UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2017/18
Subject (*)	Neurobiology		Code	610441007
Study programme	Mestrado Universitario en Bioloxía Molecular , Celular e Xenética			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	First	Optativa	3
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Bioloxía			
Coordinador	Díaz Prado, María Luz	E-mail	luz.diaz@udc.es	
Lecturers	Díaz Prado, María Luz Folgueira Otero, Mónica	E-mail	luz.diaz@udc.es m.folgueira@udc.es	
Web				
General description	Knowledge of basic biological mechanisms by which the nervous system controls behavior, the interaction between the sensory and motor systems and integration of different neural circuits.			

Study programme competences / results	
Code	Study programme competences / results
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.
A8	Skills of having an integrated view of the previously acquired knowledge about Molecular and Cellular Biology and Genetics, with an interdisciplinary approach and experimental work.
B3	Skills of management of the information: that are able to gather and to understand relevant information and results, obtaining conclusions and to prepare reasoned reports on scientific and biotechnological questions
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	Skills of expressing correctly, so much of oral form as written, in the official languages of the autonomous region.
C2	Skills of dominating the oral form expression and compression and written of a foreign language.
C8	Considering the importance that the investigation has, the innovation and the technological development in the socioeconomic advance and cultural of the society.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Students will acquire knowledge on the basic mechanisms by which the nervous system regulates behaviour, interaction between motor and sensory systems and integration of the different neural circuits.	AR6 AR7 AR8	BR3 BR5 BR9	CC1 CC2 CC8

Contents	
Topic	Sub-topic

1) Neuron Doctrine: historical introduction to modern neurobiology	Reticular Theory Golgi?s technique and Santiago Ramón y Cajal?s studies Neuron Doctrine
2) Neuron organization and signalling	Basic structure of the neuron Types of neurons Electrical synapse Chemical synapse
3) The changing brain	Early development of the nervous system Formation of neural circuits Modification of neural circuits and synaptic plasticity
4) Anatomic organization of the nervous system	Anatomy of the central nervous system Anatomy of the peripheral nervous system Basic notions on comparative neuroanatomy
5) Neural basis of sensory perception	Somatic sensory system Visual system Chemosensory system Auditory and vestibular system Pain
6) Neural control of motor activity and its coordination	General organization of the systems involved in motor control
7) Complex encephalic functions	Learning and memory Emotions
8) The neurobiology of the 21st century	Blue Brain Project Transgenics and Brainbow Optogenetics Brain-Machine Interface

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A6 A7 A8	7	14	21
Laboratory practice	C8	7	7	14
Document analysis	B3 B5 B9 C1 C2	6	24	30
Objective test	A6 A7 A8	2	6	8
Personalized attention		2	0	2
(*)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	Lectures will be sixty minutes long. Teachers will discuss the contents of the syllabus. Students are advised to read in advance about some fundamental aspects of the class in the recommended texts.
Laboratory practice	They will consist on identifying different regions of the nervous system, learning about the use of model systems to study the nervous system both in normal and pathological conditions, using interactive webpages and on line neuroanatomical atlases.

Document analysis	Each student will read a recent article that has been designated by the teacher and complements contents of lectures. Students will present a brief summary of their article, followed by a discussion with the rest of the class.
Objective test	It will be an exam about the contents reflected on the syllabus of the subject. The exam will consist of multiple choice, true/false and/or questions to be answered briefly.

Personalized attention	
Methodologies	**Description**

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Document analysis	B3 B5 B9 C1 C2	The teacher will assess clarity of presentation and level of understanding of the article by the students. The teacher will also assess any graphics used for the presentation and students participation in other discussions in the class. In this activity, the acquisition of the B3, B5, B9 skills are valued.	30
Objective test	A6 A7 A8	It will consist of any of the following types of questions: multiple choice, gap-filling, matching, ordering answers, and short answers.In this activity, the acquisition of specific skills A9, A10 and A11 will be evaluated.	70
Others			

Assessment comments
Students on flexible learning system (attending classes and working from home) can substitute ?Document analysis? for an assay regarding any content of the syllabus. The second opportunity of the year (exam of July) will consist of test that will be marked for the 100% of the rating for all students. "Matricula de Honor" distinction will be awarded to students taking the exam on the first opportunity of the academic year.

Sources of information	
Basic	Bibliografía básica: - Dale Purves et al. (2008). Neuroscience. Sinauer Associates, cop. 4th ed.- Eric R. Kandel, James H. Schwartz, Thomas M. Jessell (2000).Principios de neurociencia. McGraw Hill-Interamericana.- Greg Lemke (2009). Developmental neurobiology. Academic Press-Elsevier.- John H. Byrne; James L. Roberts (2009). From molecules to networks an introduction to cellular and molecular neuroscience. Elsevier. - Larry Squire et al. (2008). Fundamental neuroscience. Academic Press.- Daniel P. Cardinale (2007). Neurociencia aplicada: sus fundamentos. Editorial Médica Panamericana.
Complementary	

Recommendations
Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Citoloxía/610212103 Histoloxía Vexetal e Animal/610212104 Organografía Microscópica/610212628
Other comments
Students are advised students to study making use of all material available, including the recommended bibliography and web sources.

(*)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.