Teaching Guide				
Identifying Data				2021/22
Subject (*)	Zooarchaeology		Code	710537021
Study programme	Máster Universitario en Arqueoloxía e Ciencias da Antigüidade			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	First	Optional	3
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Física e Ciencias da Terra			
Coordinador	Grandal D`Anglade, Aurora	E-mail	aurora.grandal@udc.es	
Lecturers	Grandal D`Anglade, Aurora	E-mail	aurora.grandal@udc.es	
Web				
General description	Zooarchaeology is the discipline that deals with the study of faunal remains in archaeological sites, whether they are domestic animals or wildlife, from hunting or gathering. They can be found as waste products of human food, or even concentrated in rubbish dumps, shells, etc. They can also be found in other contexts, e.g. as funerary offerings, ornaments, bone industry, etc. In any of these cases, animal remains offer important information on the way of life and economy of human societies, information that can be obtained from different approaches through the application of different analytical techniques.			
Contingency plan	Case of epidemic outbreak preventing physical presence: 1. Modifications to the contents none 2. Methodologies *Teaching methodologies that are maintained the sessions will be conducted virtually via Teams. *Teaching methodologies that are modified none, none, but the sessions will be conducted virtually via Teams. 3. Mechanisms for personalized attention to students By Teams, Virtual course or e-mail 4. Modifications in the evaluation none *Evaluation observations: same 5. Modifications to the bibliography or webgraphy none			

Study programme competences	
Code	Study programme competences
A1	(CE-1) Ser capaz de preparar e redactar informes históricos e arqueolóxicos, adaptándose ao tipo de actividade que se desenvolva.
A5	(CE-5) Adquirir as capacidades necesarias para dirixir actividades de campo, de prospección e de escavación arqueolóxica e de tratamento e estudo de materiais e mostras.
B6	(CG-1) Que os estudantes demostrasen unha comprensión sistemática dun campo de estudo e o dominio das habilidades e métodos de investigación relacionados co devandito campo;
B7	(CG-2) Que os estudantes demostrasen a capacidade de concibir, deseñar, poñer en práctica e adoptar un proceso substancial de investigación con seriedade académica;
B9	(CG-4) Que os estudantes sexan capaces de realizar unha análise crítica, avaliación e síntese de ideas novas e complexas;

B11	(CG-6) Que se lles supoña capaces de fomentar, en contextos académicos e profesionais, o avance tecnolóxico, social ou cultural dentro dunha sociedade baseada no coñecemento.
B12	(CG-7) Que os estudantes demostrasen ao longo da investigación capacidade para establecer relacións mutuas entre os tres eixos principais que configuran o programa: histórico, arqueolóxico-artístico e lingüístico-literario.
B14	(CG-9) Que sexan capaces de abrir vías de especialización novas no ámbito dos estudos arqueolóxicos.
C1	(CT-1) Utilizar bibliografía e ferramentas de procura de recursos bibliográficos xenerais e específicos, que inclúe o acceso por Internet, vendo as súas enormes posibilidades e potenciando a capacidade discriminatoria do alumno sobre os seus contidos.
C2	(CT-2) Xestionar de forma óptima o tempo de traballo e organizar os recursos dispoñibles, establecendo prioridades, camiños alternativos e identificando erros na toma de decisións.
C3	(CT-3) Potenciar a capacidade de traballo en equipo, en contornas cooperativas, pluridisciplinares ou de alto nivel competitivo.

Learning outcomes			
Learning outcomes	Study programme competences		
Know the different types of information provided by the faunal remains present in an archaeological context.		BC6 BC11 BC12 BC14	CC1
Know the conservation problems of faunal remains depending on the different archaeological contexts and identify the processes that have affected them until their recovery and study.	AC5	BC6 BC7	
Know the most appropriate systems for the recovery and sampling of these remains in a site and evaluate their representativeness.	AC5	BC6 BC7	
Know the analysis procedures in the field of zooarchaeology, from the most descriptive (morphological, metric) to those of biomolecular archaeology. To learn to choose between different analysis strategies according to the problem to be solved.	AC1 AC5	BC6 BC9 BC14	CC2
To be able to interpret the results obtained from analyses within the framework of archaeological research.	AC1	BC9 BC11 BC14	CC1 CC3

