Teaching Guide				
Identifying Data				2018/19
Subject (*)	Ethology		Code	610G02038
Study programme	Grao en Bioloxía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Fourth	Optional	6
Language	GalicianEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Bioloxía			
Coordinador	Servia García, María José	E-mail	maria.servia@udc.es	
Lecturers	Fernandez Rodriguez, Luis Jose Servia García, María José	E-mail	luis.fernandezr@udc.es maria.servia@udc.es	
Web	ciencias.udc.es/bave/index.php/Profesorado/maria-j-servia.html			
General description	Ethology covers the study of the mechanisms and evolution of animal behaviour. We will examine behaviour within the framework of Tinbergen?s four areas of inquiry: causation (mechanisms), development, function and evolution (phylogeny) with an emphasis on behavioral ecology. Topics include methods for the observation and quantification of behaviour, natural selection and evolution of behaviour, habitat selection, migration, territoriality, feeding behaviour, sexual reproduction, mating systems, parental investment, communication and social behaviour. Service-Learning activities will promote the integration of Sustainable Development Goals into the teaching of this subject.			

Study programme competences / results	
Code	Study programme competences / results
A1	Recoñecer distintos niveis de organización nos sistemas vivos.
A7	Reconstruír as relacións filogenéticas entre unidades operacionales e pór a proba hipóteses evolutivas.
A19	Analizar e interpretar o comportamento dous seres vivos.
A20	Muestrear, caracterizar e manexar poboacións e comunidades.
A23	Avaliar o impacto ambiental. Diagnosticar e solucionar problemas ambientais.
A26	Deseñar experimentos, obter información e interpretar os resultados.
A27	Dirixir, redactar e executar proxectos en Bioloxía.
A28	Desenvolver e implantar sistemas de xestión relacionados coa Bioloxía.
A30	Manexar adecuadamente instrumentación científica.
A32	Desenvolverse con seguridade no traballo de campo.
B1	Aprender a aprender.
B2	Resolver problemas de forma efectiva.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B4	Traballar de forma autónoma con iniciativa.
B5	Traballar en colaboración.
B6	Organizar e planificar o traballo.
B7	Comunicarse de maneira efectiva nunha contorna de traballo.
B8	Sintetizar a información.
B9	Formarse unha opinión propia.
B10	Exercer a crítica científica.
B11	Debater en público.
B12	Adaptarse a novas situacións.
B13	Comportarse con ética e responsabilidade social como cidadán e como profesional.

Learning outcomes

Learning outcomes	Study programme competences / results		
Be able to understand animal behaviour as a result of evolution in relation to the environment	A1 A7 A19		
Be able to use basic sampling techniques in animal behaviour.	A20 A23 A28 A30 A32	B6	
Be able to design experiments, obtain information and discuss results.	A26	B2	
Be able to critically analyse, synthesize and present information.		B3 B7	
Develop the ability to work as a team member.		B5	
Behave ethically, being a conscious citizen and professional.		B13	
Be able to use information and communication tools, needed both for the professional life and the continuous learning of the student	A28	B12	
Be able to critically analyse the significance of scientific knowledge, available technology and information for solving problems.		B10	
Be able to direct, report and perform projects in Biology.	A27		
Know how to learn		B1	
Work autonomously and with initiative		B4	
Proper expression, both oral and written, in the official languages of the region.		B8 B11	
Assume, as professional and citizen, the importance of lifelong learning.		B9 B12	
Proper expression, both oral and written, in a foreign language.	A27	B8	

Contents	
Topic	Sub-topic
Part 1. Fundamental concepts of Ethology	1.1 Introduction and history of Ethology. 1.2 Proximate causes and ontogeny of behaviour 1.3 Evolution and adaptative value of behaviour 1.4 Group selection and kin selection
Part 2. Taking decissions	2.1 Optimality models in animal behaviour 2.2 Predation and anti-predator behaviour 2.3 Habitat selection. Dispersal, philopatry and territoriality 2.4 Orientation and migration
Part 3. Sex and behaviour	3.1 Sexual reproduction: costs and benefits 3.2 Ecology of mating systems 3.3 Sexual selection 3.4 Parental care
Part 4. Group living	4.1 Communication. Ecology and evolution of signals 4.2 Some aspects of social organization 4.3 Altruism and cooperation

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Introductory activities	B6 B7 B12	0.65	0	0.65

Guest lecture / keynote speech	A1 A7 A19 B11	20	46	66
Supervised projects	A19 B1 B3 B4 B5 B8 B10	1	7	8
Seminar	A19 B1 B3 B7 B9 B10 B11	7	17.5	24.5
Research (Research project)	A20 A23 A26 A27 A28 A30 A32 B13	15	23.4	38.4
Short answer questions	A7 A19 B2	2.5	0	2.5
Aprendizaxe servizo	A7 A19 B2 B7 B8 B13	1.8	6.66	8.46
Personalized attention		1.5	0	1.5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	**Description**
Introductory activities	PRESENTATION: The course will be briefly presented during the first class. Contents, activities, schedules and grading will be explained in this session.
Guest lecture / keynote speech	LECTURES (20) will consist mainly in oral sessions, where experiments, graphs and videos will be analysed. The slides used by the professor will be available through the Moodle platform.
Supervised projects	ASSIGNMENTS: Students will be asked to prepare and defend a short presentation in groups of 2-3 persons. Drafts of the presentation will be discussed and improved together with the professor, in person or via email. Those students participating in Service-Learning activities are exempt from this task.
Seminar	SEMINARS: An important part of the seminars will involve reading and discussion of primary scientific literature related to class contents. We will work also on subjects and methods related to class assignments. Students will be graded depending on their active participation and/or through short exams.
Research (Research project)	PRACTICAL WORK: Practical work will involve the analysis of videos and material for introducing students to the methods for the observation and quantification of behaviour. Whenever possible, we will perform part of the practical work in outdoor facilities (ex. the Aquarium Finisterrae). Students will produce a final research report. Those students involved in Service-Learning activities may be exempt from doing some activities of the practical work.
Short answer questions	SHORT ANSWER EXAM: One final exam will be given. It will consist of 10 objective, short answer questions that will require detailed and precise responses.
Aprendizaxe servizo	SERVICE-LEARNING (SL): Students may have the option to voluntarily participate in a Service-Learning activity. The aim is to reduce pet abandonment due to behavioural problems of the animals. Participation in this activity will exempt students form the elaboration of the class short presentation. Depending on the time required for the SL activity, students may be exempt also from doing some activities of the practical work.

