Teaching Guide				
Identifying Data				2018/19
Subject (*)	Biology: Basic Levels of Organisation of Life I (Cells)		Code	610G02007
Study programme	Grao en Bioloxía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	Basic training	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Bioloxía			
Coordinador	Manso Revilla, Maria Jesus	E-mail	maria.jesus.manso@udc.es	
Lecturers	Díaz Prado, María Luz Folgueira Otero, Mónica Lamas Criado, Iban Manso Revilla, Maria Jesus Yañez Sanchez, Julian	E-mail	luz.diaz@udc.es m.folgueira@udc.es iban.lamas@udc.es maria.jesus.manso@udc.es julian.yanez@udc.es	
Web				
General description	This subject is in the first year of degree and the only precedent that holds the majority of national students are knowledge from the Biology course of secondary education. Therefore, because this course is included in the basic common core, teaching is included in the first semester of the first course to provide students with the basic skills needed for other subjects. Although the course is called Cytology, contents conform more to a modern Cell Biology which other aspects in an integrated manner besides those purely structural are also considered.			

Study programme competences / results	
Code	Study programme competences / results
A1	Recoñecer distintos niveis de organización nos sistemas vivos.
A4	Obter, manexar, conservar e observar especímenes.
A5	Analizar e caracterizar mostras de orixe humana.
A11	Identificar e analizar material de orixe biolóxica e as súas anomalías.
A26	Deseñar experimentos, obter información e interpretar os resultados.
A30	Manexar adecuadamente instrumentación científica.
A31	Desenvolverse con seguridade nun laboratorio.
B1	Aprender a aprender.
B4	Traballar de forma autónoma con iniciativa.
B6	Organizar e planificar o traballo.
B8	Sintetizar a información.
B9	Formarse unha opinión propia.
B10	Exercer a crítica científica.
B11	Debater en público.
B13	Comportarse con ética e responsabilidade social como cidadán e como profesional.

Learning outcomes			
Learning outcomes	Study programme competences / results		
To know the characteristics and properties of the different cell types as anatomical and functional units of living organisms, their possible origin and interrelationship	A1	B1 B4 B9 B11	

To know the structure, origin and function of cellular components, with particular emphasis on eukaryotic cells	A1 A4	B4 B9 B11	
To understand the mechanisms underlying the dynamics of life and social processes of cells	A1	B4 B9 B11	
To understand and become familiar with the methodologies, bibliographic sources and technical terms of Cell Biology, in some cases using the scientific method to study	A1 A4 A5 A11 A26 A30 A31	B6 B8 B10 B13	

Contents	
Topic	**Sub-topic**
INTRODUCTION:	Concept and historical background of Cell Biology. Organization levels and clasification of life.
CELL MEMBRANE AND CELL SURFACE	Structure and organization of biological membranes. Transport of molecules across the membrane. The cell surface. Cell adhesion and cellular junctions.
CYTOSOL AND CYTOSKELETON	Cytosol. Cytoskeleton. Complex microtubular structures.
SYNTHESIS, INTRACELLULAR TRAFFIC AND DEGRADATION OF MACROMOLECULES	Ribosomes The endoplasmic reticulum The Golgi complex Lisosomes
THE ENERGY CONVERSION	Mitohondria Plastids Microbodies
THE CELL NUCLEUS AND THE EUKARYOTIC GENOME ORGANIZATION	The cell nucleus Chromatin Chromosomes
THE CELL CYCLE	The cell cycle Mitosis and cytokinesis Meiosis The programmed cell death.
THE SOCIAL CONTEXT OF THE CELL	Cell communication and cell signaling Cancer

Practical lessons	- Fundamentals of light microscopy - Observation of bacteria and fungi - Observation of protozoans (Protista) and animal cells - Observation of plant cells - Cell Fractionation - Study of plant subcellular structures - Observation of chromosomes and mitosis - Staining and observation of blood cells - Fundamentals of electron microscopy

