



| Teaching Guide | | | | | |
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| Identifying Data | | | | 2020/21 | |
| Subject (*) | Master These | | Code | 610500027 | |
| Study programme | Mestrado Universitario en Ciencias, Tecnoloxías e Xestión Ambiental (plan 2012) | | | | |
| Descriptors | | | | | |
| Cycle | Period | Year | Type | Credits | |
| Official Master's Degree | 2nd four-month period | First | Obligatory | 6 | |
| Language | SpanishGalicianEnglish | | | | |
| Teaching method | Face-to-face | | | | |
| Prerequisites | | | | | |
| Department | BioloxíaEnxeñaría CivilEnxeñaría Naval e IndustrialFísica e Ciencias da TerraQuímica | | | | |
| Coordinador | | | E-mail | | |
| Lecturers | Andrade Garda, Jose Manuel Beceiro Gonzalez, Maria Elisa Canle López, Moisés Kennes , Christian Lado Liñares, Marcos Lopez Mahia, Purificacion Moreda Piñeiro, Jorge Muniategui Lorenzo, Soledad Prieto Blanco, Maria del Carmen Rodríguez Roiloa, Sergio Vidal Vázquez, Eva | | E-mail | jose.manuel.andrade@udc.es elisa.beceiro.gonzalez@udc.es moises.canle@udc.es c.kennes@udc.es marcos.lado@udc.es purificacion.lopez.mahia@udc.es jorge.moreda@udc.es soledad.muniategui@udc.es m.c.prieto.blanco@udc.es sergio.roiloa@udc.es eva.vidal.vazquez@udc.es | |
| Web | | | | | |
| General description | Master's Thesis consists on the integral and individual development of a concrete project carried out by each student, under the supervision of one or more supervisors (academic and/or professional staff) chosen from a relationship made public annually. The Master's Thesis can be developed following a Research experience or a Professional experience, according to the choice of the Obligatory Practices orientation. This subject enables the student to integrate the knowledge and skills of specialization acquired during the master's studies, with a critical spirit and autonomy. Likewise, it allows evaluating the student's ability to write, discuss and defend their own work at a specialized level. The specific topics of the Compulsory Practices and the Master's Thesis will be announced at the beginning of the first four-month term of each academic year. Proposals will be function of the students enrolled and the availability of academic/professional supervisors, and will be related to the training content received, as well as the skills, competencies and skills acquired during the master's degree. | | | | |



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| Contingency plan | <p>1. Modifications to the contents No modification: The contents of the Master Thesis will be related to the compulsory external practices carried out by the student.</p> <p>2. Methodologies *Teaching methodologies that are maintained All *Teaching methodologies that are modified Presentation and oral defence: The presentation and defence of the final Master's Thesis before a three-member committee designated for this purpose will be made by videoconference using Microsoft Teams. To ensure that the defence of the master's thesis is a public act, the link to the virtual defence will be provided to those people interested in attending.</p> <p>3. Mechanisms for personalized attention to students Personalized attention to students will be carried out via email, Moodle platform or Teams at the request of the student, and as far as possible, at the time established for the tutorials.</p> <p>4. Modifications in the evaluation It is not necessary to modify the evaluation, only the form of presentation and defence of the Master's Thesis before the committee, which will be by video conference using Microsoft Teams (virtual defense). *Evaluation observations: The same as in the teaching guide</p> <p>5. Modifications to the bibliography or webgraphy No modifications, all necessary materials will be available in Moodle or through access to the electronic resources available in the Library of the UDC.</p> |
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| Code | Study programme competences |
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| | Study programme competences |
| A1 | Coñecemento das realidades interdisciplinares da Química e do Medio Ambiente, dos temas punteiros nestas disciplinas e das perspectivas de futuro. |
| A2 | Deseño de novas especies químicas e materiais con propiedades determinadas. |
| A3 | Capacitar ao alumno para o desenvolvemento dun traballo de investigación nun campo da Química ou do Medio Ambiente, incluíndo os procesos de caracterización de materiais, o estudo das súas propiedades fisicoquímicas e biolóxicas e dos procesos que poden sufrir no medio natural. |
| A4 | Coñecer en profundidade as características e fundamentos de diversos modelos químicos para o estudo de sistemas orgánicos, inorgánicos e biolóxicos, incluídos os materiais con proxección tecnolóxica. |
| A5 | Capacitación para o deseño de vías de síntese e retrosíntese de novos compostos. |
| A6 | Coñecemento do comportamento de diferentes especies químicas e dos procesos aos que poden estar sometidas unha vez liberadas no medio ambiente, incluíndo as súas relacións entre distintos compartimentos ambientais. |
| A7 | Coñecer o marco teórico e as aplicacións da electroquímica e da fotocatálise nos campos da enerxía e o medio ambiente. |
| A8 | Coñecer os fundamentos das interaccións intermoleculares e as súas aplicacións no campo da catálise supramolecular, recoñecemento molecular e biocatálise. |
| A9 | Coñecer algunas aplicacións básicas da química computacional e dos programas de cálculo más utilizados nos ámbitos da química e o medio ambiente. |
| A10 | Relacionar a presenza de especies químicas no medio natural cos conceptos de toxicidade e biodisponibilidade. |
| A11 | Coñecer as distintas técnicas experimentais e computacionais orientadas á caracterización de mecanismos de reacción. |
| A12 | Coñecer as distintas estratexias para o tratamento estadístico de series de datos relacionadas con datos ambientais. |
| A13 | Comprender os procesos de bioacumulación e as técnicas de biomonitorización e biomarcaxe. |
| A14 | Coñecer as principais propiedades fisicoquímicas das augas naturais, relationalas coa súa calidade e entender as principais tecnoloxías de tratamento de augas naturais. |
| A15 | Coñecer os indicadores de calidade do chan e do aire, os procesos de distribución de contaminantes e as tecnoloxías de recuperación e aplicación en cada caso. |
| A16 | Comprender a problemática asociada aos resíduos, os modos de xestionalos e as principais tecnoloxías de tratamiento de resíduos. |



