



| Teaching Guide | | | | |
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| Identifying Data | | | | 2014/15 |
| Subject (*) | Tecnoloxía Química | Code | 610G01041 | |
| Study programme | Grao en Química | | | |
| Descriptors | | | | |
| Cycle | Period | Year | Type | Credits |
| Graduate | 2nd four-month period | Fourth | Optativa | 4.5 |
| Language | SpanishGalician | | | |
| Prerequisites | | | | |
| Department | Química Física e Enxeñaría Química 1 | | | |
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| Web | | | | |
| General description | <p>A materia ?Tecnoloxía Química? é unha optativa que se imparte no 4º curso do Grao en Química. O obxecto fundamental da materia é aportar ao alumno os coñecementos básicos da Enxeñaría Ambiental. Introdúcense diferentes procesos empregados no tratamento e valorización de augas, efluentes gasosos e residuos. Parte dos conceptos teóricos adquiridos poñeranse en práctica no laboratorio, e para que o alumno se familiarie cos equipos e procesos, realizarase unha visita a unha instalación industrial en funcionamento.</p> <p>La materia ?Tecnología Química? es una asignatura optativa que se imparte en el último curso del Grado en Química. El objetivo fundamental es aportar al alumno conocimientos básicos en Ingeniería Ambiental, haciendo una introducción a los distintos procesos empleados en el tratamiento y valorización de aguas, efluentes gaseosos y residuos. Parte de los conceptos teóricos adquiridos se pondrán en práctica en el laboratorio, y para que el alumno se familiarice con los equipos y procesos, se realizará una visita a una instalación a escala industrial.</p> <p>The subject ?Chemical Technology? is an elective course offered in the last year of the degree in Chemistry. The main objective of the course is to provide the students with basic knowledge of environmental engineering. It introduces the most important processes used in water treatment and recovery, waste gas treatment and waste treatment and disposal.</p> | | | |

| Study programme competences | |
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| Code | Study programme competences |
| A7 | Knowledge and application of analytical methods |
| A11 | Knowledge and design of unit operations in chemical engineering |
| A13 | Understanding of chemistry of main biological processes |
| 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 |
| 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 |
| B2 | Effective problem solving |
| B3 | Application of logical, critical, creative thinking |
| B4 | Working independently on own initiative |
| B5 | Teamwork and collaboration |
| C6 | Ability to assess critically the knowledge, technology and information available for problem solving |
| C8 | Understanding role of research, innovation and technology in socio-economic and cultural development |

| Learning outcomes | |
|--|-----------------------------|
| Subject competencies (Learning outcomes) | Study programme competences |
| | |



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|--|---------------------------------------|----------------------|----------|
| To understand the design and operation of chemical and biological reactors. | A11 A13 | | |
| To know the problems of water and air pollution and waste management, and also the technologies available to treat it. | A7 A15 A19 A20 A24 A25 | B2 B3 B4 B5 | C6 C8 |

| Contents | |
|---|---|
| Topic | Sub-topic |
| Chapter 1. Introduction to environmental engineering. | Separation operations. Types of reactors and bioreactors. |
| Chapter 2. Wastewater treatment. | Introduction. Physical treatment processes. Biological treatment processes and technologies. |
| Chapter 3. Treatment of gaseous effluents. | Introduction. Systems for pollution abatement. Treatment technologies to treat contaminated gases and vapors. |
| Chapter 4. Waste valorisation and treatment. | Introduction. Types of Waste. Waste valorization and management. Waste treatment technologies. |

| Planning | | | |
|---------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests | Ordinary class hours | Student?s personal work hours | Total hours |
| Guest lecture / keynote speech | 15 | 30 | 45 |
| Seminar | 7 | 21 | 28 |
| Laboratory practice | 7 | 7 | 14 |
| Field trip | 3 | 3 | 6 |
| Supervised projects | 3 | 13.5 | 16.5 |
| Mixed objective/subjective test | 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 | |
|---------------------------------|--|
| Methodologies | Description |
| Guest lecture / keynote speech | Lectures with the basic content of the subject. |
| Seminar | Practical problems related to the given lectures will be developed. |
| Laboratory practice | Laboratory experiments to apply the acquired theoretical knowledge to practice. Acquisition of the basic skills and procedures related to the subject under study. |
| Field trip | Several training visits to companies that have facilities related to the contents of the subject will be done. Each individual student should prepare a report to be delivered to the teacher. It is a mandatory activity. |
| Supervised projects | Homework to be prepared in a small group of students on a topic related to the subject content. It will have a submission deadline. A written report will be given to the teacher and will be presented orally in class. |
| Mixed objective/subjective test | A final written exam to assess the knowledge acquired by the student will be held at the end of the semester. |

| Personalized attention | |
|------------------------|-------------|
| Methodologies | Description |
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|---------------------|---|
| Supervised projects | The teacher will help the student with the doubts that may arise in performing the activities entrusted to it. It will take place in the timetable of tutorials available to the teacher. |
|---------------------|---|

| Assessment | | |
|---------------------------------|---|---------------|
| Methodologies | Description | Qualification |
| Supervised projects | They quality of the report will be assessed in terms of content and references. Both the submitted written report and oral presentation will contribute to the assessment. The skills assessed are: A24, A25, B3, B4, B5, C6 and C8. | 15 |
| Laboratory practice | A continuous assesment in the experimental work. The report with the results and discussion will be assessed. The skills assessed are: A7, A20, A24, B3, B4 and B5. | 15 |
| Mixed objective/subjective test | Final written exam that will assess the knowledge acquired at the end of the semester. The skills assessed are: A11, A13, A15 and B2. | 65 |
| Field trip | Each student should prepare a report on the facilities visited in the company, and deliver it to the teacher. It is a mandatory activity. The skills assessed are: A24, A25 and C6 | 5 |

| Assessment comments |
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| <p>- Attendance to all the laboratory and field trip activities is mandatory. At least, a grade of 4 (out of 10) in each of these activities is required. If the average is equal to or greater than 5 (out of 10) but this threshold marks was not met, the final mark will be 4.5 (fail).</p> <p>- According to the rules contained in "Probas de Avaliación e Actas de Cualificación de Grao e Mestrado", the so-called "second opportunity of July" is understood as a second opportunity to take the final written exam. The score of this second exam will be considered together with the others obtained during the course, corresponding to the other activities. The percentages of the different contributions will be the same as those of the former "first opportunity".</p> <p>- Students who have not attended the mixed objective test and have not participated in no more than 25% of the scheduled activities will be graded as non attendance.</p> <p>- Mark Honors: priority is given in the first opportunity (June). Honors may only be granted in July if their number have not be exhausted in June final qualifications.</p> <p>- The teaching-learning process, including assessment, refers to an academic course and, therefore, will restart as new with every new academic year, including all activities and assessment procedures scheduled for that course.</p> <p>&nbsp;</p> |

| Sources of information | |
|------------------------|--|
| Basic | |
| 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 |
| Enxeñaría Química/610G01033 |



Other comments

We suggest that students are able to understand English texts.

(*)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.