Journal of Archaeological Science* 24:385-398.

TEMA 5. La determinació de les restes de fauna:

CANNON, D.Y. (1987). *Marine Fish Osteology: a manual for archaeologists*. Burnaby, BC: Simon Fraser University

COHEN, A. & SERJEANTSON, D. (1996). *A manual for the identification of bird bones from archaeological sites*. London:Birkbeck College.

HELMER, D. (1995). "Biometria i arqueozoologia a partir d'alguns exemples del Pròxim Orient", *Cota Zero*, 11: 51-60.

HILLSON, S. W. (1992). *Mammal bones and teeth: an introductory guide to methods of identification*. Institute of Archaeology, University College London, London, U.K.

HILLSON, S. W.(2005). *Teeth*. Cambridge University Press, Cambridge.

TEMA 6. Determinacióde l'estructura de les poblacions animals sacrificades:

GREENFIELD, HASKEL J.(2010) 'The Secondary Products Revolution:the past, the present and the future', *World Archaeology*, 42: 1, 29 - 54.

HALSTEAD, P. 1998. Mortality models and milking: problems ofuniformitarism, optimality and equifinality reconsidered. *Anthropozoologica*, 27: 3-20.

MULVILLE, J. i OUTRAM, A. (eds) 2005. *The Zooarchaeology of Fats, Oils, Milk and Dairying* (9th ICAZ conference proceedings). Oxford: Oxbow.

ROWLEY-CONWY, PETER (2004). Age at Death: A Zooarchaeological Technique with Implications for Anthropology, Agricultural economics and History. *Journal of Interdisciplinary Studies in History and Archaeology* Vol. 1, No.1 (Summer 2004), pp. 51-59.

RUSCILLO, D. (Edt.) (2005). *Recent advances in ageing and sexing animal bones*, Oxbow Books, Oxford.

TEMA 7. Traces vinculades al processament, distribució i consum dels recursos animals:

SANDRINE COSTAMAGNO, FRANCINE DAVID (2009). Comparison of butchering and culinary practices of different siberian reindeer herding groups. *Archaeofauna* 18: 9-25.

GIFFORD-GONZÁLEZ, D. 1993: Gaps in zooarchaeology analysis of butchery: Is gender an issue? In: Hudson, J. (ed.): *From Bones to Behavior: Ethnoarchaeological and Experimental Contributions to the Interpretation of Faunal Remains*: 181-199. Center for Archaeological Investigations, Southern Illinois University at Carbondale, Carbondale.

GREENFIELD, H.J. (1999). The origins of metallurgy: distinguishing stone from metal cut-marks on bones from archaeological sites. *Journal of Archaeological Science* 26, 797-808.

OUTRAM, A.K. 2001: "A new approach to identifying Bone Marrow and Grease exploitation: why the "indeterminate" fragments should not be ignored". *Journal of ArchaeologicalScience* 28: 401-410.

TEMA 8. La quantificació i tractamentestadístic:

DONALD K. GRAYSON & CAROL J. FREY (2004). Measuring Skeletal Part Representation in Archaeological Faunas. *Journal ofTaphonomy* 2 (1): 27-42.

GRAYSON, DONALD K. (1979). On the Quantification of Vertebrate Archaeofaunas. In *Advances in Archaeological Method and Theory*, vol. 2, edited by Michael B. Schiffer, pp. 199-237. Academic Press: New York.

LYMAN, R.L. (2008). *Quantitative paleozoology*, Cambridge University Press, Cambridge

TEMA 9. La interpretació: el mode de gestió dels recursos animals:

MALTBY, M. (Edt.) (2005). *Integrating Zooarchaeology*, Oxbow Books, Oxford.

O'DAY,J., VAN NEER, W. (Edts.) (2003). *Behaviour Behind Bones: The Zooarchaeology of Ritual, Religion, Status and Identity*, David Brown Book Company.