Personalized attention	
Methodologies	**Description**
Research (Research project) Supervised projects Short answer questions Aprendizaxe servizo Guest lecture / keynote speech Seminar	The professor will solve doubts and provide support for class assignments, seminars and practical work during the office hours or by appointment, in person or via email. Students will be assisted by the professor in the preparation of class expositions, so they attain a minimum quality. Only class expositions already reviewed by the professor will be allowed to be presented and graded. Students may ask for clarifications in any activity, including exams.

Assessment

Methodologies	Competencies / Results	Description	Qualification
Research (Research project)	A20 A23 A26 A27 A28 A30 A32 B13	PRACTICAL WORK: MANDATORY. Students will prepare a report in a scientific format that will include: the objectives of the work, material and methods used, the results obtained and a short discussion. Those students unable to attend the practical lessons will be required to prepare a report on a field work, under the supervision of the professor.	20
Supervised projects	A19 B1 B3 B4 B5 B8 B10	CLASS ASSIGNMENTS: MANDATORY. They will be graded depending on their originality, the clear connection with the class contents, the quality of the sources and the quality of the exposition. The assignment will be optional for those students involved in a Service-Learning activity.	15
Short answer questions	A7 A19 B2	SHORT ANSWER EXAM: MANDATORY. The final exam will consist of 10 objective, short answer questions that will require precise and well-reasoned responses. Literally reproduction of class slides will lower the grade. For passing the exam students are REQUIRED TO OBTAIN AT LEAST 4 POINTS OUT OF 10.	60
Aprendizaxe servizo	A7 A19 B2 B7 B8 B13	SERVICE-LEARNING: OPTIONAL. Students will be graded through individual and group interviews. Grading will depend on the quality of the materials prepared, the contents learnt, and the active and responsible participation in all the activities.	0
Seminar	A19 B1 B3 B7 B9 B10 B11	SEMINARS: Students will be graded depending on attendance and active participation. Assessment might include also short exams. ABSENT STUDENTS WILL EARN NO POINTS FOR THE SEMINARS unless absence is clearly justified.	5
Others			

Assessment comments
Most of the lectures contents will be assessed in a final exam. This exam will count 6 points, and students are required to obtain at least 2.4 points out of 6 to pass it (the exam will have 10 questions, so students are required to obtain at least 4 points). IMPORTANT: Students have the right to be assessed in the official languages of the UDC (Galician and Spanish) in an appointment process. Seminars, practical work reports and class assignments will count 4 points. Active participation in these activities is expected, and group working is strongly recommended. Students who do not complete all the required tasks and activities will not be able to attain the maximum grade (10 points) in any of the grading opportunities. Points earned in seminars, practical work and class assignments (or Service-Learning activities) will be kept for the two grading opportunities. Students are required to obtain at least 5 points out of 10 to pass the course. For being classified as ?Absent?, students can not take the final exam (the short answer exam).

Sources of information	
Basic	ALCOCK, J. (2005). Animal Behavior (8_ ed.). Sinauer Associates, Inc. ALCOCK, J. (2009). Animal Behavior (9_ ed.). Sinauer Associates, Inc. CARRANZA, J. (ED.) (1994). Etología. Introducción A La Ciencia Del Comportamiento . Cáceres, Universidad De Extremadura, Servicio De Publicaciones. DANCHIN, E., GIRALDEAU, L. & CÉZILLY, F. (2008). Behavioural Ecology. Oxford University Press. DUGATKIN, L.A. (2009). Principles of Animal Behavior. W.W. Norton, New York. FREEMAN, S. & J.C. HERRON (2002). Análisis Evolutivo . Madrid, Pearson Educación. KREBS, J.R. & N.B. DAVIES (1993). An Introduction To Behavioural Ecology . Oxford, Blackwell Scientific Publications
Complementary	DRICKAMER, L.C., VESSEY, S.H. & MEIKLE, D. (1996). Animal behavior (4_ed.). Wm. C. Brown Publishers. GOODENOUGH, J., B. MCGUIRE, & WALLACE, R.A. (2001). Perspectives in animal behavior. John Wiley & Sons. GRIER, J.W. & BURK, T. (1992). Biology of animal behavior (2_ed.). Mosby-Year Book MAIER, R. (2001). Comportamiento animal. Un enfoque evolutivo y ecológico. McGraw-Hill.

Recommendations
Subjects that it is recommended to have taken before

Statistics/610G02005 Genetics/610G02019 Population Genetics and Evolution/610G02021 Zoology I/610G02031 Zoology II/610G02032
Subjects that are recommended to be taken simultaneously
Data Analysis in Biology/610G02044
Subjects that continue the syllabus
Other comments
Class slides will be available to students through the Moodle platform. However, slides are only a guiding tool, and students are expected to do extra reading and work to pass the course. Attendance to classes and reading of texts and extra materials is strongly recommended.