Contents	
Topic	Sub-topic
1. Zooarqueology.	Resources and objectives
2. Recovery of faunal remains	2.1. Which ones, how many and how. 2.2. Types of deposits and sampling. 2.3. Laboratory processing.
3. Taphonomy	3.1. Biostratinomic and diagenetic processes. 3.2. Natural and cultural agents.
4. Taxonomic, biometric and quantitative analyses	4.1. Identification: from atlases to comparative collections. 4.2. Biometrics: what to measure. 4.3. Quantification: RN, MNI, MNE, Weight and other indexes. 4.4. Age and sex determination. Size calculation.
5. Molecular analysis	5.1. Peptide fingerprinting (ZooMS). 5.2. Stable isotopes. 5.3. Ancient DNA.
6. Introdución ás patoloxías óseas	6. Introduction to bone pathologies
7. Introduction to bone industry	

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours

Guest lecture / keynote speech	A1 B6 B11 B12 B14 C1	12	24	36
Laboratory practice	A5 B7 B12 B14 C2 C3	6	6	12
Workbook	A1 B9 C1 C2	0	6	6
Case study	B6 B11 B12 C1 C2 C3	0	15	15
Seminar	A1 B7 B12 C2 C3	3	0	3
Personalized attention		3	0	3
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	In the theoretical classes, the teaching staff will introduce the different aspects of the syllabus through explanations of the theoretical foundations and the review of real cases.
Laboratory practice	In the practical classes, students, guided by the lecturers, will handle materials and data sets in order to apply the analytical methodologies studied in the theoretical classes, obtain results and draw conclusions.
Workbook	Recommended reading resources
Case study	Critical analysis of case studies available in the virtual campus.
Seminar	Guided discussion of the results of the case study analysis.

Personalized attention	
Methodologies	Description
Workbook Case study	3 hours of personalised attention by means of individual tutorials are planned for the resolution of doubts and the monitoring of the completion of the assigned tasks.

Assessment			
Methodologies	Competencies	Description	**Qualification**
Workbook	A1 B9 C1 C2	Lecturas recomendadas, aplicación dos coñecementos adquiridos nos traballos prácticos	10
Laboratory practice	A5 B7 B12 B14 C2 C3	Realización das tarefas	30
Seminar	A1 B7 B12 C2 C3	Presentación e discusión dos resultados do traballo práctico	10
Case study	B6 B11 B12 C1 C2 C3	Realización de un traballo de investigación a partir de datos publicados ou procedentes de distintas fontes	30
Guest lecture / keynote speech	A1 B6 B11 B12 B14 C1	Presentación de contidos teóricos e análise de casos. Avaliarase a participación e implicación na materia.	20

Assessment comments

A continuous assessment strategy will be developed in which the following aspects of the subject will be assessed: - Attendance and active participation in lectures: 20%. - Completion of practical tasks: 40% (30% completion of practical tasks, 10% recommended reading). - Individual development work with correct application of concepts from the syllabus: 40% (30% completion of the work, 10% guided discussion in seminars).
It will be necessary to obtain a minimum of 40% of the grade in each of these aspects in order to pass the subject.
In the second sitting, in July, the student will have to take the same type of continuous assessment tests that were taken throughout the course. The remaining 20% will be assessed by means of a written test.
In case of official dispensation, the same evaluation criteria will be followed as those applied to the face-to-face modality in the July exam session.
Grading system: expressed by means of a final numerical grade from 0 to 10 according to current legislation (Royal Decree 1125/2003 of 5 September; BOE 18 September). Art. 16 of the Regulations for the evaluation of the academic performance of students (DOG 21 July 2011) establishes the following: "The fraudulent completion of any exercise or test required in the evaluation of a subject will result in a failing grade in the corresponding exam session, regardless of the disciplinary process that may be followed against the offending student. It shall be considered fraudulent, among others, the performance of plagiarised work or work obtained from sources accessible to the public without reworking or reinterpretation and without citation of the authors and sources".