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A1 B1	21	63	84
Directed discussion	A1 B1 B4 B6 B9 B10 B11 B13	3	6	9
Laboratory practice	A1 A4 A5 A11 A26 A30 A31 B8 B13	15	15	30
Mixed objective/subjective test	A1	4	4	8
Seminar	A1 B4 B9 B11	4	8	12
Workbook	A1 B9	0	3	3
Introductory activities	A1	1	0	1
Online discussion	A1 B4 B9	0	2	2
Personalized attention		1	0	1
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	50 minutes sessions about some of the contents of the program. For better exploitation, it is recommended that students have previously read on their ownv the fundamental aspects of these topics in the recommended texts and completed the questionnaires concerning the topic. This section includes the acquisition of A1 skill.
Directed discussion	In small groups of 10 students, it will be discussed (1) current topics in cell biology and its implications, and (2) discuss and resolve theoretical and practical content related to the subject matters what each the student should worked on using the relevant literature. This activity exercises the skills B1, B4, B6, B11 and C1.
Laboratory practice	Some theoretical aspects related to the equipment and experimental methodologies and simple cytological techniques are acquired in the lab. Students should perform a memory where the goal of each practice, protocols followed and the results where the student must describe, draw and interpret observations in detail. Attendance at practices is necessary for evaluation. Circumstances that prevent attendance, must be notified/justified to the people in charge. In this section skills A4, A30, A31 are worked out.
Mixed objective/subjective test	This category includes both learning assessments and the final exam on the theoretical and practical contents of the course, all of them based in multiple choice questions of two outputs and short answer questions.
Seminar	In small groups of 10-15 students, it will be worked on a scheduled topic. Previously students should prepare a summary (1-2 pages) or glossary of terms on the topic and a copy will be delivered to the proffessor at the end of the session. The session consists of sharing the information and guided discussion on the topic. Througout this activity skills B1,B4, B6, B8 and B11 will be trained.
Workbook	Two selected documents related to the introduction will be available to students at the begining of the course to perform a comprehensive reading.

Introductory activities	One ession will be dedicated to presentation of the course, explaining its structure, activities, assessment criteria, etc ... also content in the teaching guide. Student can resolve any queries related.
Online discussion	A particular cell biology issue will be proposed in the on-line forum. Contribution and discussion will be expected from the students. In this section it will be exercised skills B1, B4, B8, B11.

Personalized attention	
Methodologies	**Description**
Seminar Directed discussion Laboratory practice	Students are free to discuss any concerns raised from lectures, but also extensively in seminars and guided discussions. They also have the chance to resolve any questions in personalized tutoring sessions.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Mixed objective/subjective test	A1	2 assessments of learning throughout the course and a final exam including the theoretical and practical content of the entire course will be conducted. All exams contains multiple choice questions of two inputs and short questions as well.	90
Laboratory practice	A1 A4 A5 A11 A26 A30 A31 B8 B13	At the end of the laboratory period it will be required to submit a report of the activities carried out with the resolution of some issues about them. For the evaluation of the lab period it will taken into account some of the practices done and some selected questions of the questionnaire associated to the practices as well.	10

Assessment comments
Attendance at practical sessions is necessaryfor the consideration of submitted status and allowed to take the exam. The final exam of the first call (the end of the1st semester) represent 70% of the final grade and the remaining 30% what will be the average ofthe results obtained in the 2 controls and lab memory (20% and 10%, respectively). Student shall be deemed submitted when has attended at least 25% of the activities of the course (Practical sessions and 1 seminar). Additionally, knowing that during the course students begin exercisingin certain generic skills (and in some cases by themselves) is always positively valued mode, as their active participation in seminars and guided discussions. In particular, the work of the seminar and delivered the set of relevant contributions made in the forum will be assessed to an extent in the final grade. Exceptionally, under justified reasons (part-time learning or particular learning circumstances), in case the student could not follow the assessment activities, the teacher can adopt appropriate measures aimed not to hurt their score. In the second call (July) only the results of the examination will be taken into account for final qualification in case the practical (necessary condition for evaluation), were done regardless of the score on them. Honors will be preferably granted among students presented in the first call.

Sources of information	
Basic	- Alberts, B. y col. (2011). Introducción a la Biología celular. Panamericana - Cooper, GM. (2010). La célula. Marbán - Karp, G. (2009). Biología Celular y Molecular. McGraw-Hill. Interamericana - Paniagua, R.; Nistal, M.; Sesma, P.; Álvarez-Uría, M.; Anadón, R.; Fraile, B.; Sáez, FJ. (2007). Citología e Histología Vegetal y Animal: Biología celular. Interamericana-McGraw-Hill

Complementary	- Lodish, H.; Berk, A.; Zypursky, S.; Matsudaira, P.; Baltimore, D.; Darnell, J. (2005). Biología Celular y Molecular. Panamericana - Platner, H.; Hentschel, J. (2011). Biología Celular. Panamericana - Alberts, B.; Johnson A.; Lewis, J.; Raff, M.; Roberts, R. & Walter, P (2004). Biología Molecular de la célula. Omega - Pollard, T.D; Earnshaw WC. (2002, 2008). Cell Biology. Saunders

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments
Adaptation in his first year at the University is a major effort for all students. Learning includes the learning of fundamental concepts on the subject, familiarity with the laboratory work, the development of simple practical memories, finding information from different sources and processing, presentation and defense of information. Brevity in time of this course, carries the risk that students are not yet adapted to the system of own work and study, and could lead to failure if the process of adaptation and awareness is not fast. It is therefore very important the continuate study and periodic rehearsals as the course progresses. It is strongly recommended to read or work on the topic of lectures prior lessons and take appropriate notes during their presentations, so as complete the questionnaires related in the two days immediately following presentation.