| Teaching Guide | | | | |
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| Identifying Data | | | | 2020/21 |
| 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 | Hybrid | | | |
| Prerequisites | | | | |
| Department | Enxeñaría Naval e IndustrialFisioterapia, Medicina e Ciencias Biomédicas | | | |
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| Web | moodle.udc.es | | | |
| 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 | | | |
| Contingency plan | 1. Modifications to the contents<br><br>2. Methodologies<br>*Teaching methodologies that are maintained<br><br>*Teaching methodologies that are modified<br><br>3. Mechanisms for personalized attention to students<br><br>4. Modifications in the evaluation<br><br>*Evaluation observations:<br><br>5. Modifications to the bibliography or webgraphy | | | |

| Study programme competences / results | |
|---|---|
| Code | Study programme competences / results |
| 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 |

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| 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 / results | | |
| Know fundaments of the biomechanics | AJ3<br>AJ6<br>AJ7 | BJ7 | |
| Know the biometric systems, the standard protocols and the communications with this type of devices in the health. | AJ3<br>AJ6<br>AJ7 | BJ8 | CJ1 |
| Know purchase, analyse and interpret pertinent data of sensors | AJ3<br>AJ6<br>AJ7 | BJ8 | CJ1 |
| Know the telemedicina project examples | AJ7 | BJ1<br>BJ2<br>BJ5<br>BJ6<br>BJ7<br>BJ8 | CJ8 |
| Know to do clasification the technological requirements for the deployment of projects of telemedicina | AJ7 | BJ1<br>BJ2<br>BJ5<br>BJ6 | CJ8 |
| Saber identificar os requisitos tecnolóxicos para a implantación de proxectos de telemedicina. | AJ3<br>AJ6<br>AJ7 | | CJ2<br>CJ3<br>CJ6<br>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 / Results | Teaching hours (in-person & virtual) | 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 | |
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| **Methodologies** | **Description** |
| Supervised projects | The works done in group will require of personalized follow-up before his public exhibition |

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

| **Recommendations** |
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| **Subjects that it is recommended to have taken before** |
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| **Subjects that are recommended to be taken simultaneously** |
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| **Subjects that continue the syllabus** |
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| **Other comments** |
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**(*)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.**