Teaching Guide				
Identifying Data				2021/22
Subject (*)	Advanced Cellular Biology		Code	610441003s
Study programme	Máster Universitario en Bioloxía Molecular, Celular e Xenética (semipresencial)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatory	3
Language	SpanishGalician			
Teaching method	Hybrid			
Prerequisites				
Department	Bioloxía			
Coordinador	Yañez Sanchez, Julian	E-mail	julian.yanez@udc.es	
Lecturers	Díaz Prado, María Luz Yañez Sanchez, Julian	E-mail	luz.diaz@udc.es julian.yanez@udc.es	
Web				
General description	Cell biology as a current discipline has grown and matured significantly so that its conceptual boundaries are often diffuse and difficult to define. Thus, Cytology, Biochemistry, Molecular Biology, Genetics and Cell Physiology cell overlap in many respects. In fact, any substantial advance in either of these areas involves using methodologies typified as specific in one or more areas. This course focuses on the structure and function of cellular components with a holistic view of the interactions between these components to ensure proper functioning of the cell. We realize that it is not possible to cover in a single course all the continuous advances in depth, so we selected aspects of current relevance to give an idea of the complexity underlying cellular processes. Since this is an advanced course, it is assumed that students have basic knowledge of cell biology, genetics, physiology, biochemistry and molecular biology.			
Contingency plan	No caso de que as circunstancias limitaran ou impedisen a presencialidade nas dependencias da Facultade para as actividades presenciales do alumnado da modalidade semipresencial teranse en conta o seguintes aspectos: 1. Modificacións nos contidos: Non están previstas modificacións dos contidos 2. Metodoloxías: Manteranse as metodoloxías descritas nesta guia. De se precisaren, adecuaranse as sesións prácticas no laboratorio as circunstancias concretas e, de ser necesario substituiranse por actividades non presenciáis (visionado de videos, casos prácticos, análise e interpretación de datos,...) 3. Manteránse os mecanismos de atención personalizada ao alumnado limitada aos medios telemáticos 4. Manteranse os criterios de avaliación 5. Modificacións da bibliografía ou webgrafía: Non están previstas modificacións.			

Study programme competences	
Code	Study programme competences
A1	Skills of working in a sure way in the laboratories knowing operation handbooks and actions to avoid incidents of risk.
A2	Skills of using usual techniques and instruments in the cellular, biological and molecular research: that are able to use techniques and instruments as well as understanding potentials of their uses and applications.
A6	Skills of understanding the functioning of cells through the structural organization, biochemistry, gene expression and genetic variability.
A7	Skills of knowing and analyzing specific cellular systems as stem cells, nerve cells, cells of the immune system, or other cells related to several pathologies.
A13	Skills to become a professional in health, pharmacy, veterinary, animal production, biotechnology or food sectors.
B5	Ability to draft, represent, analyze, interpret and present technical documentation and relevant data in the field of the branch of knowledge of the master's degree in the native language and at least in another International diffusion language.
B9	Skills of preparation, show and defense of a work.
C1	Ability to express oneself correctly, both orally and in writing, in the official languages of the autonomous community

Learning outcomes			
Learning outcomes	Study programme competences		
Skills of understanding the functioning of cells through the structural organization.	AR6 AR7	BR5 BR9	CC1
Skills to apply immunohistochemical techniques to the study of cell components	AR1 AR2 AR13		

Contents	
Topic	Sub-topic
Introduction to cell	Cell Domains and the origin of multicellularity. Integrative view of the eukaryote cell
Structure and dynamics of the cell nucleus	Structure of nuclear envelope Nucleocytoplasmic traffic. Cell nucleus organization: chromatinic territories and nuclear subdomains.
Biogenesis, trafficking and functions of the cell endomembrane system	Structure and membrane domains. Membrane compartments and vesicular trafficking. Traffic RE-Golgi complex. Endosomes and endocytosis. Traffic between the Golgi complex and endosomes. The secretory pathway of the Golgi complex: conventional and unconventional exocytosis. Lipid trafficking between compartments. Post-translational targeting of cytosolic proteins to organelles. Degradation of cellular components.
Cytoskeleton and cell dynamic.	Microtubules and associated proteins. Microtubule complex structures. Microfilaments and associated proteins. Cell motility and contractile systems. Cytoskeleton and cytokinesis. Intermediate filaments. Septins.
Interactions cell to cell and cell to extracellular matrix	Cell adhesion and junctions Extracellular matrix molecules Pathological alterations of the extracellular matrix.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A6 A7	8	16	24
Document analysis	A13 A6 B5 B9 C1	4	12	16
Laboratory practice	A1 A2	10	20	30
Mixed objective/subjective test	A6	2.5	0	2.5
Personalized attention		2.5	0	2.5
(*)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	This activivity includes the personal work (not face-to-face) on various study materials available in the web page of the subject for the students and that cover the different contents. These materials include multimedia files, specific readings, educational videos, self-assessment tests, ...
Document analysis	Consist of reading of recent articles in Cell Biology on a topic previously designated that complements or completes the contents of the subject. As a result of this work, a written review should be presented that will be also available to classmates. In addition, also on the subject page, a discussion forum will be opened for a limited time to make contributions and resolve doubts about the published topics.
Laboratory practice	It will consist of the application of immunohistochemical methods for the analysis and study of certain cellular structures or components.
Mixed objective/subjective test	It will consist of an exam with choice questions and/or short questions on the contents of the topic treated in lectures and seminars.

Personalized attention	
Methodologies	**Description**
Guest lecture / keynote speech	The lecturer will have at least by appointment, an interview via MS Teams at the beginning of the course to meet personally with each student and resolve any questions about the organization of the course. Each student will have the opportunity to consult specific questions of the subject at any time during the weeks of the activities via E-mail. Alternatively, when the nature and extent of the problem would be required, students have up to 4 appointments by videoconference through MS Teams throughout the semester, including the dates prior to the exam of both opportunities.

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Document analysis	A13 A6 B5 B9 C1	It will be assesed the degree of understanding of the subject of the bibliographic review and its written presentation, which will be published in the web page of the subject. In addition, participation in a specific forum will be also valued, answering the questions posted by the teacher and other colleagues as well as the relevant contributions to the topics discussed	30
Mixed objective/subjective test	A6	It will consist of the resolution of questions (short answer and multiple choice, order, complete or associate) and / or some cases about the contents of the topics covered in the keynote sessions or discussed in the forum. The exam will be carried out electronically through the Faculty's virtual platform and with simultaneous connection through MS Teams.	70

Assessment comments
Exceptionally, when the student by justified reasons (part-time students or specific circumstances of learning) or unexpected circumnstances were not be able to take all the continuous assessment tests the teacher can adapt the appropriate measures or activities trying not to harm student scores for those reasons. In the case of the second opportunity of the current year (July) there will be an exam with 100% consideration for the final grade. Students will take their exam online on the official date (via moodle and MS Teams). Honors will be preferentially granted among the students of the first call.

Sources of information	
Basic	- Alberts, B.; Johnson A.; Lewis, J.; Raff, M.; Roberts, R. & Walter, P (2008-2015). Molecular Biology of the cell. Garland - Pollard, T.D; Earnshaw WC (2002, 2008). Cell Biology. Saunders

Complementary	- Lodish, H.; Berk, A.; Zypursky, S.; Matsudaira, P.; Baltimore, D.; Darnell, J. (2013). Molecular cell biology. Macmillan Enlaces de interés/ Links of interest:IBIOSEMINARS Virtual cell animation collectionSaylor Academy: Cell biology lectures

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

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.