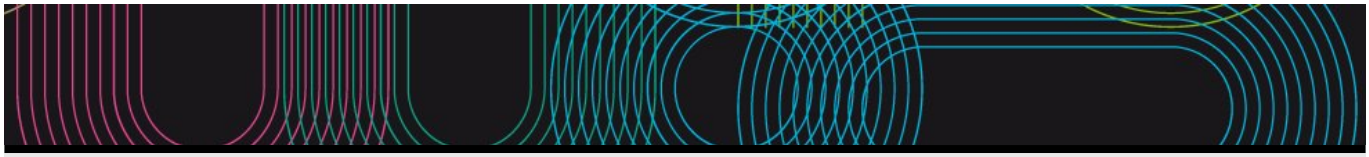

IDENTIFYING DATA				
Biology: Biology				
Subject	Biology: Biology			
Code	V11G200V01101			
Study programme	(*)Grao en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Spanish			
Department				
Coordinator	Castro Tubio, José M.			
Lecturers	Castro Tubio, José M.			
E-mail	jmctubio@gmail.com			
Web	http://http://darwin.uvigo.es/mobgenomes/			
General description	The matter of Biology has like aim the preparation of the studens to comprise and explain better the living beings, as they are constituted and as they work, as they study , as they contrast the hypotheses and the experimental facts to elaborate the biological theories.			

Competencies	
Code	
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
C15	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories in: chemistry of biological molecules and their processes
D1	Communicate orally and in writing in at least one of the official languages of the University
D3	Learn independently
D4	Search and manage information from different sources
D7	Apply theoretical knowledge in practice
D8	Teamwork
D9	Work independently
D12	Plan and manage time properly
D13	Make decisions
D14	Analyze and synthesize information and draw conclusions
D15	Evaluate critically and constructively the environment and oneself

Learning outcomes			
Expected results from this subject	Training and Learning Results		
Understand the cell like fundamental unit of the be alive.	A5	C15	D1 D3 D4 D7 D9 D12 D14
Understand the properties and organisation of the distinct *cellular organelles.	A5	C15	D1 D3 D4 D7 D9 D12 D14

Know the cellular structure in **procariotas and *eukaryotic.	A5	C15	D1 D3 D4 D7 D9 D12 D14
Relate the cellular structures with the metabolism.	A5	C15	D1 D3 D4 D7 D9 D12 D14
Understand the distinct metabolic *roads of the distinct organic molecules.	A5	C15	D1 D3 D4 D7 D9 D12 D14
Describe the hereditary material and know the principles of the central dogma.	A5	C15	D1 D3 D4 D7 D8 D12 D13 D14 D15
Define the process of mutation and his implication in the evolutionary processes.	A5	C15	D1 D3 D4 D7 D9 D12 D14
Know the technicians of DNA **recombinante.	A5	C15	D1 D3 D4 D7 D8 D9 D12 D13 D14 D15
Comprise the importance of the immune *system.	A5	C15	D1 D3 D4 D7 D8 D12 D13 D14 D15

Contents	
Topic	
1. The cell	Size, form and cellular function cellular classification Cellular Theory Procaryotic cell eukaryotic Cell

2. *Biomembranas And systems of cellular transport.	Cellular membrane: functions, biochemical composition, physic-chemical properties. Synthesis of the cellular membrane. System of transport through the biological membranes: bombs, protein transporters and channels.
3. The core and the chromosomes. The cellular organelles.	Nuclei Cellular: structure, composition and functions. Structure and functions of the nucleolus Structures and functions of chromatin and chromosomes. Structure, composition and functions of: matrix extracellular, cytoskeleton and centrioles, endoplasmatic reticulum, apparatus of Golgi, endosomes and lisosomes, mitochondria, peroxisomes and cloroplasts.
4. Cellular division and cellular cycle.	Definition and characteristics of mitosis . Differences between somatics and germinal cells. Phases of the cellular cycle Biological meaning ofmitosis. Concept of the apoptosis, cellular proliferation and cancer. Concept and differences between asexual and sexual reproduction. Definition and characteristic of meisosis. Phases of meiosis Origin of the genetic variability of the **meiosis Differences between **mitosis and **meiosis.
5. General design of the metabolism: catabolism and anabolism.	Concept of: energetic metabolism, metabolic route, catabolism, anabolism. The equivalent of ATP Extraction of the chemical energy of the organic compounds: glucides, lipids and proteins.
6. Photosynthesis	Nature of the light. Photosynthetic pigments. Stages of the photosynthesis: luminous phase and dark phase (cycle of Calvin). The problem of the photorespiration: plants C4 and plants CAM.
7. DNA, structure and function	Composition, structure of the DNA Function of the DNA Replication of the DNA Initiation the technicians of the recombinant DNA
8. RNA and the expression of the genetic message.	Composition, structure of the RNA RNAm, RNAt and RNAr Other types cellular RNAs and its functions. Review of the concepts of transcription and translation. Language of the genic information.
9. Mutation and evolution.	Genic mutations: concept and types. Molecular consequences of the genic mutations. Structural chromosomal mutations: Numerical chromosomal mutations: Origin and consequences of the mutations. Relation of the mutations and cancer. Evolutionary theories Arguments in favour of wool evolution.
10. The immune system.	Concept of immune system. Components of the immune system. Mechanism of the innate defence of the immune system. Antibodies and interferon. Types of immune response. Alterations of the immune system. Importance of the vaccines.