ROWLEY-CONWY, P. (Edt.) (2000). *Animal Bones, Human Societies*, Oxbow Books, Oxford.

USEFUL WEBSITES

Virtual comparative specimens:

http://vzap.iri.isu.edu/ViewPage.aspx?id=230

http://hbs.bishopmuseum.org/frc/types.html

Zooarch e-mail list:

http://www.jiscmail.ac.uk/lists/ZOOARCH.html

Zooarchaeological organizations:

Archeozoo - http://www.archeozoo.org/en

International Council for ArchaeoZoology http://www.alexandriaarchive.org/icaz/

Bone Commons (ICAZ) - http://www.alexandriaarchive.org/bonecommons/

Sites to buy skeletons and casts:

http://www.animalskeletons.net/

http://www.skullsite.co.uk/lists.htm

http://theevolutionstore.com/

ArchNet: Faunal Resources (Links related to identification of animal remains):

http://archnet.asu.edu/topical/Selected_Topics/Faunal%20&%20Zooarchaeology.php

Bioarchaeological References:

http://www.utep.edu/leb/baref/biblio.htm

Computerised Bone Templates (presents an approach to the computerized recording of graphical zooarchaeological data using digital image templates and graphic software packages):

http://www.archaeographica.com

ICAZ Animal Palaeopathology Working Group:

http://www.apwg.supanet.com/

Zooarchaeology Information and Resources:

http://www.zooarch.com

Bloc 3.- Human osteoarchaeology

1. Human osteology, physical anthropology, taphonomy and paleopathology

ALQAHTANI, Sakher Haber, HECTOR, Mark y LIVERSIDGE, Helen M. (2010), "Brief communication: the London Atlas of Human Tooth Development and Eruption", American Journal of Physical Antrhopology, 142: 481-490.

BAXARIAS, Joaquín; HERRERÍN, Jesús (2008), The handbook atlas of paleopathology. Pórtico, Zaragoza.

BOTELLA, Miguel C.; ALEMÁN, Inmaculada; JIMÉNEZ, Silvia A. (1999), Los huesos humanos. Manipulación y alteraciones. Ed. Bellaterra, Barcelona.

BUIKSTRA, Jane E. (ed.) (2019), Ortner's identification of paleopathological conditions in human skeletal remains, Smithsonian Institution, Washington. Academic Press-Elservier https://doi.org/10.1016/C2011-0-06880-1

BUIKSTRA, Jane E.; UBELAKER, D.H.(eds) (1994), Standards for data collection from human skeletal remains. Proceedings of a Seminar at the Field Museum of Natural History organized by Jonathan Haas, Arkansas Archaeological Survey Research Serie nº 44, Indianapolis.

CAMPILLO, Domènec; SUBIRÁ, Mª Eulàlia (2004), Antropología física para arqueólogos. Ariel, Barcelona.

KLALES, Alexandra R. (2020), Sex estimation of the human skeleton. History, methods and emerging techinques. Academic Press, Nueva York. https://doi.org/10.1016/C2017-0-03550-4

KRENZER, Udo (2006), Compendio de métodos antropológico forenses para la reconstrucción del perfil osteo-giológico. CAFCA, Guatemala. https://www.ziviler-friedensdienst.org/de/publikation/compendio-de-metodos-antropologico-forenses-para-la-reco

IRISH, Joel D.; SCOTT, Richard S. (eds.) (2016), A Companion to Dental Anthropology. Wiley Blackwell, Londres.

MIKŠÍK, Ivan; MORVAN; Marine; BRŮEK, Jaroslav (2023), "Peptide analysis of tooth enamel - A sex estimation tool for archaeological, anthropological, or forensic research", *Journal of Separation Science* https://doi.org/10.1002/jssc.202300183

NIKITA, Efthymia. (2017), Osteoarchaeology. A Guide to the Macroscopic Study of Human Skeletal Remains. Elsevier, Londres. https://www.sciencedirect.com/book/9780128040218/osteoarchaeology

POKINES, James T.; SYMES, Steven A. (eds.) (2014), Manual of Forensic Taphonomy. CRC Press, Boca Raton.

