Teaching Guide				
Identifying Data				2020/21
Subject (*)	Advanced Cellular Biology		Code	610441003
Study programme	Mestrado Universitario en Bioloxía Molecular , Celular e Xenética			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatory	3
Language	SpanishGalician			
Teaching method	Face-to-face			
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	In the event that circumstances prevent access or presence to the facilities of the Faculty, the modality of non-attendance teaching would be adopted with the following assumptions. 1. Modification of the contents No changes in contents are planned 2. Methodologies * Teaching methodologies that are maintained The methodologies described in this guide will be maintained * Teaching methodologies that are modified If necessary, the practical laboratory sessions will be adapted to the existing circumstances and, if necessary, they will be replaced by non-face-to-face activities (videos, case studies, analysis and interpretation of data, ...) 3. Mechanisms for personalized attention to students Personalized attention will be limited to telematic means 4. Modifications in the evaluation If necessary, face-to-face tests will be done electronically * Evaluation observations: The evaluation criteria will be maintained 5. Modifications of the bibliography or webgraphy No modifications are planned. Additional free access means and sources will be provided if necessary.			

Study programme competences / results	
Code	Study programme competences / results
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	Correct oral and written communication on scientific topics in the native language and at least in another International diffusion language.
B9	Skills of preparation, show and defense of a work.
C1	Adequate oral and written expression in the official languages.

Learning outcomes			
Learning outcomes	Study programme competences / results		
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 / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A6 A7	8	16	24
Document analysis	A6 A13 B5 B9 C1	4	12	16

Laboratory practice	A2 A1	10	20	30
Mixed objective/subjective test	A6	2.5	0	2.5
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	Face sessions of approximately 50 minutes on the contents of the program. For a full exploitation of these sessions, it is recommended that students have previously read on their own the fundamental aspects of these topics in the recommended texts.
Document analysis	It will consist of individual reading of recent research articles or reviews on a topic in Cell Biology designated by the lecturer complementing the given lectures. In classroom sessions each student will present a brief summary in limited time and will provide the basis for a posterior general discussion. Likewise, a brief summary or graphical abstract of each subject presented will be written and available to course participants on the subject webpage.
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	Students will be attended personally for any question raised along the course (in person, via e-mail and/or skype)

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Document analysis	A6 A13 B5 B9 C1	The degree of understanding of the subject and its presentation in the indicated time so as original graphical abstract will be assessed. Active participation in the discussion of presentations is also valued.	30
Mixed objective/subjective test	A6	It will consist of short answer and multiple choice questions on the contents of the topics covered in the keynote sessions and seminars.	70

Assessment comments
Part-time students will be able to substitute the attendance to the activity of Analysis of documentary sources by a single written revision on one aspect related to the syllabus and agreed with the teacher, maintaining its value in the evaluation in the first call (30%) Exceptionally, in case the student for justified reasons could not take all the continuous assessment tests (part-time students or specific circumstances of learning), the teacher will adopt the appropriate measures that do not to harm student rating 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 in the case of both face-to-face and semi-face-to-face students. Part-Time 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	- Pollard, T.D; Earnshaw WC (2002, 2008). Cell Biology. Saunders - Alberts, B.; Johnson A.; Lewis, J.; Raff, M.; Roberts, R. & Walter, P (2008). Molecular Biology of the cell. Garland
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.