Teaching Guide				
Identifying Data				2023/24
Subject (*)	Chemistry Laboratory 1		Code	610G01010
Study programme	Grao en Química			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	Basic training	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Química			
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Web				
General description	In the first course of the current Degree in Chemistry there is a module designated "Chemistry", of basic character inside of the branch of sciences, that studies the fundamental and basic concepts of the chemistry. This module contains 4 subjects: "Chemistry 1", "Chemistry 2", "Chemistry laboratory 1" and "Chemistry 4", being this last the only essentially experimental subject of all the module. In this subject students study the fundamental and basic concepts of the work in a chemistry laboratory.			

Study programme competences / results	
Code	Study programme competences / results
A1	Ability to use chemistry terminology, nomenclature, conventions and units
A7	Knowledge and application of analytical methods
A12	Ability to relate macroscopic properties of matter to its microscopic structure
A16	Ability to source, assess and apply technical bibliographical information and data relating to chemistry
A17	Ability to work safely in a chemistry laboratory (handling of materials, disposal of waste)
A18	Risk management in relation to use of chemical substances and laboratory procedures
A19	Ability to follow standard procedures and handle scientific equipment
A20	Ability to interpret data resulting from laboratory observation and measurement
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
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
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

Learning outcomes

Learning outcomes	Study programme competences / results		
Have sufficient knowledge and experimental skills to use the most common products and materials in a chemical laboratory correctly and safely, being aware of their most important characteristics, including danger and possible risks.	A1 A12 A17 A18 A23	B2 B3 B4 B5 B6 B7	C1 C3
Acquire the ability to use, under safe conditions, experimental techniques in a chemical laboratory, at the same time that skills are acquired to develop other more complex skills.	A7 A12 A16 A17 A18 A19 A20 A21 A23 A25	B2 B3 B4 B5 B6 B7	C1 C3
Learn to make a laboratory notebook.	A1 A12 A16 A20 A21 A24	B2 B3 B4	C1

Contents	
Topic	Sub-topic
Block I. Previous concepts.	Practice 1. Safety in the laboratory. Practice 2. Registration and communication of work in the laboratory Practice 3. Laboratory material. Practice 4. General considerations on laboratory data.
Block II. Basic processes in a chemical laboratory.	Practice 5. Preparation of solutions. Practice 6. Distillation. Practice 7. Separation of a mixture of solids and purification of a solid by crystallization. Practice 8. Preparation of a gas stream. Practice 9. Liquid-liquid extraction. Practice 10. Chromatography.

Planning

Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Introductory activities	A25 B5 B6 B7 C3	2	0	2
Guest lecture / keynote speech	A1 A16 A18 A20 A21 A25 B2 B3 B6 C1 C3	3	0	3
Workshop	A1 A16 A21 A23 A24 A25 B2 B3 B7 C1 C3	10	48	58
Laboratory practice	A1 A7 A12 A16 A17 A18 A19 A20 A21 A23 A24 A25 B2 B3 B4 B5 B6 B7 C1 C3	40	32	72
Short answer questions	A1 A7 A18 A20 A21 A24 B2 B3 C1	2	0	2
Mixed objective/subjective test	A1 A12 A16 A18 A20 A21 A24 A25 B2 B3 C1	3	9	12
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
Introductory activities	Large group activity at the beginning of the course, and where the subject will be presented, commenting, among other aspects, the work methodology and the criteria that will be used in the evaluation of the students.
Guest lecture / keynote speech	Intermediate group classroom sessions in which the contents of Block I that require the active participation of students will be addressed.
Workshop	Intermediate group sessions in which the contents of Block II will be worked on, related to the basic processes in a chemical laboratory. Each practice will be associated with a script with questions of understanding of the theoretical foundations, possible aspects of danger, toxicity and safety measures to consider. These aspects will be worked on in advance by the students and collected in a Previous Work that will be reviewed by the teaching staff in the workshops. At the end of the internship period, an intermediate group review workshop will be held to review and consolidate the concepts worked on during the course.
Laboratory practice	In the laboratory practices, which are taught in an intermediate group, students will work on content from Block I and Block II through practical activities. All the work carried out in the practices will be reflected in the Laboratory Notebook.
Short answer questions	At the end of each practice, short-answer tests, numerical calculations or test-type tests will be carried out, with the aim of verifying that the contents of the practices worked on have been understood and assimilated.
Mixed objective/subjective test	At the end of the internship period, a written exam will be carried out where the knowledge acquired by the students will be evaluated, which will consist of a series of questions of a different nature, which can be medium-long development or short development on specific aspects of an internship. , solving numerical problems or choosing between multiple answers.