SCHAEFER, Maureen; BLACK, Sue; SCHEUER, Louise (2009), Juvenile osteology. A laboratory and field manual. Academic Press, Londres.

TERMCAT (1993), Diccionari d'anatomia, Colecció Diccionaris terminològics, Fundació Barcelona, Barcelona. https://www.termcat.cat/es/diccionaris-en-linia/182

UBELAKER, Douglas H. (1984), Human skeletal remains. Excavation, analysis, interpretation, edición revisada, Smithsonian Institution, Washington. (trad. castellà: Enterramientos humanos.Excavación, análisis, interpretación. Munibe, supl. 24, Sociedad de Ciencias Aranzadi, Donostia, 2003).

WALDRON, Timothy (2009), Palaeopathology. Cambridge University Press, Cambridge.

WHITE, Timothy D.; BLACK, Michael, T.; FOLKENS, Pieter A. (2011), *Human Osteology,* 3a edició, Academic Press, New York.

2. Applications in bioarchaeology

ARKEOGAZTE magazine "Huesos, tierra, memoria", nº 10, 2020 - https://arkeogazte.org/monografico-huesos-tierra-memoria/

DELGADO DARIAS, Teresa (2009), La historia en los dientes. Una aproximación a la Prehistoria de Gran Canaria desde la Antropología Dental. Cabildo de Gran Canaria, Col. Cuadernos de Patrimonio Histórico nº 8, Las Palmas.

DÍAZ-ZORITA, Marta (2017), The Copper Age in south-west Spain. A bioarchaeological approach to Prehistoric social organization. BAR, Oxford [tesis doctoral año 2013, University of Durham http://etheses.dur.ac.uk/9470/]

DUDAY, Henri (2009), The Archaeology of the Dead: Lectures in Archaeothanatology. Oxbow Books, Londres.

ETXEBERRIA, Frnacisco (ed.) (2020), *Las exhumaciones de la Guerra Civil y de la dictadura franquista. Estado actual y recomendaciones de futuro.* Ministerio de la Presidencia, Relaciones con las Cortes y Memoria Democrática. https://www.mpr.gob.es/servicios/publicaciones/Documents/Exhumaciones_Guerra_Civil_accesible_BAJA.pdf

GELLER, Pamela (2021), *Theorizing bioarcheology*, Springer Cham.

KATZENBERG, M. Anne; GRAUER, Anne L. (eds.) (2019), Biological Anthropology of the Human Skeleton. 3a edició, Wiley-Blackwell.

KLAUS, Haagen D; HARVEY, Amanda R.; COHEN, Mark Nathan (2017), Bones of complexity. Bioarchaeological case studies of social organization and skeletal biology. University Press of Florida, Gainesville.

KURIN, Danielle Shawn (2022), The bioarchaeology of disaster. How catastrophes change our skeletons. Routledge, Londres.

LEWIS, Mary E. (2007), The Bioarchaeology of Children. Perspectives from biological and forensic anthropology. Cambrdige University Press, Cambridge.

MARTIN, Debra L.; HARROD, Ryan P.; PÉREZ, Ventura R. (2013), Bioarchaeoogy. An integrated approach to working with human remains. Manuals in Archaeological Method, Theory and Technique, Springer, Nova York.

MATISOO-SMITH, Elizabeth; HORSBURGH, K. Ann (2012), DNA for archaeologists. Left Coast Press, Walnut Creek, California.

MAYS, Simon (2010), *The archaeology of human bones.* 2a edició, Routledge, Nueva York

ROBERTS, Charlotte A. (2009), Human remains in archaeology: a handbook. Council for British Archaeology, col. Practical Handbooks in Archaeology, nº 19, York.

