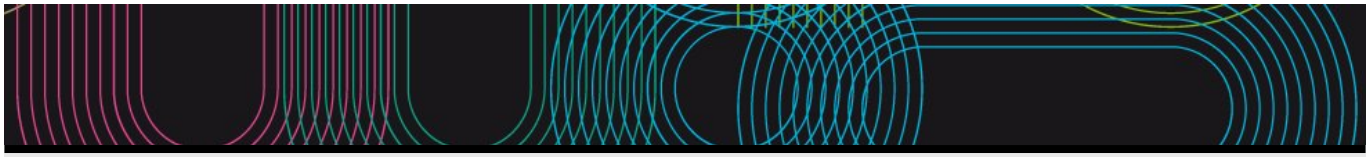
Universidade Vigo

Subject Guide 2018 / 2019



IDENTIFYING DATA				
Zoology 2: Arthropod invertebrates and chordates				
Subject	Zoology 2: Arthropod invertebrates and chordates			
Code	V02G030V01405			
Study programme	(*)Grao en Bioloxía			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	2nd	2nd
Teaching language	Spanish English			
Department	Ecology and Animal Biology			
Coordinator	Iglesias Briones, Maria Jesús			
Lecturers	Iglesias Briones, Maria Jesús Kim , Sin Yeon Palanca Soler, Antonio Velando Rodríguez, Alberto Luís			
E-mail	mbriones@uvigo.es			
Web	http://http://bioloxia.uvigo.es/es/docencia/horarios			
General description	According to its academical denomination this course deals with two animal phyla, phylum Arthropoda with joint appendages and phylum Chordata with an axial skeleton (notochorda), segmented muscles, pharyngeal slits, endostile or thyroid gland and postanal tail.			

Competencies	
Code	
A1	Students should prove understanding and knowledge in this study field that starts in the Secundary Education and with a level that, even though it is suppported in advanced books, also includes some aspects that involve knowledge from the vanguard of the study field.
A2	Students should know how to apply their knowledge to their work or vocation in a professional way. They also should have the competences that are usually proved through the elaboration and defence of arguments and the resolution of problems within their study field.
A3	Students should prove ability for information-gathering and interpret important data (usually within their study field) to judge relevant social, scientific or ethical topics.
A4	Students should able to communicate information, ideas, issues and solutions to all audiences (specialist and unskilled audience).
B2	Ability of reading and analizing scientific papers and having critical assessment skills to understand data collection, deducing the main idea from the least relevant ones and basing on the correponding conclusions.
B3	Acquisition of general knowledge about the basic subjects of biology, both at theory and experimental level, without dismissing a higher specialization in subjects that are oriented to a concrete professional area.
B4	Ability in handling experimental tools, both scientific and computer technology equipment that support the search for solutions to problems related to the basic knowledge of biology and with those of a concrete labour context.
B5	Understanding of the levels of organization of living beings from a structural (molecular, cellular and organic) and functional point of view by observing their relations with the environment and other organisms, as well as their appearances in situations of environmental alteration.
B7	Collection of information about issues of biologic interest, analysis and emission of critical opinions and reason them including the reflection about social and/or ethical aspects related to the issue.
B10	Development of analytic and abstraction skills, the intuition and the logical and rigorous thought through the study of biology and its uses.
B11	Ability to communicate in detail and clearly: knowledge, methodology, ideas, issues and solutions to all audiences (not only qualified but unskilled in Biology).
B12	Ability to identify their own educational necessities in the biology field and in concrete labour areas and to organize their learning with a high grade of autonomy in any context.
C1	Obtaining, managing, preserving, describing and identifying current biological organisms and fossils.

C2	Recognizing different levels of Living systems organization. Performing phylogenetic analysis and identifying evidence of evolution.
C9	Analysing and interpreting the behaviour of living beings
C10	Analysing and assessing the adaptation of living beings to the environment.
C11	Sampling, characterizing, managing, preserving and restoring Populations, Communities and Ecosystems.
C12	Cataloguing, mapping, assessing, preserving, restoring and managing natural and biological resources.
C23	Developing, managing and using biological control techniques.
C24	Designing biological process models.
C31	Knowing and handling technical and scientific apparatus.
C32	Knowing and handling basic or specific key concepts and terminology
C33	Understanding the social projection of Biology.
D1	Development of capacity of analysis and synthesis
D2	Acquisition of the organization and planning capacity for tasks and time
D3	Development of oral and writting communication abilities
D4	Acquisition of foreign language knowledge related to the study field
D6	Research and interpreting of information from different sources
D7	Resolution of issues and decision making in an effective way
D8	Development of the ability of independent learning
D9	Ability to work in collaboration or creating groups with an interdisciplinary character
D10	Development of the critical thinking
D11	Adquisition of an ethical agreement with the society and the profession
D12	Respectful behaviour to diversity and multiculturalism
D13	Sensitivity for environmental issues
D14	Adquisition of abilities in the interpersonal relationships
D15	Development of creativity, initiative and enterpreneurial spirit
D17	Development of the self-criticism ability

