



## IDENTIFYING DATA

### Biology: Biology I

Subject	Biology: Biology I			
Code	V10G061V01101			
Study programme	Grado en Ciencias del Mar			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	#EnglishFriendly Spanish			
Department				
Coordinator	Pasantes Ludeña, Juan José			
Lecturers	Miguel Villegas, Encarnación de Pasantes Ludeña, Juan José			
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Web				
General description	<p>Biology I is one of the mandatory subjects in the first semester of the first year of the Degree in Marine Sciences. The basic biological principles of cell biology and genetics are studied, mainly:</p> <ol style="list-style-type: none"> <li>1) cell and tissue organisation.</li> <li>2) development and cell differentiation.</li> <li>3) transmission and characterization of hereditary material.</li> <li>4) basic aspects of evolution and the origin of species.</li> </ol> <p>Theoretical and practical lessons are employed in the teaching program in order the students be familiar with</p> <ol style="list-style-type: none"> <li>1) microscopic identification</li> <li>2) the solving of practical problems in genetics and cell biology.</li> </ol> <p>English Friendly subject: International students may request from the teachers: a) materials and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.</p>			

## Training and Learning Results

Code	
B1	Know and use vocabulary, concepts, principles and theories related to oceanography and apply everything learned in a professional and/or research environment.
B2	Plan and execute surveys in the field and laboratory work, applying basic tools and techniques for sampling, data acquisition and analysis in the water column, sea bottom and marine substratum.
B3	Recognize and implement good practices in measurement and experimentation, and work responsibly and safely both in field surveys and in the laboratory.
B4	Manage, process and interpret the data and information obtained both in the field and in the laboratory.
B5	Develop, implement and write basic or applied projects in oceanography from a multidisciplinary perspective.
C9	Acquire basic knowledge about the structural and functional organization and the evolution of marine organisms.
C11	Apply the knowledge and techniques acquired to the characterization and sustainable use of living resources and marine ecosystems.
D1	Develop the search, analysis and synthesis of information skills oriented to the identification and resolution of problems.
D2	Acquire the ability to learn autonomously, continuously and collaboratively, organizing and planning tasks over time.

## Expected results from this subject

Expected results from this subject	Training and Learning Results
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1. Define, look for, organize and elaborate works with information of the subject	B1	C9	D1
2. Cooperatively workout exercise resolution	B2	C11	D2
3. Use of telematic tools and other sources for autonomous learning	B3		
	B4		
	B5		

#### CELL BIOLOGY

- Recognize the diversity and organisation of cells and tissues
- Establish relations between cell compartments and cell functions
- Differentiate clearly vegetal and animal cell organisation
- Establish relationships between cell organisation and cell function
- Recognize the types of microscopes associated to the study of cells and tissues.
- Morphological identification of the cells and their components.

#### GENETICS

- Importance of DNA in biology
- Apply the scientific method and basic research technologies in Genetics
- Learn how to establish genetic hypotheses and strategies to refute them
- Manage the basic mechanisms for the transmission of the hereditary material
- Know the molecular structure, the regulation and the expression of the hereditary material
- Know the basic genomic principles and their biotechnological applications.
- Know the origin of the biological diversity and the evolutionary history of the species

#### Contents

##### Topic

Cell biology, 1st part. General organisation of the eukaryotic cell	Cell evolution. Endosymbiosis: Evolutionary importance. Similarities and differences of animal and plant cells. Cell membranes: composition. Functional properties. Plasma membrane and cell surface. Cell junctions and cell adhesion. Cell communication. Cytoplasm and cell organelles (I): Endoplasmic reticulum, Golgi and lysosomes. Vesicular traffic (II): peroxysomes, mitochondria and chloroplasts. Cytoskeleton and cell movement. The nucleus: chromatin and chromosomes. The nucleolus.
Cell biology, 2nd part. Bases of embryonic development	Cell cycle: interphase and M phase. Apoptosis. Gametogenesis. Fertilization and development of the zygote. Cell specialization.
Cell biology, 3rd part. Tissues	Animal tissues. Epithelium: General organisation and function. Connective tissue and derivatives. General organisation. Specialized connective tissues : general characteristics of cartilage, bone and blood. Muscular tissue. Nervous tissue.
Genetics	DNA structure, organisation, replication, alterations and expression. Mendelian heredity and its variations. Linkage and recombination. DNA technologies and their applications

#### Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	39	39	78
Problem solving	6.5	6.5	13
Practices through ICT	6	6	12
Objective questions exam	2	14.5	16.5
Problem and/or exercise solving	0.5	30	30.5

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

#### Methodologies

	Description
Lecturing	Description, by the teaching staff, of the contents of the study subject, of the theoretical bases and/or the guidelines of the work, the exercise or the project to be developed by the students.
Problem solving	Resolution of genetic exercises.
Practices through ICT	Application of the learned contents to specific situations and acquisition of basic skills and procedures related with the object of study in spaces with specialized equipment (laboratories, computing rooms, etc.).

