UNIVERSIDADE DA CORUÑA

| Teaching Guide | | | | |
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| Identifying Data | | | | 2015/16 |
| Subject (*) | Química, Información e Sociedade | | Code | 610G01031 |
| Study programme | Grao en Química | | | |
| Descriptors | | | | |
| Cycle | Period | Year | Type | Credits |
| Graduate | 1st four-month period | Second | Obligatoria | 6 |
| Language | Spanish | | | |
| Teaching method | Face-to-face | | | |
| Prerequisites | | | | |
| Department | Química AnalíticaQuímica Física e Enxeñaría Química 1 | | | |
| Coordinador | Penedo Blanco, Francisco Jose | E-mail | francisco.penedo.blanco@udc.es | |
| Lecturers | Penedo Blanco, Francisco Jose | E-mail | francisco.penedo.blanco@udc.es | |
| Web | | | | |
| General description | In this area the main aspects related to the development of science, sources of scientific information, the relationship between Science, Society and Industry are addressed. The critical and ethical vision of scientific work is also developed. | | | |

| Study programme competences / results | |
|---|---|
| Code | Study programme competences / results |
| A16 | Ability to source, assess and apply technical bibliographical information and data relating to chemistry |
| A18 | Risk management in relation to use of chemical substances and laboratory procedures |
| A21 | Understanding of qualitative and quantitative aspects of chemical problems |
| 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 |
| A28 | Acquisition, assessment and application of basic principles of industrial activity, organisation and task management |
| B2 | Effective problem solving |
| B3 | Application of logical, critical, creative thinking |
| B4 | Working independently on own initiative |
| B5 | Teamwork and collaboration |
| B6 | Ethical, responsible, civic-minded professionalism |
| B7 | Effective workplace communication |
| C3 | Ability to use basic information and communications technology (ICT) tools for professional purposes and learning throughout life |
| C4 | Self-development as an open, educated, critical, engaged, democratic, socially responsible citizen, equipped to analyse reality, diagnose problems, and formulate and implement informed solutions for the common good |
| C5 | Understanding importance of entrepreneurship, and knowledge of resources available for people with business ideas |
| C6 | Ability to assess critically the knowledge, technology and information available for problem solving |
| C7 | Acceptance as a professional and as a citizen of importance of lifelong learning |
| C8 | Understanding role of research, innovation and technology in socio-economic and cultural development |

| Learning outcomes | | | |
|---|---|---|---|
| Learning outcomes | Study programme competences / results | | |
| Know the different mass media for chemical information, throughout history and today. | A16<br>A24<br>A25<br>A28 | B3<br>B7 | C6 |

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|---|---|---|---|
| Know the methods of current and past research, and environmental influences. | A16<br>A23<br>A25 | | C6<br>C7 |
| Learn to use different means of access to information in chemistry, both written and audiovisual and on-line | A16<br>A24<br>A25<br>A28 | B2<br>B4 | C3 |
| Knowing and understanding the different pathways leading to the results in the process of chemical research. Knowing the structure of the various research institutions in today's society | A16<br>A25<br>A28 | B3<br>B5<br>B7 | C8 |
| Know, learn and critically evaluate the research ethics and outcome. Know and judge responsible behavior, good praxis. Observe and correct mistakes and negligence in the daily work | A18<br>A21<br>A23<br>A25<br>A28 | B3<br>B6<br>B7 | C4 |
| Know and understand the relationship between society, science and industry at present and over time, including both the positive momentum as interference. | A24<br>A25<br>A28 | B2<br>B3<br>B6<br>B7 | C4<br>C5<br>C8 |

| Contents | |
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| **Topic** | **Sub-topic** |
| SECTION I: Origin and development of research and theories | Topic 1.- The beginnings of modern Science<br>Topic 2.- The beginnings of modern Chemistry<br>Topic 3.- The Scientific Revolution<br>Topic 4.- The Chemical Revolution<br>Topic 5.- Sciences methods I<br>Topic 6.- Sciences methods II<br>Topic 7.- Sciences methods III<br>Topic 8.- The practice of Science |
| SECTION II: Communication of results | Topic 9.- Sources of information I<br>Topic 10.-Sources of information II<br>Topic 11.- Decisions, dissemination and evaluation of results<br>Topic 12.-Responsible conduct of science<br>Topic 13.- Organization and funding science<br>Topic 14.-Publications and scientific societies<br>Topic 15.- Intellectual property and patents<br>Topic 16.- Popular science |
| SECTION III: Risks and Benefits of Chemistry and Chemical Industry for the Society | Topic 17.- Science and Technology<br>Topic 18.- Chemistry and Industry I<br>Topic 19.- Chemistry and Industry II<br>Topic 20.- Science and Military industry |

| Planning | | | | |
|---|---|---|---|---|
| **Methodologies / tests** | **Competencies / Results** | **Teaching hours (in-person & virtual)** | **Student?s personal work hours** | **Total hours** |
| Guest lecture / keynote speech | A16 A18 A21 A25 B6 C4 C7 C8 | 32 | 32 | 64 |
| Seminar | A16 A23 A24 B2 B3 B4 B7 C3 | 8 | 32 | 40 |

