



IDENTIFYING DATA

Experimental Design And Data Analyses

Subject	Experimental Design And Data Analyses			
Code	V02M123V01102			
Study programme	(*)Máster Universitario en Ciencias Biológicas: Biología Molecular, Computacional e Ambiental e Bio-Industrias			
Descriptors	ECTS Credits	Type	Year	Quadmester
	3	Mandatory	1st	1st
Language				
Department				
Coordinator	Saavedra González, María Ángeles			
Lecturers	Pardo Fernández, Juan Carlos Saavedra González, María Ángeles			
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Web				
General description				

Competencies

Type A	Code	Competences Specific
	A1	(*)To know the scientific method and the correct use of the scientific terminology as well as to acknowledge the contribution that scientific research provides to the overall knowledge and professional practice.
	A2	(*)Ability to describe and to analyse biological diversity, the mechanisms determining the interactions with the biotic and abiotic environment and being able to select those which might have technical applications.
	A3	(*)Ability to manage and/or to develop basic tools for validating and analysing data by means of statistics and bioinformatics.
	A4	(*)To know the ethical and legal aspects governing the collection and the handling of biological samples, organisms and habitats.
	A5	(*)Ability to design, evaluate and implement models of biological structures, systems and processes.
	A6	(*)To learn the sampling techniques and the instrumental methodologies, in the field and laboratory, for their application in the Biological Sciences
	A7	(*)To have an integrated view of the R&D processes and their possible transfer to the industrial sector. Planning and supervising facilities together with managing their human and economic resources.
	A8	(*)Ability to classify, evaluate, conserve, restore and manage natural and productive systems. Developing and implementing land management and sustainability plans.
	A9	(*)To understand and know how to apply quality control systems and safety protocols in any biological laboratory of the public or private sector.
	A10	(*)To acquire the professional ability to teach and spread Biology and to offer expertise advice for elaborating scientific, technical and socioeconomic biology reports. Address environmental consulting.

A11 (*)To perform an individual Master Project (critical and in-depth study) under the supervision of a tutor in a research or working environment demonstrating that skills have been acquired.

Type B Code Competences Transversal

B1	(*)Dissemination of results and conclusions of the biological studies, in oral and written English, through complex presentations that address ideas related with R&D in Biology.
B2	(*)Managing computational, laboratory, field and industrial techniques in order to obtain, process and apply the acquired information.
B3	(*)Disseminating and broadcasting ideas in contexts both academic and non-specialised.
B4	(*)Reflecting on social and ethical responsibilities.

Learning aims

Subject competences	Typology	Competences
To know the scientific method and the correct use of the scientific terminology as well as to acknowledge the contribution that scientific research provides to the overall knowledge and professional practice.	know Know How	A1
Ability to manage and/or to develop basic tools for validating and analysing data by means of statistics and bioinformatics.	know Know How	A3
Dissemination of results and conclusions of the biological studies, in oral and written English, through complex presentations that address ideas related with R&D in Biology.	know Know How	B1
Managing computational, laboratory, field and industrial techniques in order to obtain, process and apply the acquired information.	know Know How	B2
Disseminating and broadcasting ideas in contexts both academic and non-specialised.	know Know How	B3
Reflecting on social and ethical responsibilities.	know Know How	B4

Contents

Topic

Introduction to R language

Descriptive statistics and graphics

Probability and distributions

One- and two-sample tests

Goodness of fit tests

One-way analysis of variance

Linear regression and correlation

Categorical data analysis

Planning

	Personalized attention	Assessment	Ordinary class hours A	Face-to-face hours outside the classroom Guided academic environment B	Student's work factor C	Outside the classroom hours D	Total hours (A+B+D) E
Master Session	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	0	3	30	40
Workshops	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	0	5.6	28	33
Short answer tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	0	0	0	2
Total hours E:							75
Work load in UVIGO ECTS credits:							3

*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	Individual lectures will cover each of the topics included in the subject contents.

Workshops Practical work will be carried out through resolution of problems and questions, and computer applications on real data.

Personalized attention

Description

Master Session

Workshops

Assessment

	Description	Qualification
Master Session	Continuous assessment through monitoring of classroom work	10
Workshops	Student's autonomous work	40
Short answer tests	Written exam on the subject contents	50

Other comments and second call

Sources of information

Dalgaard, P., Introductory statistics with R , 2008, Springer

Devore, J. L., Probability and statistics for engineering and the sciences , 2012, Brooks-Cole

Zar, J. H., Biostatistical analysis , 1999, Prentice Hall

Recommendations