Learning outcomes

Expected results from this subject	Training and Learning Results			
To know the origin and evolution of animals: the body plans, the position of the distinct groups along the evolutionary tree and the rules of the zoological nomenclature.	A1 A2 A3 A4	B5	C1 C2 C32	D1 D6 D10
To know the biodiversity and the organisms' abilities to adapt to their environment: species identification (use of dichotomous keys) and analysis of animal behaviour	A1 A2 A3 A4	B2 B4 B5	C1 C9 C10 C11 C31	D6 D7 D12 D13
To know and compare the anatomy and physiology of the different animal groups: morphological adaptations, strategies of capture and food foraging, developmental biology and biological cycles	A1 A2 A3 A4	B2 B5	C1 C10	D1 D6 D9 D10
To apply the acquired knowledge in zoology to manipulate and analyse specimens and samples of biological origin, with the aim of cataloging, evaluating, designing and interpreting biological models; to elaborate management measures for species control and for the dessign of adequate plans that could ensure their conservation and the restoration of their habitats.	A1 A2 A3 A4	B7	C1 C11 C12 C23 C24 C31	D1 D2 D6 D7 D8 D9 D10 D11 D13 D15
To apply knowledge and techniques in those areas specialised in producing and exploitating resources of animal origin; awareness of animal welfare and ethical commitment when studying and using animals	A1 A2 A3 A4	B2 B3 B4 B7 B12	C9 C10 C24	D2 D9 D10 D11 D13 D15

To understand the social projection of zoology and its impact in the professional world, as well as to know how to disseminate contents (orally and written) in academic and scientific fields and in any other forum of dissemination.	A1 A2 A3 A4	B2 B3 B7 B10 B11	C31 C32 C33	D1 D3 D4 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D17

Contents

Topic	
Presentation: General organisation of the course	Organisation of the course. Introduction and justification of the phylogenetic scheme adopted.
I. Panarthropoda	Phylogenetic considerations of Panarthropoda Phylum Tardigrada. External and internal morphology. Phylum Onychophora. External and internal morphology.
II. Phylum Arthropoda	General characteristics Subphylum Chelicerata Suphylum Miriapoda Subphylum Crustacea Subphylum Hexapoda
III. Phylum Chordata	Exclusive characteristics Subphylum Cefalochordata Subphylum Urochordata Subphylum Vertebrata
IV. Phylum Chordata: Craneata	Subphylum Vertebrata (Vertebrates except Tetrapods) Class Mixini Class Petromizontidae Class Chondrichtyes Class Actinopterygii Class Sarcopteriygii
IV. Phylum Chordata: Craneata	Subphylum Vertebrata (Tetrapod Vertebrates) Class Amphybia Class non Avian Reptiles Class Aves Class Mammals
PRACTICE PROGRAMME	Practice I. Morphological study of Arthropods I. External morphology of different groups. Practice II. Morphological study of Arthropods II. Internal morphology of a model arthropod. Practice III. Morphological study of Vertebrates I. External and internal morphology of a teleostean fish. Practice IV. Morphological study of Vertebrates II. Diversity of Amphibian and Reptiles. Practice V. Morphological study of Vertebrates III. Diversity of Birds and Mammals. Practice VI. Field trip. Observation in situ of different groups of arthropods and chordates.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	28	42	70
Laboratory practices	15	30	45
Case studies	0	16	16
Seminars	3	0	3
Short answer tests	2	14	16

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description

Lecturing	Theorical contents related by the professor in the classroom. "Teaching starts in the classroom and ends in the books".
Laboratory practices	Practical activitiies at the laboratory which complement the topics addressed during the theorical lessons.
Case studies	Resolution of practical cases and questionaires using the online TEMA platform. These are intended to help in retaining concepts but above all to acquire the transversal skills included in the sylllabus.
Seminars	They can be used to solve any problems arisen during the course. Execution of complementary activities of the theoretical-practical aspects of the course. The competences of foreign language (English) will be worked out.

