| Teaching Guide | | | | | |
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| Identifying Data | | | | | 2017/18 |
| Subject (*) | Physics 2 | | | Code | 610G01004 |
| Study programme | Grao en Química | | | | |
| Descriptors | | | | | |
| Cycle | Period | Year | | Type | Credits |
| Graduate | 2nd four-month period | First | | FB | 6 |
| Language | SpanishGalician | | | | |
| Teaching method | Face-to-face | | | | |
| Prerequisites | | | | | |
| Department | Física e Ciencias da Terra | | | | |
| Coordinador | Rilo Siso, Esther | | E-mail | esther.rilo.siso@udc.es | |
| Lecturers | Rilo Siso, Esther | | E-mail | esther.rilo.siso@udc.es | |
| Web | | | | | |
| General description | Provides knowledge of General Physics required for substantiation of the laws and phenomena of chemistry. This is a subject that is the link between mathematics and chemistry in the sense of giving a formal formulation of scientific observations that establish laws and results without which you can not "close" the scientific method. The laws of physics provide the basic ingredients in which most sciences are supported, as well as instrumentation and measurement techniques used in all scientific fields, and especially in chemistry. Hence its importance and presence in the first year of the degree, since along with Physics 1 provides students with the necessary basis for understanding matters of other modules and courses for the degree. | | | | |

| Study programme competences | |
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| Code | Study programme competences |
| A1 | Ability to use chemistry terminology, nomenclature, conventions and units |
| A3 | Knowledge of characteristics of the different states of matter and theories used to describe them |
| A12 | Ability to relate macroscopic properties of matter to its microscopic structure |
| A14 | Ability to demonstrate knowledge and understanding of concepts, principles and theories in chemistry |
| A15 | Ability to recognise and analyse new problems and develop solution strategies |
| A19 | Ability to follow standard procedures and handle scientific equipment |
| A20 | Ability to interpret data resulting from laboratory observation and measurement |
| A22 | Ability to plan, design and develop projects and experiments |
| A23 | Critical standards of excellence in experimental technique and analysis |
| A24 | Ability to explain chemical processes and phenomena clearly and simply |
| A25 | Ability to recognise and analyse link between chemistry and other disciplines, and presence of chemical processes in everyday life |
| A27 | Ability to teach chemistry and related subjects at different academic levels |
| B1 | Learning to learn |
| B2 | Effective problem solving |
| B3 | Application of logical, critical, creative thinking |
| B4 | Working independently on own initiative |
| B5 | Teamwork and collaboration |
| B7 | Effective workplace communication |
| C1 | Ability to express oneself accurately in the official languages of Galicia (oral and in written) |
| C3 | Ability to use basic information and communications technology (ICT) tools for professional purposes and learning throughout life |
| C6 | Ability to assess critically the knowledge, technology and information available for problem solving |

| Learning outcomes | |
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| Learning outcomes | Study programme competences |

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| Have the minimum theoretical foundations that allow the understanding of the aspects of chemistry related to the electrical and magnetic phenomena and vibratory motion and wave motion. | A1<br>A3<br>A12<br>A14<br>A25 | | C1 |
| Know how to reduce real problems to their most essential aspects and apply them to the field of chemistry | A14<br>A15<br>A27 | B1<br>B2<br>B3<br>B4<br>B5<br>B7 | C1<br>C3<br>C6 |
| Apply the basic laboratory techniques, including the necessary calculations and expressing the results appropriately. Use the material and apply the basic safety standards to work in a laboratory. | A19<br>A20<br>A22<br>A23<br>A24 | B1<br>B2<br>B3<br>B5<br>B7 | C3<br>C6 |

| Contents | |
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| **Topic** | **Sub-topic** |
| 1. Introduction to the study of the physic fields | Fields theory<br>Gravitational field |
| 2. Electricity | Electric field and potential.Capacity<br>Electric current and directs current circuits |
| 3. Magnetism | Magnetic field<br>Magnetic induction<br>Alternating current circuits |
| 4. Oscillations and waves | Oscillations<br>Waves motion |
| 5. Ligth | Properties<br>Interferences and difraction |
| Practical teaching: resistance measurement using a Wheatstone bridge, measurements of voltage, resistance and current in electrical circuits, light diffraction in a thread, simple pendulum, spring constant. | |

| Planning | | | | |
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| **Methodologies / tests** | **Competencies** | **Ordinary class hours** | **Student?s personal work hours** | **Total hours** |
| Guest lecture / keynote speech | A1 A3 A12 A14 A15 A24 A25 A27 B1 B2 B3 C6 | 27 | 67.5 | 94.5 |
| Problem solving | A14 A15 A27 B1 B2 B3 B4 B5 B7 C1 C3 C6 | 9 | 13.5 | 22.5 |
| Laboratory practice | A19 A20 A22 A23 A24 B1 B2 B3 B5 C3 C6 | 15 | 15 | 30 |