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| A17 | Coñecer a problemática asociada coa enerxía e as súas fontes, as tecnoloxías más empregadas actualmente e as de futuro. |
| A18 | Coñecer as implicacións económicas dos problemas ambientais, os instrumentos de política económica e os principais indicadores ambientais. |
| A19 | Coñecemento e interpretación da lexislación, normativa e procedementos administrativos básicos sobre medios acusos, chans e atmosferas. Comprensión das bases científicas e económicas da sustentabilidade. |
| A20 | Coñecemento dos principais tipos de produtos naturais: enzimas, receptores moleculares, etc. Entender a súa participación en procesos de catálise e autoensamblaxe. |
| A21 | Comprender os fundamentos dos procesos de calidade e o modo de xestionalos. |
| A22 | Dominar as técnicas instrumentais de análises más típicas no ámbito químico profesional. |
| B1 | Posuir e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación. |
| B2 | Que os estudiantes saibam aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornas novas ou pouco coñecidos dentro de contextos más amplos (ou multidisciplinares) relacionados coa súa área de estudo. |
| B3 | Que os estudiantes sexan capaces de integrar coñecementos e enfrentarse á complexidade de formular xuízos a partir dunha información que, sendo incompleta ou limitada, inclúa reflexións sobre as responsabilidades sociais e éticas vinculadas á aplicación dos seus coñecementos e suizos. |
| B4 | Que os estudiantes saibam comunicar as súas conclusións e os coñecementos e razóns últimas que as sustentan a públicos especializados e non especializados dun modo claro e sen ambigüedades. |
| B5 | Que os estudiantes posúan as habilidades de aprendizaxe que lles permitan continuar estudiando dun modo que haberá de ser en gran medida autodirixido ou autónomo. |
| B6 | Ser capaz de analizar datos e situacións, xestionar a información dispoñible e sintetizala, todo iso a un nivel especializado. |
| B7 | Ser capaz de planificar adecuadamente desenvolvimentos experimentais, a un nivel especializado. |
| B8 | Comprender, a un nivel especializado, as consecuencias do comportamento humano na contorna ambiental. |
| C1 | Ser capaz de traballar en equipos, especialmente nos interdisciplinares e internacionais. |
| C2 | Ser capaz de manter un pensamento crítico dentro dun compromiso ético e no marco da cultura da calidade. |
| C3 | Ser capaz de adaptarse a situacións novas, mostrando creatividade, iniciativa, espírito emprendedor e capacidade de liderado. |
| C4 | Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma. |
| C5 | Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro. |
| C6 | Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida. |
| C7 | Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común. |
| C8 | Entender a importancia da cultura emprendedora e coñecer os medios ao alcance das persoas emprendedoras. |
| C9 | Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrentarse. |
| C10 | Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida. |
| C11 | Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade. |

