Universida_{de}Vigo

Subject Guide 2019 / 2020

IDENTIFYIN	G DATA			
Genetics I	Constical			
Study	(*)Grao en Bioloxía			
programme				
Descriptors	ECTS Credits	Choose	Year	Ouadmester
	6	Mandatory	2nd	2nd
Teaching	Spanish			
language	English			
Department				
Coordinator	Quesada Rodríguez, Humberto Carlos			
	Canchaya Sanchez, Carlos Alberto			
Lecturers	Canchaya Sanchez, Carlos Alberto			
	Carvajal Rodriguez, Antonio			
	Femdnuez Silva, IIIa Morán Martínez, María Paloma			
	Pérez Pereira Noelia			
	Quesada Rodríguez, Humberto Carlos			
	Soto Vazquez, Jose Luis			
	Tomás López, Laura			
E-mail	hquesada@uvigo.es			
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Web	The evolution of the Course Council is the data			
description Mendelian Genetics. Linkage and recombination. Structure, replication and organisation of the DNA. Genetics and its regulation. After taking Genetics I, the students will have to know and comprehend: The mechanisms of the inheritance. The structure and function of the nucleic acids. The expression, replication, transmission and modification of the genetic material. The genetic regulation and the genetic bases of development.				on of the DNA. Gene nd comprehend:
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Competenci	les			
Lode Al Student	s should prove understanding and knowledge in th	is study field that sta	rts in the Secur	dany Education and with
a level t	that, even though it is supported in advanced boo quard of the study field.	ks, also includes som	e aspects that in	nvolve knowledge from
A2 Student	s should know how to apply their knowledge to the	eir work or vocation in	a professional	way. They also should
have the	e competences that are usually proved through the	e elaboration and defe	ence of argume	nts and the resolution of
problem	ns within their study field.	· · · ·		
A3 Student	s should prove ability for information-gathering an	d interpret important	data (usually w	ithin their study field) to
Judge re	elevant social, scientific or etnical topics.	course and calutions t		(anagialist and ungkilled
A4 Student	s should able to communicate information, ideas, i	ssues and solutions t	o all audiences (specialist and unskilled
B2 Ability o	of reading and analizing scientific papers and havin	g critical assessment	skills to underst	tand data collection,
B3 Acquisit	ion of general knowledge about the basic subjects	of biology both at th	eory and experi	mental level without
dismissi	ing a higher specialization in subjects that are orien	nted to a concrete pro	ofessional area.	
B4 Ability II	n nangling experimental tools, both scientific and c	computer technology	equipment that	support the search for
B5 Underet	anding of the levels of organization of living being	s from a structural (m	olecular cellula	r and organic) and
function	al point of view by observing their relations with th	ne environment and o	ther organisms	as well as their
appeara	ances in situations of environmental alteration.			
B7 Collectio	on of information about issues of biologic interest,	analysis and emissior	n of critical opini	ions and reason them
includin	g 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.

C3 Identifying, analysing and characterizing biological samples, including those of human origin, and possible anomalies.

C4 Isolating, analysing and identifying biomolecules, viruses, cells, tissues and organs.

C7 Manipulating and analysing genetic data and carrying out genetic counseling

C10 Analysing and assessing the adaptation of living beings to the environment.

C16 Growing, producing, transforming, improving biological resources as well as getting profits.

C20 Designing, using and supervising biotechnological processes.

C21 Processing and interpreting bioessays and biological diagnoses.

- C24 Designing biological process models.
- C25 Gathering background information, develop experimental work and analysing data results

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

D5 Use of computer resources 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

D16 Acceptance of a quaility commitment

D17 Development of the self-criticism ability

D18 Development of negotiating power

Learning outcomes				
Expected results from this subject	Т	raining F	and Le Results	earning
Know and comprise the structure and function of the nucleic acids	A3	B3 B5	C4 C7	D1 D6 D8 D10
Know and comprise the expression, replication, transmission and modification of the genetic material	A3	B3 B4 B5	C3 C4 C7 C10	D4 D6 D8 D10
Know and comprise the genetic regulation and the genetic bases of the development	A3	B4 B5	C3 C21 C24	D1 D4 D6 D8
Apply knowledge of the genetics to isolate, identify, handle and analyse specimens and samples of biological origin, including virus, as well as to characterise his cellular and molecular constituents	A2 A3	B4 B5 B7	C3 C4 C7 C20 C21 C31	D1 D2 D13 D15
Analyse and interpret the adaptations of the living beings to the half	A1 A2 A3	B5 B7 B10	C10	D9 D13 D15 D17
Manipulate and analyse the genetic material and carry out genetic advice	A1 A2 A3	B3 B4 B5	C7	D11 D12 D16 D18