| | | | | |
|---|---|---|---|---|
| Supervised projects | A16 A18 A21 A23 A24 A28 B2 B3 B5 C5 C6 | 8 | 32 | 40 |
| Mixed objective/subjective test | A16 A21 A24 A25 B3 B6 C4 C5 C6 C7 C8 | 3 | 0 | 3 |
| 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 | The teacher presents and explains the fundamental concepts of each topic. Two sessions (1 hour) will be given by library staff of the Faculty of Science to explain the resources and advanced management in the library. |
| Seminar | They are interactive small group sessions in which the teacher provides concrete examples related to the keynote speech. Case studies and discussion will take place between students and handling diverse scientific documentation is encouraged. Also conducted sessions in the computer lab to perform activities of obtaining scientific information using networked databases. |
| Supervised projects | In small group sessions, students will solve individual and group problems posed by the teacher, who will supervise the ongoing work of the student.<br>Problems that relate chemistry to the health, food, environment, etc. will be discussed, encouraging student participation.<br>Students shall make a final report and oral presentation of the developed work, supervised by the teacher. |
| Mixed objective/subjective test | Final exam in which multiple choice questions, short answer and essay are included. It aims to assess the knowledge acquired by the students and their ability to reason, synthesis, writing and critical thinking. |

| Personalized attention | |
|---|---|
| Methodologies | Description |
| Seminar<br>Supervised projects | Throughout all sessions of small group tutoring student is encouraged, helping to raise doubts and to solve them.<br><br>The student may attend individual tutorials in the teacher's office in the appropriate schedule. |

| Assessment | | | |
|---|---|---|---|
| Methodologies | Competencies / Results | Description | **Qualification** |
| Seminar | A16 A23 A24 B2 B3 B4 B7 C3 | Student work in these sessions is evaluated by correcting individual or group tokens, and student participation in debates and issues raised in the classroom.<br>Attendance at all sessions in the computer lab and conducting all activities connected with these practices is mandatory. | 30 |
| Mixed objective/subjective test | A16 A21 A24 A25 B3 B6 C4 C5 C6 C7 C8 | Final exam includes multiple choice questions, short answer and essay. It will be held in the official call in February and in the second chance in July. | 40 |
| Supervised projects | A16 A18 A21 A23 A24 A28 B2 B3 B5 C5 C6 | Evaluation is carried out taking into account the following aspects:<br>- Participation and critical thinking demonstrated by students throughout the debates raised in the classroom.<br>- Capacity for synthesis, reasoning, etc.. reflected in the papers presented orally and / or written. | 30 |

| Assessment comments |
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To pass the course there are two basic requirements:
1) regulating assistance all evaluable activities, the performance of the computer classroom practices (analysis of documentary sources) being mandatory.
2) Achieve a minimum rating of 4 (out of 10) in each of the assessment activities. And to pass the course, the sum of all the evaluated may not be less than 5 (out of 10). No minimum score of that reached in any of the activities and if the average is greater than or equal to 5 (out of 10), the final grade will be suspended (4.0).
The student will obtain the qualification of No Offered when making less than 25% of the scheduled academic activities and not submit to the test mixed (final exam).
In the context of continuous assessment marks obtained in seminars and supervised work may be conserved in July second chance. And the rating of the mixed evidence obtained in July replaced that obtained at the first opportunity in February.
Students evaluated in the second chance may only qualify for honors if the maximum number of licenses for the course were not exhausted at the first opportunity.
In the following academic courses, the teaching-learning process, including assessment, would start which means that the students must complete all scheduled activities for the new course.

| Sources of information | |
|---|---|
| **Basic** | - P. J. Bowler, I.R. Morus (2007). Panorama general de la ciencia moderna. Editorial Crítica, Madrid<br>- Committee on Science, Engineering and Public Policy (EEUU) (1992). Responsible Science: Ensuring the Integrity of the Research Procces, vol.1.. National Academic Press, Washington<br>- Committee on Science, Engineering and Public Policy (EEUU) (1995). On Being a Scientist. National Academy Press<br>- David C. Lindberg. (2002). Los inicios de la ciencia occidental . Editorial Paidós, Barcelona<br>- W.H. Brock (1998). Historia de la química, serie: Ciencia y Tecnología . Editorial Alianza Editorial, 1998, Madrid<br>- A.F. Chalmers (1993). ¿Qué es cosa llamada ciencia?. Siglo XXI, Madrid<br>- Patricia Fara (2009). Breve historia de la ciencia . Editorial Ariel, Barcelona<br>A continuación indícanse algunhas páxinas web coas as que se traballará:- http://www.udc.es/biblioteca- http://echa.europa.eu/-http://ec.europa.eu/index_es.htm |
| **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** |
| - It is recommended to have knowledge of English language because much of the literature is in English. - Clear and orderly writing skills are required, as well as to manage common IT tools (word processing, internet access, etc..). |

**(*)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.**