#### Personalized assistance

Methodologies	Description
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Practices through ICT	The teaching staff will continuously assess the participation of the students along the course. Students who wish it may attend personal tutorials to resolve doubts and/or uncertainties, mainly at the times indicated on the faculty website and/or on the MOOVI platform. To better optimize the procedure, the student is requested to contact the teacher in advance by email, with reasonable anticipation.
Lecturing	The teaching staff will continuously assess the participation of the students along the master sessions and their on-line activities. Students who wish it may attend personal tutorials to resolve doubts and/or uncertainties, mainly at the times indicated on the faculty website and/or on the MOOVI platform. To better optimize the procedure, the student is requested to contact the teacher in advance by email, with reasonable anticipation.
Problem solving	The teaching staff will continuous assess the participation of the students in exercise solving and in the quality of solved exercises. Students who wish it may attend personal tutorials to resolve doubts and/or uncertainties, mainly at the times indicated on the faculty website and/or on the MOOVI platform. To better optimize the procedure, the student is requested to contact the teacher in advance by email, with reasonable anticipation.
<b>Tests</b>	<b>Description</b>
Problem and/or exercise solving	The teaching staff will continuous assess the quality of the solved problems, questions and exercises for each student along the semester. Students who wish it may attend personal tutorials to resolve doubts and/or uncertainties, mainly at the times indicated on the faculty website and/or on the MOOVI platform. To better optimize the procedure, the student is requested to contact the teacher in advance by email, with reasonable anticipation.

<b>Assessment</b>				
	Description	Qualification	Training and Learning Results	
Lecturing	Final exam: the assesment of the subject Biology I will be performed by means of a written exam. In this exam the theoretical and practical contents will be evaluated by means of test of multiple answers, questions with specific short or long answers, identification and interpretation of figures / images as well as the resolution of genetic problems Final exam. Cellr biology 19 % Genetics 19 %	38	B1 B2 B3 B4 B5	C9 C11 D1 D2
Objective questions exam	Final exam	2	B1 B2 B3 B4 B5	C9 C11 D1 D2
Problem and/or exercise solving	Evaluation will be the result of the assesment of the quality of the resolution of the Genetic problems and exercises (15 %) and the marks obtained in Cell biology (30 %) and Genetics (15 %) questionaries.	60	B1 B2 B3 B4 B5	C9 C11 D1 D2

### **Other comments on the Evaluation**

The final qualification includes:

- The mark obtained in solving problems, exercise and questionaries along the course (60 %: Cell Biology 30 %, Genetics 30 %). This mark will be kept for the second oportunity
- The mark obtained in the first or second oportunity exam (40 %: Cell Biology 20 %, Genetics 20 %).

**To pass the subject, a minimum of 2 points in each of the two blocks that compose the subject (Genetics and Cell Biology), and a minimum of 5 points in total, are required. It is also necessary to reach a minimum of 4 points from a total of 10 in the Genetics exam. If those minimums are not reached, the maximum numerical qualification to be reflected in the "acta" will be 4.5.**

**In case that the final calification do not reach the pass minimum (5 points), but are equal or higher than 2.5 in one of the two blocks (Genetics or Cell Biology), the mark will be kept for the "second edition" (July) if the student is explicitly in accordance with it.**

**Global assessment option: The application for this evaluation option must be submitted in the time and manner determined by the Center, which will be published prior to the academic start.**

## **For students that chose global evaluation, marks will be the result of a single exam (100%)**

Date, time and place of exams will be published in the official web of Marien Sciences Faculty:

<http://mar.uvigo.es/alumnado/examenes/>

The students from previous courses will have to take part in all the programmed activities again.

*Students are strongly requested to fulfil a honest and responsible behaviour. It is considered completely unacceptable any alteration or fraud (i.e., copy or plagiarism) contributing to modify the level of knowledge and abilities acquired in exams, evaluations, reports or any kind of teacher's proposed work. Fraudulent behaviour may cause failing the course for a whole academic year. An internal dossier of these activities will be built and, when reoffending, the university rectorate will be asked to open a disciplinary record*

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### **Sources of information**

#### **Basic Bibliography**

Campbell N. A. & Reece J. B., **1. BIOLOGÍA**, 7ª ed, Panamericana, 2007

Pierce BA, **Genética. Un enfoque conceptual**, 5ª ed, Panamericana, 2015

#### **Complementary Bibliography**

Sadava / Heller / Orians / Purves / Hillis, **VIDA La Ciencia de la Biología**, 8ª ed, Panamericana, 2009

Brown TA, **Genomes 4**, 4ª ed, Garland Science, 2017

Schnek, A Massarini, A. Curtis, **Biología**, 7ª ed, Panamericana, 2008

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### **Recommendations**

#### **Other comments**

The study of the subject in a continuous way will allow the students to take part in active form in the course syllabus. It is recommended to show a real interest in the course, showing a good attitude and demonstrating aptitude in the acquisition of knowledges. The knowing, comprehending, thinking and reasoning the basic notions of the subject will be indispensable to take part in the distinct activities proposed by the teaching staff and be evaluated positively.