Personalized attention

Methodologies	Description
Lecturing	The tutorials for groups of several students do not allow a personalized follow-up but they are a good mechanism to consult any doubts and enable the teacher to share their difficulties. In a system in which the burden of learning falls on the student, close follow-up is essential if learning and study are to be continuous and progressive. In addition, personalized tutorials (Monday, Tuesday and Thursday 15:30-17:30) will also be used to monitor the development of the subject and resolution of any questions that may arise.
Laboratory practices	Tutorials (Monday and Wednesday 10:00-13:00) will be used to solve any questions that may arise.
Seminars	Tutorials (Monday and Tuesday 09:00-12:00) will be used to solve any questions that may arise.
Case studies	Tutorials (Monday, Tuesday and Thursday 15:30-17:30) will be used to solve any questions that may arise.

Assessment

	Description	Qualification	Training and Learning Results
Laboratory practices	Attending the practical lessons and performing the written examination of the practical contents. The student attitude and the active participation in the laboratory work would be positively evaluated.	20	A1 B2 C1 A2 B4 C2 A3 B5 C11 A4 C31
Case studies	Activities posted to the onlineTEMA platform: resolution of theoretical-practical exercises related to each of the thematic units. They are intended to evaluate the transversal competences acquired by the students. Each of them allows the teacher to evaluate the student efforts during the course. Each of the activities will be evaluated on a scale from 1 to 10 that will then be averaged to obtain the final score.	10	A1 B12 C9 D1 A2 C23 D2 A3 C24 D3 A4 C33 D4 D6 D7 D8 D10 D11 D12 D13 D15
Seminars	Assistance and resolution of a case study. The attitude and active participation in the debates is especially valued.	10	A1 B7 C31 D1 A2 B10 C32 D2 A3 B11 C33 D3 A4 D4 D6 D7 D8 D9 D10 D11 D14 D17
Short answer tests	Written exam where the student has to answer several questions related to the the theorical aspects of the subject. The aim is to evaluate the extent of the acquisition of the contents of the course.	60	A1 B2 C2 A2 B3 C9 A3 B5 C10 A4 B11 C12 C32 C33

Other comments on the Evaluation

The written exams of the theoretical aspects of the course will be performed on the official examination dates (June and July) published in the examination calendar which can be found on the faculty website: http://bioloxia.uvigo.es/en/teaching/exams

The written exams of the practical aspects of the subject will be done at the end of each of the practical classes. The points obtained during the continuous evaluation (seminars, laboratory exercises, on-line activities in TEMA) can be conserved until the second and extraordinary examination dates of the current academic year and therefore, they CANNOT be re-taken; however, the written exam (theoretical part) could be taken again on the official examination dates established in the academic calendar.

The final grade will be obtained as the sum of the parts (after calculating the percentages assigned), **as long as each part of the total evaluation (theory, practice, seminars and activities) had been passed (minimum 5.0)**. In addition, the teacher may propose extra activities in order to raise the average grade that will be announced throughout the semester and therefore, it is the student's obligation to stay informed throughout the period.

A student will receive a grade of "not presented" (NP) when he/she has not attended the final written exam that will be held in the two official calls (first and second call).

Those students retaking the course must repeat all those failed parts that are considered in the evaluation process and consult with the professors which parts approved in previous years they are willing to keep and upon which conditions.

Cheating and plagiarism in any of the different activities of the evaluation could result in failing the activity and/or the entire course.

Sources of information

Basic Bibliography

Hickman CP, Roberts LS, Larson A, lÁnson H & Eisenhour DJ, **Integrated Principles of Zoology**, 16, McGraw-Hill,
Brusca RC, Moore W and Shuster SM, **Invertebrates**, 3, Sinauer,
Kardong KV, **Vertebrates. Comparative Anatomy, Function, Evolution**, 7, McGraw-Hill,

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Zoology 1: Non-arthropod invertebrates/V02G030V01305

Subjects that are recommended to be taken simultaneously

Animal and plant histology and cytology II/V02G030V01403
Genetics I/V02G030V01404

Subjects that it is recommended to have taken before

Biology: Basic field and remote sensing techniques/V02G030V01202
Zoology 1: Non-arthropod invertebrates/V02G030V01305