SCHRADER, Sarah A.; BUZON, Michele R. (2017), "Everyday life after the collapse: a bioarchaeological examination of entheseal change and accidental injury in Postcolonial Nubia", Bioarchaeology International, 1 (1-2): 19-34; https://doi.org/10.5744/bi.2017.1000

STODDER, Anne Lucy Wiener; PALKOVICH, Ann (eds.) (2012), The bioarchaeology of individuals. University Press of Florida, Gainesville.

ZUCKERMAN, Molly K.; CRANDALLB, John (2019), "Reconsidering sex and gender in relation to health and disease in bioarchaeology", *Journal of Anthropological Archaeology,* 54: 161-171; https://doi.org/10.1016/j.jaa.2019.04.001

3. Digital resources

TERMCAT *Diccionari d'anatomia*
https://www.termcat.cat/es/diccionaris-en-linia/182
The London Atlas of Human Tooth Development - aplicación en línea para la estimación de la edad dental según el protocolo de AlQahtani *et al* 2010.
http://www.ibossolutions.com/qmul/v3/
Explorador de anatomía humana *Inner Body* con sección específica sobre el sistema esquelético
http://www.innerbody.com/image/skelfov.html
The University of Texas: osteología y anatomía primatológica comparada; incluye vistas 3D y movimiento
http://eskeletons.org/boneviewer/nid/12537/region/skull/bone/cranium
Estimación del sexo a partir de múltiples marcadores - Software MorphoPASSE
https://www.morphopasse.com/
Ejercicios de Osteología Humana
http://www.free-anatomy-quiz.com/skeletalsystem.html
Juegos de Osteología Humana *Whack-a-Bone*
http://www.anatomyarcade.com/games/WAB/WAB.html
Osteoware, Smithsonian Institution (2011): software libre para el registro informatizado de restos humanos en bases de datos (basado en los *Standards* de Buikstra y Ubelaker - incluye manual)
http://osteoware.si.edu/
Skeleton Keys (Jeffrey H. Schwartz)
http://global.oup.com/us/companion.websites/9780195188592/student/
Museum of London Archaeological Archive - Centre for Human Bioarchaeology -Osteological Research Database
https://www.museumoflondon.org.uk/collections/other-collection-databases-and-libraries/centre-human-bioarchae
Momias guanches en 3D - El Museo Canario - Momia nº 20
Momia nº 20 - https://sketchfab.com/3d-models/momia-no-20-b11be945cc3249b7bd47fda342b111ea
Momia nº 5 - https://sketchfab.com/3d-models/momia-no-5-c1a2c18f95644038865f830093f7b28d
Detección del consumo de Drogas en tejidos prehistóricos
https://theconversation.com/como-detectamos-el-uso-de-drogas-miles-de-anos-despues-de-su-consumo-204314
"Com es troben? Antropòlegs i forenses en la cerca de desapareguts" ", mesa redonda con Francisco Etxebarría y Francisco Ferández, Palau Robert (Barcelona, 18 de enero de 2023)
https://www.youtube.com/watch?v=ztwX3zdRO9Y&ab_channel=departamentjusticia
Identificación de víctimas de las fosas franquistas. Conferencia de Cristina Rihuete Herrada (Manacor, Mallorca, 3 de mayo de 2021)
https://www.youtube.com/watch?v=-rFlim-qz6c
Desenterrando la represión de género: análisis de la violencia ejercida sobre las mujeres. Conferencia de Laura Muñoz Encinar (Palma de Mallorca, 20 de noviembre de 2021)
https://www.youtube.com/watch?v=gNp1C5Emfm8
Simbología franquista, derechos humanos y leyes de memoria. Conferencia de Paco Ferrándiz (Palma de Mallorca, 20 de noviembre de 2021)
https://www.youtube.com/watch?v=twDCFLBBKdM&ab_channel=Vicepresid%C3%A8nciaGOIB

Software

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Language list

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	11	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	12	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	13	Catalan	first semester	morning-mixed
(TE) Theory	1	Catalan	first semester	morning-mixed