



IDENTIFYING DATA

Genetics I

Subject	Genetics I			
Code	V02G031V01209			
Study programme	Grado en Biología			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	2nd	2nd
Teaching language	Spanish English			
Department				
Coordinator	Quesada Rodríguez, Humberto Carlos Pérez Diz, Ángel Eduardo			
Lecturers	Canchaya Sanchez, Carlos Alberto Fernández Silva, Íria Pasantes Ludeña, Juan José Pérez Diz, Ángel Eduardo Quesada Rodríguez, Humberto Carlos Rolán Álvarez, Emilio			
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General description	<p>The contents of the Course Genetic I include: Mendelian Genetics. Linkage and recombination. Structure, replication and organisation of the DNA. Gene expression and its regulation. After taking Genetics I, the students will have to know and comprehend:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The mechanisms of the inheritance. <input type="checkbox"/> The structure and function of the nucleic acids. <input type="checkbox"/> The expression, replication, transmission and modification of the genetic material. <input type="checkbox"/> The genetic regulation and the genetic bases of development. 			

Training and Learning Results

Code	
A1	Students should prove understanding and knowledge in this study field that starts in the Secondary Education and with a level that, even though it is supported 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.
B1	Developing autonomous learning by identifying their own training need and organizing and planning tasks and time.
B3	Apply the knowledge acquired in the degree and use the scientific-technical instrumentation and CIT in contexts of Biology and/or related to the professional practice.
B6	Develop analysis and synthesis, critical reasoning and argumentation skills, applying them in Biology and other scientific-technical disciplines.
C1	Solve problems by applying the scientific method, the concepts and terminology specific to biology, mathematical models and statistical and computer tools.
C2	Identify levels of organisation of living beings through the study of current specimens and fossils. Carry out phylogenetic analyses and study the mechanisms of heredity, evolution and biodiversity.
C5	Manipulate and analyse genetic material and determine its alterations and pathological implications. Knowing the applications of genetic engineering.
D5	Communicate effectively and appropriately, including the use of computer tools and English.

Expected results from this subject

Expected results from this subject	Training and Learning Results
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To know and handle concepts, terminology and instrumentation related to Genetics.	A1 A2 A3	B1 B3 B6	C1 C2 C5	D5
Understanding the logic of the transmission of hereditary material.	A1 A2 A3	B1 B3 B6	C1 C2 C5	D5
To comprehend the techniques of genetic mapping.	A1 A2 A3	B1 B3 B6	C1 C5	
To know the structure, organization and replication of hereditary material.	A1 A2 A3	B1 B3 B6	C1 C2 C5	D5
Understanding how hereditary material functions and is expressed.	A1 A2 A3	B1 B3 B6	C1 C2 C5	D5
Understanding the basis of the regulation of gene expression.	A1 A2 A3	B1 B3 B6	C1 C2 C5	D5

Contents

Topic	
Transmission of the hereditary material	Inheritance and chromosomes. Segregation and independent transmission. Gene interaction. Inheritance and environment.
Linkage and genetic maps	Genetic Linkage and recombination. Chromosomal cartography in eukaryotes.
Nature and replication of the hereditary material	Nature and structure of the hereditary material. The replication of the DNA. Organisation of the DNA in the chromosomes. Methods of study of the DNA.
Expression of the genetic information.	Gene transcription. Genetic code. Translation.
Regulation of the gene expression	Regulation of the gene expression in prokaryotes. Regulation of the gene expression in eukaryotes.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	25	50.5	75.5
Problem solving	8	21	29
Laboratory practical	15	6	21
Practices through ICT	0	24.5	24.5

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

Methodologies

	Description
Lecturing	They will follow the course schedule. They are organized in lessons, 50 minutes each. In most cases, it is dedicated to explain and develop the contents of the course (concepts and methodologies), but due to time constraints, students need to complete them (before and after lectures), by self-study using textbooks, complementary readings, computer animations, and reference web pages.
Problem solving	The purpose of working through problems is to better understand the concepts covered during theoretical lectures. A number of problems (available in Moovi) will be assigned throughout the semester. Students may be called upon to solve examples of the completed problems (on the board on their corresponding due dates).
Laboratory practical	The aims of the laboratory sessions are to present to the student experimental procedures related to the course. Students are expected to read the corresponding lab material BEFOREHAND. The contents of the lab sessions are connected with the contents of the lectures both theoretical and problem-solving, so that their content is also part of the knowledge necessary to pass the course. There will be 5 practical sessions lasting 3 hours each.

Practices through ICT One of the competences that the university student must achieve throughout his / her training is the ability to work autonomously. It is necessary to provide non-contact activities that guide this learning. In order for the learning to be carried out according to the progress of the course, the Moovi platform will be used. Students will take self-assessment tests and solve practical problems.

