IDENTIFYING DATA

Marine Pollution and Ecotoxicology

Subject	Marine Pollution and Ecotoxicology
Code	V02M098V01206
Study programme	(*)Máster Universitario en Bioloxía Mariña

Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Optional	1st	2nd

Teaching language	Spanish
Department	
Coordinator	Barreiro Lozano, Rodolfo
Lecturers	Barreiro Lozano, Rodolfo Presa Martínez, Pablo
E-mail	rodbar@udc.es
Web	http://https://plus.google.com/+RodolfoBarreiroSP/posts
General description	(*)A asignatura explora os métodos para detectar, cuantificar, e predecir os efectos dos contaminantes no medio mariño. Estes métodos son unha ferramenta fundamental para a protección e xestión do medio ambiente fronte ao perigo da contaminación.

Competencies

Code	
A1	(*)Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, adoito nun contexto de investigación.
A2	(*)Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornos novos ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo.
B1	Utilización de criterios y métodos científicos en el planteamiento y resolución de problemas aplicando los conocimientos adquiridos
B4	Desarrollo de habilidades en el manejo y tratamiento de herramientas, matemáticas, estadísticas e informáticas
B6	Desarrollo de la curiosidad científica, de la iniciativa y la creatividad
C6	Conocimiento, identificación y evaluación de la calidad ambiental del medio marino y de la legislación vigente. Dirección de consultorías ambientales
D1	Desarrollo de las capacidades comprensivas, de análisis y síntesis
D2	Desarrollo de la capacidad de razonamiento crítico y autocrítico

Learning outcomes

Expected results from this subject	Training and Learning Results
Describes the mechanisms by which an organism faces the pollutants.	A1 A2 C6
Distinguishes and identifies the approaches of retrospective prospective ecotoxicology.	A1 A2 B1 C6
Describes the typical effects of the pollution on individuals, populations and communities	A1 A2 B1 C6

Assesses the advantages and limitations of each level of organisation to detect the impact of pollutants	A1 A2 B1 C6 D1 D2
Understands the fundamentals of ecotoxicology assays, bioaccumulation-dpuration studies and biomarkers	A1 A2 B4 D1 D2
Understands the relevance of the information provided by ecotoxicology assays	D1 D2
Understands the fundamentals and limitations of the predictions derived from models of the distribution and effects of pollutants	D1 D2
Is able to face the technical literature and place into context in the mainframe of ecotoxicology	B6 D1

Contents

Topic	
Introduction and bioaccumulation (Retrospective ecotoxicology I)	Main environmental problems. Ecotoxicology. The concept of bioavailability. Factors of pollutant bioavailability. Use of bioacumulators. Requirements of a good bioaccumulator
Toxicokinetics	Kineticsl of pollutant accumulation. Concepts of Bioconcentración Factor (BCF), Bioaccumulation Factor (BAF).
Biomagnification along the food chain	Concept of biomagnification. Estimating trophic transfer and Biomagnification Transfer. Examples of *biomagnification and trophic dilution
Physiological effects	Main physiological detrimental effects used in ecotoxicology and biomonitoring.
Biomarkers (Retrospective Ecotoxicology II).	Classification, specificity and relation with adverse effects. Requirements of a biomarker. Examples of biomarker.
Toxicity assays (Prospective Ecotoxicology *I).	Concentration-response relationship. Types of assay: acute and chronic toxicity. Data analyses. Toxicity curves. LC50, NOEC, LOEC and MATC.
Prediction in ecotoxicology (Prospective Ecotoxicology II)	Species sensitivity distribution. Environmental risk assessment.
Changes in community composition (Retrospective Ecotoxicology III).	Bioindicator species. Relative abundance. Biotic indexes. Diversity indexes. Comparison with communities of reference.

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	16	40	56
Troubleshooting and / or exercises	4	12.5	16.5
Autonomous troubleshooting and / or exercises	1	0	1
Multiple choice tests	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

	Description
Master Session	Master session
Troubleshooting and / or exercises	Computer sessions with specialized software.
Autonomous troubleshooting and / or exercises	Personal guidance to students through one-to-one meeting and/or using TICs.

Personalized attention

Methodologies	Description
Autonomous troubleshooting and / or exercises	Personal guidance to students through one-to-one meeting and/or using TICs.

Assessment

	Description	Qualification	Training and Learning Results

| Multiple choice tests | A test | 100 | A1 A2 | B1 B4 B6 | C6 | D1 D2 |

Other comments on the Evaluation

Sources of information

Newman, M. C., and M. A. Unger, **Fundamentals of Ecotoxicology**, 2,

Walker, C. H., S. P. Hopkin, R. M. Sibly, and D. B. Peakall., **Principles of Ecotoxicology**, 3,

Clark. R.B., **Marine Pollution**, 5,

Recommendations