UNIVERSIDADE DA CORUÑA

Teaching Guide			
Identifying Data			2019/20
Subject (*)	Biomechanical engineering, sensoring and telemedicine	Code	614522014
Study programme	Mestrado Universitario en Bioinformática para Ciencias da Saúde		

Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	Second	Optional	3

Language	SpanishEnglish		
Teaching method	Face-to-face		
Prerequisites			
Department	Ciencias Biomédicas, Medicina e FisioterapiaEnxeñaría Naval e IndustrialFisioterapia, Medicina e Ciencias Biomédicas		
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General description	This subject is structured in three blocks. In the first block the student goes to know basic appearances of the bioingeneiría with examples in the development of órtesis hybrid. In the second block will analyse the current situation of the telemedicina, the participatory medicine and the wearables devices in the current lines of research. In the last block the student will know the last advances and applications of systems of brain sensorización		

Study programme competences	
Code	Study programme competences
A3	CE3 ? To analyze, design, develop, implement, verify and document efficient software solutions based on an adequate knowledge of the theories, models and techniques in the field of Bioinformatics
A6	CE6 - Ability to identify software tools and most relevant bioinformatics data sources, and acquire skill in their use
A7	CE7 - Ability to identify the applicability of the use of bioinformatics tools to clinical areas.
B1	CB6 - Own and understand knowledge that can provide a base or opportunity to be original in the development and/or application of ideas, often in a context of research
B2	CB7 - Students should know how to apply the acquired knowledge and ability to problem solving in new environments or little known within broad (or multidisciplinary) contexts related to their field of study
B5	CB10 - Students should possess learning skills that allow them to continue studying in a way that will largely be self-directed or autonomous.
B6	CG1 -Search for and select the useful information needed to solve complex problems, driving fluently bibliographical sources for the field
B7	CG2 - Maintain and extend well-founded theoretical approaches to enable the introduction and exploitation of new and advanced technologies
B8	CG3 - Be able to work in a team, especially of interdisciplinary nature
C1	CT1 - Express oneself correctly, both orally writing, in the official languages of the autonomous community
C2	CT2 - Dominate the expression and understanding of oral and written form of a foreign language
C3	CT3 - Use the basic tools of the information technology and communications (ICT) necessary for the exercise of their profession and lifelong learning
C6	CT6 - To assess critically the knowledge, technology and information available to solve the problems they face to.
C8	CT8 - Rating the importance that has the research, innovation and technological development in the socio-economic and cultural progress of society

Learning outcomes	
Learning outcomes	Study programme competences

Know fundaments of the biomechanics	AJ3 AJ6 AJ7	BJ7	
Know the biometric systems, the standard protocols and the communications with this type of devices in the health.	AJ3 AJ6 AJ7	BJ8	CJ1
Know purchase, analyse and interpret pertinent data of sensors	AJ3 AJ6 AJ7	BJ8	CJ1
Know the telemedicina project examples	AJ7	BJ1 BJ2 BJ5 BJ6 BJ7 BJ8	CJ8
Know to do clasification the technological requirements for the deployment of projects of telemedicina	AJ7	BJ1 BJ2 BJ5 BJ6	CJ8
Saber identificar os requisitos tecnolóxicos para a implantación de proxectos de telemedicina.	AJ3 AJ6 AJ7		CJ2 CJ3 CJ6 CJ8

Contents	
Topic	**Sub-topic**
Biomechanical engineering	Introduction to the biomechanics. Foundations and fields of work
Sensorization	The participatory health. The monitoring in the field of the biomedicine
Telemedicina	Applications of the sensors no invasivos in projects of health. Telemonitorization. Teleradiology. Example of access to PACS

Planning				
Methodologies / tests	**Competencies**	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Supervised projects	A3 A6 A7 B1 B2 B5 B6 B7 B8 C1 C2 C3 C6 C8	5	10	15
Objective test	A3 A6 A7 B1 B2 B5 B6 B7 C1 C2 C6 C8	5	10	15
ICT practicals	A3 A6 A7 B1 B2 B5 B6 B7 B8 C1 C2 C3 C6 C8	15	15	30
Guest lecture / keynote speech	A3 A6 A7 B1 B2 C3 C6 C8	5	5	10
Personalized attention		5	0	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**
Supervised projects	Will carry out diverse practical works to put in practice the theoretical contents exposed in the face-to-face classes.

Objective test	Assesment about theoretical contents. It will be able to be suppressed by the active participation of the students in the works and the ICT exercices.
ICT practicals	Practices to realise during the classes
Guest lecture / keynote speech	Classes of theory that base the practices of the subject

Personalized attention	
Methodologies	**Description**
Supervised projects	The works done in group will require of personalized follow-up before his public exhibition

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Supervised projects	A3 A6 A7 B1 B2 B5 B6 B7 B8 C1 C2 C3 C6 C8	Works done by groups for the application of the theoretical contents	60
Objective test	A3 A6 A7 B1 B2 B5 B6 B7 C1 C2 C6 C8	Assesment that will be able to be substituted by an active participation during the practices and the supervised work	40

Assessment comments
It is necessary to obtain a minimum assessment of 50% in each block. The objective test (exam) could be changed by class projects

Sources of information	
Basic	- Lazakidou, Athina A. et al (2009). Handbook of research on distributed medical informatics and e-health . Hershey, PA : Medical Information Science Reference - Society of Participatory Medicine (2017). Society of Participatory Medicine. Web: https://participatorymedicine.org/ - NEMA: National Electrical Manufacturers Association (2017). DICOM. Digital Imaging and Communications in Medicine. Web: http://dicom.nema.org/ - deBronkart, Dave (2011). Libro Blanco de los e-Pacientes en Español. Disponible en: https://participatorymedicine.org/epatients/2011/11/wp-espanol.html - Fawcett Tom (2015). Mining the Quantified Self: Personal Knowledge Discovery as a Challenge for Data Science . Big Data. January 2016, 3(4): 249-266 - Project-redcap.org. (). Redcap (Research Electronic Data Capture). Vanderbilt University
Complementary	

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.