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| Mixed objective/subjective test | A1 A3 A12 A14 A15 A24 A25 B2 B3 C6 | 2 | 0 | 2 |
| 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 | |
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| **Methodologies** | **Description** |
| Guest lecture / keynote speech | During these sessions, teacher will explain lessons including different formats (theory, problems and general examples), emphasizing the more important aspects and in the more difficult ones. |
| Problem solving | In this sessions, some problems related to theory contents explained before will be proposed and solved. Students must solve this problems and questions under teacher supervision, individually or in groups. There will be included in these classes activities that imply the participation of the pupils, that will contribute to the continuous assessment. So teacher can observe the difficulties of comprehension that every pupil presents in the resolution of problems. |
| Laboratory practice | Students will perform laboratory practice for the application of knowledge acquired in the keynote sessions and problem solving. With this methodology, they acquire skills needed to work properly in a physics lab, which includes the use of instruments for measurement, data processing and analysis of results of physic properties and magnitudes. A guide for each practice will be given to the student, and they will have all necessary material to mount and do them. |
| Mixed objective/subjective test | It is the test for the evaluation of knowledge, which allows teacher assessing the level of student learning. |

| Personalized attention | |
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| **Methodologies** | **Description** |
| Laboratory practice<br>Problem solving | Students will be attended individually to help them to understand and resolve all problems related with the subject they can have. Moreover, teacher regularly invite students to tutorials with the intention of receiving the necessary guidance. |

| Assessment | | | |
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| **Methodologies** | **Competencies** | **Description** | **Qualification** |
| Laboratory practice | A19 A20 A22 A23 A24 B1 B2 B3 B5 C3 C6 | Attendance to Laboratory practices is MANDATORY, so you cannot pass the course without making them. The highest mark that can be obtained is 1.5 points, and the minimum one required to pass them is 0.7. It will be evaluated on the basis of participation and results delivery of each session, and a test that will take place during the last session. Competences evaluated A19, A20, A22, A23, A24, B1, B3, B5, B7, C3 | 15 |
| Problem solving | A14 A15 A27 B1 B2 B3 B4 B5 B7 C1 C3 C6 | Participation on the resolution of problems and exercises will be evaluated. Teacher may periodically collect exercises or questions proposed during these sessions. Competences evaluated: A1, A3, A12, A15, B1, B2, C1 | 15 |
| Mixed objective/subjective test | A1 A3 A12 A14 A15 A24 A25 B2 B3 C6 | Examination accounts for 70% of the final grade<br>During the term a mid-course assesment exam will be done. Competences evaluated: A1, A3, A12, A14, A15, B2, C1. | 70 |

| Assessment comments |
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| Exam mark should not<br>be less than 5 (up to 10). The final mark must<br>be 5 or higher to pass course, and will be calculated as follows: exam mark*0.7+laboratory+problem<br>solving. If a student, having a final mark higher than 5, fails<br>the minimum mark in any activity, he/she will have a mark of 4.5, i.e., Fail.<br>The evaluation of students in the second opportunity will follow the same criteria as at the first opportunity. The students tested in the second opportunity may only be eligible for honors if the maximum number of these for the corresponding course was not covered at the first opportunity. In the July opportunity will be saved the qualifications of Laboratory and Seminars of problems.<br>Students which due to justified reasons or for being enrolled part-time do<br>not participate in the ongoing evaluation activities volunteers, may do<br>equivalent work , consisting of delivery and explanation during sessions of individualized<br>tutoring bulletins problems and activities proposed in small group sessions.<br>The labs will be held according to the schedule published at the beginning<br>of the semester. The completion is mandatory, so it is necessary to overcome to<br>pass the course.<br>For the rating of No Presented students they must not have participated in<br>activities totaling more than 25% of the final grade . |

| Sources of information | |
|---|---|
| **Basic** | - Tippler & Mosca (). Física para la ciencia y la tecnología . Reverté<br>- Sears, Zemansky, Young & Freedman (). Física Universitaria . Addison Wesley Longman<br>- Fidalgo & Fernández (). Física General. Everest |
| **Complementary** | - Burbano de Ercilla, Burbano García & Gracia Muñoz (). Problemas de Física. Mira<br>- Lea & Burke (). Física, la naturaleza de las cosas. Paraninfo<br>- Angel Franco García (2006). Prácticas de Física. http://www.sc.ehu.es/sbweb/fisica_/ |

| Recommendations |
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| **Subjects that it is recommended to have taken before** |
| Mathematics 1/610G01001<br>Physics 1/610G01003 |
| **Subjects that are recommended to be taken simultaneously** |
| Mathematics 2/610G01002 |
| **Subjects that continue the syllabus** |
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| **Other comments** |
| You need to have knowledge of physics and mathematics from high school. |

**(*)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.**