Apply knowledges and relative technology to the genetics in appearances related with the production, exploitation, analysis and diagnostic of processes and biological resources	A1 A2 A3	B3 B4 B5 B7	C4 C16 C20	D6 D7 D16
Obtain information, develop experiments and interpret the results	A2	B2	C25	D3
	A3	B3	C31	D5
		B10	C32	D7
		B11		
Comprise the social projection of the genetics and his repercussion in the professional exercise	A1	B10	C33	D14
	A3	B11		D16
	A4	B12		D17
				D18
Know and handle the concepts, terminology and scientific instrumentation-technical relative to the	A1	B3	C31	D1
genetics	A2	B4	C32	D4
-	A3			D6

Contents	
Торіс	
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.
	Develoment genetics

Planning			
	Class hours	Hours outside the	Total hours
		classroom	
Lecturing	21	52.5	73.5
Problem solving	7	21	28
Laboratory practical	20	6	26
Autonomous practices through ICT	0	22.5	22.5
*The information in the planning table is for	guidance only and does no	ot take into account the het	erogeneity 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 needs 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 TEMA) will be assigned throughout the semester. These will be collected periodically as they will be graded in the class time. This is a compulsory task. 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 4 hours each with the following topics: 1 Drosophila management in the laboratory, 2Blood groups and family trees, 3Recombination in fungi, 4restriction enzymes, and 5Bacterial transformation.

Autonomous 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 TEMA platform will be used
	I EMA platform will be used.

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 TEMA platform.			
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 TEMA platform.			
Laboratory practical	The student will have access through the TEMA 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 TEMA platform.			
Autonomous 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 platform of teledocencia TEMA. 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	Qualificatio	n T	raining R	and Le lesults	arning
Lecturing	SEE DETAILS IN OTHER COMMENTS. - Two mid-term exams - One final exam	40	A1 A2 A3	B2 B3 B5 B10	C3 C4 C7 C10 C16 C21 C25 C31 C32 C33	D1 D2 D4 D6 D7 D8 D10 D11 D15 D16 D17
Problem solving	SEE DETAILS IN OTHER COMMENTS. - Two mid-term exams - One final exam	40	A1 A2 A3 A4	B2 B3 B10 B12	C10 C20 C24 C31 C32	D1 D7 D8 D10 D15 D17
Laboratory practical	 SEE DETAILS IN OTHER COMMENTS. Attendance and performance A multiple choice test at the end of each laboratory session. 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	10	A1 A2 A3 A4	B10 B12	C21 C24 C32	D1 D2 D6 D14
through ICT	- Presentation of exercises within the established period	10	_			

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

- Two mid-term exam (25% of the final grade). It involves theory and problem- solving material.
- One final exam (55% 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 minimun 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.
- Attendance and performance in the laboratory session (10% 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 TEMA for all the units.
- To overcome the subject, it will be necessary to obtain 5 points out of 10 in the weighted global of the evaluations.

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.

Option B (for students who do not attended the mid-term exam)

- A single final exam (90% of final grade). In this exam, it will be necessary to obtain at least 5 points to pass the subject.
- Attendance and performance in the laboratory sessions. (10% 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. For repeating students, grade obtained on the previous year will be kept. So that, only for them attendance will be voluntary

2. Extraordinary Evaluations

Unique option

- One final exam (90% 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.
- Attendance and performance in the laboratory sessions (10% 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. For repeating students, grade obtained on the previous year will be kept. So that, only for them attendance will be voluntary.

Students who are absent from the 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

Klug, Cummings & Spencer, **Klug, Cummings, Spencer**, 10, Pearson, 2013 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 are recommended to be taken simultaneously

Biochemistry I/V02G030V01301 Biochemistry II/V02G030V01401

Subjects that it is recommended to have taken before

Biology: Evolution/V02G030V01101 Biology: Basic laboratory techniques/V02G030V01203