| Learning outcomes | | |
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| Learning outcomes | Study programme competences | |
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| To demonstrate, through the planning, development, elaboration, discussion and defense of the Final Master's Thesis (TFM), that the student acquired the overall competences raised for the Master degree and therefore he/she is able to obtain the Master's degree. | AC1 AC2 AC3 AC4 AC5 AC6 AC7 AC8 AC9 AC10 AC11 AC12 AC13 AC14 AC15 AC16 AC17 AC18 AC19 AC20 AC21 AC22 | BC1 BC2 BC3 BC4 BC5 BC6 BC7 BC8 CC9 CC10 CC11 |
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| Contents | |
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| Topic | Sub-topic |
| Master's Thesis Report | A Master's Thesis report will include the following contents: |
| Orientation on Research or Professional experience | Abstract written in English, Spanish and Galician Introduction and Literature review. State of the art Objectives Material and Methods or Experimental Procedure Results and discussion Conclusions References Assessment of the tasks performed and their relationships with the knowledge and skills acquired in the Master Degree |

| Planning | | | | |
|-------------------------|---|----------------------|-------------------------------|-------------|
| Methodologies / tests | Competencies | Ordinary class hours | Student's personal work hours | Total hours |
| Introductory activities | A1 B1 B3 B6 | 1.5 | 0 | 1.5 |
| Summary | A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22 B1 B2 B3 B4 B5 B6 B7 B8 C2 C3 C1 C7 C8 C9 C10 C11 | 10 | 125 | 135 |
| Oral presentation | C4 C5 C6 | 0.5 | 10 | 10.5 |
| Personalized attention | | 3 | 0 | 3 |



(*)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 |
| Introductory activities | Activities used at beginning of any teaching-learning process to obtain information regarding student competences, interests and/or motivations in relation to specific learning outcomes, which educators may then incorporate in their planning to create more meaningful, effective learning experiences based on students' existing knowledge. Through these teaching activities the student will be oriented on his / her Master's Degree report, will be given guidance on the bibliographic sources to be handled, the most appropriate methodology to be used and the way of planning the work. In addition, the TFM report and the preparation of the presentation and defense of the work before the committee. |
| Summary | The student must present a written report summarizing the work done during the TFM based on the mandatory practices carried out, with research or professional orientation. This report must include at least an introduction, a section including the objectives, the state of the art on the subject, a section on materials and experimental methods or procedures, the results obtained, their discussion and critical analysis, conclusions and bibliography, all of these at a specialized level. In addition, at least a summary of the TFM must be written in Galician, Spanish and English. |
| Oral presentation | Oral defense of the work will be held in a public event and the students will have to defend their work for a maximum of 10 minutes, followed by some questions by the committee members. |

| Personalized attention | |
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| Methodologies | Description |
| Summary | The tutor will dedicate at least the time provided in the UDC POD for student follow-up, including review of the state of the issue, TFM planning, choice of the most suitable methodology for the student's development, supervision of the obtained results, discussion of the results and conclusions, based on the work developed in the compulsory practices carried out by the student. It will also supervise the writing of TFM's report and the preparation of the oral presentation. The student's progress will be assessed and proposals for improvement will be made. |
| Oral presentation | |
| Introductory activities | |

| Assessment | | | |
|-------------------------|---|---|---------------|
| Methodologies | Competencies | Description | Qualification |
| Summary | A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22 B1 B2 B3 B4 B5 B6 B7 B8 C2 C3 C1 C7 C8 C9 C10 C11 | Students are required to write a scientific-technical report based on the work carried out during the period of compulsory practices. The quality of the submitted report will be assessed, paying particular attention to its scientific-technical document structure. | 30 |
| Oral presentation | C4 C5 C6 | Oral defence of the Master's Thesis will be held at a public event where the students will have to defend their work for a maximum time of 10 minutes which is followed by some questions from Examination committee members. | 20 |
| Introductory activities | A1 B1 B3 B6 | Continuous evaluation by the tutor | 50 |

| Assessment comments | |
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| Sources of information | |
|------------------------|--|
| Basic | |
| 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.