Personalized assistance

Methodologies	Description
Lecturing	The students can interact with the professor in relation to any aspect of the discipline through personalized tutoring for the resolution of questions, or by mail through the Moovi platform. The tutorials can also be done through the virtual campus by agreeing dates and times previously with the students through email.
Problem solving	The students can interact with the professor respect to any subject related to the resolution of practical problems during the class, using personalized tutoring, or by mail trough the Moovi platform. The tutorials can also be done through the virtual campus by agreeing dates and times previously with the students through email.
Laboratory practical	The student will have access through the Moovi platform to all the documentation of each practice: script of practices, presentations used in class, and complementary information of each practice. Students can interact directly with the teacher during the development of each practical session to clarify questions or expand concepts, or through email through the Moovi platform. The tutorials can also be done through the virtual campus by agreeing dates and times previously with the students through email.
Practices through ICT	The learning process of the student that complements the master classes and the practices will be carried out through the development of non-contact activities through the teaching platform Moovi. In this platform the student will find the material with the presentations of the theory classes, complementary readings, useful documents to study, the script of practices, lists of problems and exercises that must realize in a given term, and self-assessment exams. The teachers will reserve a time to attend and resolve the doubts of the students. In these activities the teacher has as a function to guide and guide the process of student learning and help him to successfully complete the corresponding autonomous work. The teachers will indicate the first days of class the place, day and hours for that personalized attention.

Assessment

Description	Qualification	Training and Learning Results				
		A1	B1	C1	D1	D5
Lecturing SEE DETAILS IN OTHER COMMENTS ABOUT THE EVALUATION. - Two mid-term exams - One final exam	40	A2 A3	B6	C1 C2	D5	
Problem solving SEE DETAILS IN OTHER COMMENTS ABOUT THE EVALUATION. - Two mid-term exams - One final exam	35	A1 A2 A3	B1 B6	C1	D5	
Laboratory practical SEE DETAILS IN OTHER COMMENTS ABOUT THE EVALUATION. - Knowledge and performance - A multiple choice test at the end of each laboratory session	15	A2 A3	B3 B6	C1 C2	D5	
Attendance to laboratory sessions is mandatory. For repeating students, grade obtained on the previous year will be kept. So that, only for them attendance will be voluntary						
Practices through ICT SEE DETAILS IN OTHER COMMENTS ABOUT THE EVALUATION. - Online self-evaluations - Presentation of exercises within the established period	10	A1 A2 A3	B1 B3 B6	C1 C2	D5	

Other comments on the Evaluation

Evaluation

The calendar of the tests is in this link: <http://bioloxia.uvigo.es/en/teaching/exams>

1. Evaluation in June

Option A (Continuous assessment):

- Two mid-term non-eliminatory tests (35% of the final grade). It involves theory and problem- solving material.
- One final exam (40% of the final grade). It involves theory and problem- solving material. It will be necessary to obtain at least 4 points (out of 10) to pass the exam. If this minimum grade is not obtained, the final mark in the

subject will be obtained with the global qualifications if it is less than 5, or 4.5 if it is greater than 5.

- Knowledge and performance in the laboratory session (15% of the final grade). A multiple choice type test will take place at the end of each laboratory session. Attendance to laboratory session is mandatory. For repeating students, grades obtained the previous year will be kept. So that, only for them, attendance will be voluntary.
- Work outside the classroom (10% of final grade). In order to obtain grading, each student must have their own set of completed problems to turn in before due dates and each student should follow the learning sequence in Moovi for all the units.
- To overcome the subject, it will be necessary to obtain 5 points out of 10 in the global qualification.

All grades, except the final exam, will be saved for the 2nd opportunity in July. For subsequent courses, only the qualification of practices will be saved.

Students who are absent from the final exam will not be graded

Option B (for students who waive continuous assessment within the period established by the Dean of the Faculty of Biology, and for students who attend extraordinary calls):

- One final exam (85% of final grade). It involves theory and problem-solving material. In this exam, it will be necessary to obtain at least 5 points to pass the subject.
- Knowledge and performance in the laboratory sessions (15% of the final grade). A multiple choice type questions will take place at the end of each laboratory session. Attendance to laboratory sessions is mandatory. Practice grades will be saved for the 2nd opportunity in July. For repeating students, practice grade obtained on the previous year will be kept. So that, only for them attendance will be voluntary.

Students who are absent from the final exam will not be graded

Academic Ethics :

- Cheating in this course will not be tolerated.
- Cheating includes but is not limited to: plagiarism, copying during the exams, falsifying documentation related to absences, use of unauthorized electronic devices during an exam
- Penalties for cheating can include failing course

Teaching timetable: <http://bioloxia.uvigo.es/es/docencia/horarios>

Sources of information

Basic Bibliography

Complementary Bibliography

Griffiths AJF, Doebley J, Peichel C, Wassarman DA, **Introduction to Genetic Analysis**, 12, WH Freeman, 2020

Michael R. Cummings, William S. Klug, Charlotte A. Spencer, Michael A. Palladino, Darrell Killian, **Concepts of Genetics**, 12, Pearson Education, 2020

Pierce, Benjamin A, **Genética : un enfoque conceptual**, 5, Médica Panamericana, 2015

Watson, Baker, Bell, Gann, Levine, Losick, **Biología molecular del gen**, 7, Médica Panamericana, 2016

Benito Jiménez, César, **141 problemas de genética : resueltos paso a paso**, 1, Síntesis, 2015

Mensúa, Jose Luis, **Genética: problemas y ejercicios resueltos**, 1, Alhambra, 2003

Recommendations

Subjects that continue the syllabus

Genetics II/V02G030V01505

Other comments

It is recommended to study the subject continuously
