Teaching Guide				
Identifying Data				2021/22
Subject (*)	Ecology and Biomonitorization		Code	610500007
Study programme	Mestrado Universitario en Ciencias, Tecnoloxías e Xestión Ambiental (plan 2012)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Optional	3
Language	SpanishEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	BioloxíaEnxeñaría Naval e IndustrialFísica e Ciencias da Terra			
Coordinador	Ruiz De la Rosa, Jose Miguel	E-mail	jose.miguel.ruiz.delarosa@udc.es	
Lecturers	Bao Casal, Roberto Rodríguez Roiloa, Sergio Ruiz De la Rosa, Jose Miguel	E-mail	roberto.bao@udc.es sergio.roiloa@udc.es jose.miguel.ruiz.delarosa@udc.es	
Web				
General description	Ecology and evolution. Population dynamics. Organization of communities. Flows of matter and cycles of energy. The case of tributyl tin (TBT) of antifouling paints: environmental history and biomonitoring in Galicia. Paleoecology and biomonitoring.			
Contingency plan	1. Changes in content Without changes. 2. Methodologies * Teaching methodologies that are maintained Master session. The expository classes would be maintained, but would be taught by Teams. Practices through ICT. The practical classes would be maintained. Since all the software used is freely available and / or executable via the web, students would carry out these practices remotely. For this they would have the relevant scripts and all the necessary protection (see below on personalized attention). Objective proof. The final exam is maintained, but it would become a multiple choice test via Moodle. Alternatively, the aforementioned test-type examination could be replaced by the individual answer of objective questions. These responses will be handwritten, scanned or photographed face to face to create PDFs that will be sent to the teacher in charge of their correction, attached by email. * Teaching methodologies that are modified: none. 3. Mechanisms for personalized attention to students Attention to student demand, either by email, Moodle or Teams. 4. Modifications in the evaluation Without changes. * Evaluation observations: Given the usual schedule for this module, continuous evaluation is ruled out. Thus, 100% of the rating is based on an objective test (see above on its methodology). 5. Modifications of the bibliography or webgraphy Without changes.			

Study programme competences	
Code	Study programme competences
A1	Coñecemento das realidades interdisciplinares da Química e do Medio Ambiente, dos temas punteiros nestas disciplinas e das perspectivas de futuro.

A6	Coñecemento do comportamento de diferentes especies químicas e dos procesos aos que poden estar sometidas unha vez liberadas no medio ambiente, incluíndo as súas relacións entre distintos compartimentos ambientais.
A10	Relacionar a presenza de especies químicas no medio natural cos conceptos de toxicidade e biodisponibilidade.
A13	Comprender os procesos de bioacumulación e as técnicas de biomonitorización e biomarcaxe.
B1	Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación.
B5	Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en gran medida autodirixido ou autónomo.
B8	Comprender, a un nivel especializado, as consecuencias do comportamento humano na contorna ambiental.
C6	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.

Learning outcomes			
Learning outcomes	Study programme competences		
Describe and discuss ecological concepts at the individual, population and community level	AC1	BC1 BC8	
Use some basic techniques of the broad ecological methodology		BC5	CC6
Understand the results of basic ecotoxicology techniques	AC6 AC10 AC13		
Understanding the relevance of the sedimentary registry to define ecological reference conditions		BC5	CC6

Contents	
Topic	Sub-topic
Ecology: theory	Ecology and evolution. Population dynamics. Organization of communities. Matter flows and energy cycles. Gaia Hypothesis.
Ecology: practices	Population dynamics: competition and predation. Spatial dynamics: metapopulations.
The case of TBT of antifouling paints	Environmental history. Biomonitoring in Galicia.
Paleoecology and biomonitoring	Theory and practices.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A1 A6 A10 A13 B1 B8	12	36	48
ICT practicals	B5 C6	8	16	24
Objective test	A1 A6 A10 A13 B1 B5 B8 C6	1	0	1
Personalized attention		2	0	2
(*)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	Summary presentation of the contents available via Moodle (or virtual classroom).

ICT practicals	The practices will be held in Aula Informática with the simulation programs available in the Faculty and others via the web.
Objective test	Written examination on the matter exposed and / or practiced.

Personalized attention	
Methodologies	**Description**
Guest lecture / keynote speech ICT practicals Objective test	The theoretical and practical sessions include tutoring sessions and personalized attention

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Guest lecture / keynote speech	A1 A6 A10 A13 B1 B8	Discussion in class about the theoretical contents of different disciplines.	1
ICT practicals	B5 C6	Participation in practicals is compulsory, as well as to perform the exercises exposed in them.	1
Objective test	A1 A6 A10 A13 B1 B5 B8 C6	Written exam.	98
Others			

Assessment comments

Sources of information	
Basic	Begon, M., J. L. Harper, y C. R. Townsend (1999) Ecología. Individuos, Poblaciones y Comunidades. Omega, Barcelona (3ª edición inglesa).Ricklefs, RE (1998) Invitación a la Ecología: La Economía de la Naturaleza. 4ª ed. Editorial Médica Panamericana, Buenos Aires, Argentina.Smith, RL. y Smith, T.M. (2000) Ecología. 4ª ed. Pearson Educación, SA. Madrid. de Mora, SJ (1996). Tributyltin: case study of an environmental contaminant. In: Campbell PGC, Galloway JN, Harrison RM (eds) Cambridge Environmental Chemistry Series No. 8. Cambridge University Press, Cambridge. Smol, J.P. 2002. Pollution of Lakes an Rivers. A Palaeoenvironmental Perspective. Arnoldv Publishers, London, 280 pp.
Complementary	La bibliografía básica es suficiente para un módulo de estas dimensiones.

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
This module is integrated with the others within the master.

(*)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.