Sources of information	
Basic	Albarella, U. (2017) The Oxford Handbook of Zooarchaeology. Oxford: Oxford University PressBarone, R. (1976): Anatomie Comparée des Mammifères Domestiques. Tome I: Ostéologie. París: Ed. Vigot FréresBejega, V., González, E. e Fernández, C. (2010). La arqueomalacología: una introducción al estudio de los restos de moluscos recuperados enyacimientos arqueológicos. Iberus (Sociedad Española de Malacología), 28: 13-22.Bartosiewicz, L. & Gál, E. (2013). Shuffling nags, lame ducks. The archaeology of animal disease. Oxford: Oxbow books.Brown, T. A. e Brown, K. (2011) Biomolecular Archaeology: An Introduction. John Wiley & SonsDavis, S. (1989) La arqueología de los animales. Barcelona: Ediciones Bellaterra. Fernández, C. (2010). Zooarqueología: recuperación, muestreo y análisis. En A.J. López & E. Ramil (eds.). Arqueoloxía: ciencia e restauración.Museo de Prehistoria y Arqueoloxía de Vilalba (Lugo). Monografías, 4. pp. 71-82.Fernández Jalvo, Y. e Andrews, P. (2016) Atlas of Taphonomic Identifications. 1001+ Images of Fossil and Recent Mammal Bone Modification(Vertebrate Paleobiology and Paleoanthropology Series). Amsterdam: Springer.Gifford-González, D. (2018) An introduction to Zooarchaeology. Amsterdam: Springer. Hillson, S. (1996) Mammal bones and teeth. An Introductory Guide to Methods of Identification. London: University College London.Hillson, S. (2005) Teeth. Cambridge Manuals in Archaeology (2nd edition). Cambridge: Cambridge University Press. Larsen, C.S. (2015) Bioarchaeology. Cambridge: Cambridge University Press Lyman, R.L. (2008). Quantitative paleozoology. Cambridge Manuals in Archaeology. Cambridge: Cambridge University Press.Macgregor, A. (1985). Bone, Antler, Ivory & Horn. The technology of skeletal materials since the Roman period. New Jersey: Barnes & Noble Books.Matisoo-Smith, L. e Horsburgh, K.A. (2012) DNA for Archaeologists. Walnut Creek, CA: Left Coast Press.Michener, R. e Lajtha, K. (2008) Stable Isotopes in Ecology and Environmental Science. New Jersey: John Wiley & Sons.O'connor, T. (2004). The archaeology of animal bones. Stroud, Gloucestershire: Sutton Publishing. 2nd edition.Pales, L. e Lambert, C. (1981) Atlas ostéologique pour servir à l'identification des mammifères du quaternaire (4 tomos) París: CNRS. Reitz, E.J. e Wing, E.S. (2008) Zooarchaeology. Cambridge Manuals in Archaeology (2nd edition). Cambridge: Cambridge University Press. Russell, N. (2011) Social Zooarchaeology. Humans and animals in prehistory. Cambridge: Cambridge University Press. Shapiro, B. e Hofreiter, M. (2012) Ancient DNA: methods and protocols. New Jersey: Humana Press Trigo, J., Díaz, G., García, O., Guerra, A., Moreira, J., Pérez, J., Rolán, E., Souza, J. e Urgorri, V. (2018) Guía de los moluscos de Galicia. Vigo: Servicio de publicaciones de la Universidade de Vigo.Von Den Driesch (1976). A Guide to the Measurement of Animal Bones from Archaeological Sites. Harvard: Harvard University Press
Complementary	

Recommendations
Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments
It is recommended to independently acquire notions of zoology and anatomy, and to visit Natural Science museums to observe collections of vertebrates, molluscs, etc.The student should know the basics of general office packages, e.g. Libre Office or Microsoft Office.Also, the student should know how to use standard collaborative programmes, such as Microsoft Teams, the official programme of the USC, available free of charge in the USC repository.ObservationsAlthough this subject is eminently presential, in the case of not being possible to presencialidade for mor of the sanitary emergency, it would be harnessed oso of the virtual classroom. Las clases teóricas se impartirán a través de videoconferencia interactiva (sincrónica) mediante Microsoft Teams. If necessary, the practical classes could also be taught through Microsoft Teams.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.