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	26	48	74
Seminars	13	26	39
Troubleshooting and / or exercises	0	17	17
Tutored works	2	13	15
Short answer tests	1	4	5

*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	In these classes the professor will explain and will develop the concepts and basic foundations of the *temario of clear form and *amena to facilitate his understanding. The contents of each subject will be exposed in the platform FEAR with sufficient time so that the students can consult them. It recommends that the student work on this material, consulting besides the bibliography recommended.
Seminars	In these classes will be oriented to: to) explanations of all type of doubts of the previously explained concepts in the masterclasses. *b) The students of individual way or in group will realise pictures *sinópticos of the subjects analysed in the masterclasses with the end to have an overview of the *temario, what will facilitate them his understanding and interrelationship. *c) In this section also will work some contents of the *temario of Biology, that by experience of the *profesorado are of more difficult understanding and that therefore require a greater didactic support.
Troubleshooting and / or exercises	Each student of individual way will have to realise realise a series of corresponding exercises to each subject to strengthen his study and understanding. These bulletins of exercises will be exposed in the platform FEAR as well as his date of delivery for his evaluation.
Tutored works	To develop the competition *CT8, the students will realise two works in group. The works will be related with the fields of the biotechnology, molecular biology and immunology and will be proposed by the professor. Part of the necessary information for his execution will be contributed by the professor and the rest by the students.

Personalized attention

Methodologies	Description
Tutored works	They formulate, argue and resolve questions, exercises and problems related with the subject. Each student will sue to the teaching staff the clarifications that estimate opportune to comprise better to subject and develop successfully the tasks that went him proposals. These queries will attend in schedule of *titorías.
Seminars	They formulate, argue and resolve questions, exercises and problems related with the subject. Each student will sue to the teaching staff the clarifications that estimate opportune to comprise better to subject and develop successfully the tasks that went him proposals. These queries will attend in schedule of *titorías.
Troubleshooting and / or exercises	They formulate, argue and resolve questions, exercises and problems related with the subject. Each student will sue to the teaching staff the clarifications that estimate opportune to comprise better to subject and develop successfully the tasks that went him proposals. These queries will attend in schedule of *titorías.

Assessment

	Description	Qualification	Training and Learning Results		
Troubleshooting and / or exercises	It will value the assistance (compulsory) to the seminars, the participation us same and the resolution by part of the *alumnado of a series of problems and/or exercises like academic follow-up of the student. The final qualification of these exercises will be of 20% of the final note.	20	A5	C15	D1 D3 D7 D9 D12 D13 D14 D15
Tutored works	It will evaluate the structuring and organisation of the contents, the oral exhibition and the sources consulted. These works will be exposed in the sessions of seminars to the rest of mates. The final qualification of these works will be of 10% of the final note.	10	A5	C15	D1 D3 D4 D7 D8 D9 D12 D13 D14 D15

Short answer tests	It will realise an only proof at the end of the course on the matter explained in the sessions *magistrales and in the seminars. It will consist in questions of short answer. Said proof will represent 70% of the final note.	70	A5	C15	D1 D3 D4 D7 D9 D12 D13 D14 D15

Other comments on the Evaluation

The student that realise the final proof of evaluation will be considered like presented.Is indispensable to obtain a minimum note of 5 on 10 in the short proof final (include all the matter) to be able to approve the matter. The final note of the matter will come given by the average of the three sections of the evaluation. Of this way, to approve the matter, said average has to be equal or upper to 5.0In the case of not surpassing the matter,
the qualification in the record will be only the note of the final proof of all the matter (will not do average).In the second announcement, the evaluation will carry out of the following way:1. It will conserve the punctuation reached by the student during the course in the works *tutelados and the seminars. Any of these sections is recoverable.2. It will realise an analogous proof to the one of the end of the *cuatrimestre. This proof *equivaldrá to 70% of the final note.

Sources of information

Basic Bibliography

Complementary Bibliography

John Kimball, **http://biology-pages.info/**,

Bruce Alberts, Dennis Bray, Karel Hopkin, Alexander Johnson, Julian Lewis, Martin Raff, Keith Robert, **Introducción a la Biología Celular**, Tercera Edición, 2011,

Helmut Plattner, Joachim Hentschal, **Biología Celular**, Cuarta Edición, 2014,

Peter J Rusell, **iGenetics. A molecular approach**, Third Edition, 2010,

Leonardo Fainboin, Jorge Geffner, **Introducción a la Inmunologia Humana**, Sexta Edición, 2011,

James D. Watson, **Biología Molecular del gen**, Séptima edición, 2016,

Recommendations

Subjects that continue the syllabus

Chemistry, physics and biology: Integrated laboratory I/V11G200V01103

Subjects that are recommended to be taken simultaneously

Physics: Physics I/V11G200V01102
Mathematics: Mathematics I/V11G200V01104
Chemistry, physics and biology: Integrated laboratory I/V11G200V01103
Chemistry: Chemistry I/V11G200V01105

Other comments

It recommends have *cursada the matter Biology that gives in the 2º course of *Bachillerato so much in the modality of Sciences of the Health as in the one of Sciences (double option).