Personalized attention	
Methodologies	Description

Laboratory practice Workshop Guest lecture / keynote speech	(Already described for each methodology) To check and guide the work of the students (previous preparation of the practices, preparation of the laboratory notebook, degree of understanding of the work, etc.) several tutoring sessions will be scheduled that will be distributed through the middle of the practice period. The hours of personalized attention will serve to clarify the fundamental concepts of the subject, as well as to resolve individual issues presented in seminars, lectures, and practices. Those students who benefit from the "recognition of part-time dedication and academic exemption from attendance exemption" regime, according to the UDC regulations, will have specific attention that is specified in the following aspects: - These students will have, at their own request and at times to be agreed, tutorial help for the preparation of the contents of the master class prior to the practical laboratory classes, and of the seminar after them (see methodology). - Likewise, and when requested, these students will receive additional tutorial help for orientation and resolution of doubts.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Laboratory practice	A1 A7 A12 A16 A17 A18 A19 A20 A21 A23 A24 A25 B2 B3 B4 B5 B6 B7 C1 C3	During the laboratory practices, a continuous evaluation of the students' work, the degree of understanding of the practices, the attitude and rationalization of the experiments will be carried out. Likewise, both the content and the format of the Laboratory Notebook will be evaluated (see methodologies).	40
Mixed objective/subjective test	A1 A12 A16 A18 A20 A21 A24 A25 B2 B3 C1	Written exam in which the knowledge acquired by the students in all the activities carried out will be assessed.	30
Workshop	A1 A16 A21 A23 A24 A25 B2 B3 B7 C1 C3	Evaluación del Trabajo Previo que el alumnado debe elaborar para cada una de las prácticas del Bloque II, previa a la realización de las mismas. Esta actividad será evaluada mediante la participación activa del alumnado y los conceptos adquiridos en la preparación del Trabajo Previo.	10
Short answer questions	A1 A7 A18 A20 A21 A24 B2 B3 C1	At the end of each practice of Block II, a short answer and/or calculation test related to the contents and relevant aspects of the practice carried out will be carried out to evaluate the rationalization of the theoretical foundations with the experimental one	20

Assessment comments

- This is an experimental subject, so attendance at all scheduled face-to-face activities of the course is mandatory.
- To pass the subject it will be necessary to achieve, added the qualifications of all the continuous evaluation activities (laboratory practices, workshops and short answer tests), a minimum of 5 points (out of 10) and obtain a minimum of 5 points (out of 10). 10) in the mixed test qualification. In the event that the students do not achieve the minimum score in any of them, if the sum of all the evaluable activities is greater than or equal to 5 points, the subject will appear as failed (4.5 out of 10 points).
- In the case of not passing the subject at the first opportunity:
1) The qualification of the workshops and short answer tests will be preserved in the second opportunity in July.
2) The qualification of the laboratory practices will be replaced by the one obtained in a practical exam, being necessary to reach a minimum of 5 points (out of 10). Likewise, it will be an essential condition to obtain a minimum score of 5 points (out of 10) in the sum of the scores for the Workshops + Laboratory Practices sections + Short Answer Tests.
3) The score of the mixed test of the second opportunity in July will replace the one obtained in the mixed test of the first opportunity, being again necessary to obtain a minimum of 5 points (out of 10) in the total score of the mixed test to be able to overcome matter.
- To obtain the qualification of not presented, the students may not have participated in more than 25% of the laboratory practices and workshops, nor have they taken the mixed test.
- In accordance with academic regulations, students who are evaluated in the "second opportunity" will only be eligible for honors if the maximum number of these for the course has not been fully covered in the "first opportunity".
- Being an experimental subject, attendance at all activities is mandatory. Therefore, for those students who take advantage of the "recognition of part-time dedication or academic waiver of attendance exemption", we will try to adapt the schedules to their availability as far as possible. The final grade for said students, both for the first and for the second opportunity, will follow the evaluation scheme described above.
- In the case of very exceptional, objectifiable and adequately justified circumstances, the Teacher in Charge could totally or partially exempt any member of the student body from attending the continuous evaluation process. Students in this circumstance must pass a specific exam that leaves no doubt about the achievement of the skills of the subject.
Plagiarism Implications on Grading:
The fraudulent completion of any exercise or test of the student for the evaluation of the subject will be subject to disciplinary responsibilities, as stated in the Regulations for Evaluation, Review and Claim of University Degree and Master's Degree Qualifications (Article 11) and in the Statute of the UDC Student Body (Article 35, point 3): "Failed grade in the call in which the offense is committed: the student will be graded with "Fail" (numerical grade 0) in the corresponding call of the academic year, both the fault occurs both on the first opportunity and on the second. For this, their qualification will be modified in the first opportunity record if necessary".
December advance call:
The weighting in the evaluation of the different teaching activities of the students who participate in the early call in December will be adapted to the new evaluation percentages included in this guide, in case these differ from each other in both academic years.

Sources of information	
Basic	- C.M. Rodríguez Pérez, J.L. Ravelo Socas, J.M. Palazón López (2005). Técnicas de organización y seguridad en el laboratorio. Madrid, Editorial Síntesis - M.J. Insausti, P. Redondo, E. Charro (1999). Manual de Experimentación Básica en Química. Valladolid, Universidad de Valladolid - R. H. Petrucci, W.S.Harwood, F.G. Herring (2003). Química General. Madrid, 8ª Ed., Pearson Educación - Universidade da Coruña (2007). Manual de Seguranza e Saúde no Laboratorio. GUIÓNS DE PRÁCTICAS e todo o material que se porá a disposición do alumnado a través do Campus Virtual da UDC (Moodle) http://www.ub.edu/oblq/Esta páxina Web sobre OPERACIÓNS BÁSICAS DE LABORATORIO, elaborada por profesorado da Universidad de Barcelona, contén información moi completa sobre practicamente todos os aspectos que se van tratar nesta materia. Igualmente, conta co soporte dun banco de imaxes que resulta moi útil como ferramenta de consulta.
Complementary	- J. Martínez Urreaga (2006). Experimentación en Química General. Thomson - C. Fernández (2009). Laboratorio de Química. Generalidades y aspectos básicos.. Universidad de Extremadura - J.R. Dean, A.M. Jones, D. Holmes, R. Reed, J. Weyers, A. Jones (2002). Practical Skills in Chemistry. Edinburgh, Pearson Education

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
General Chemistry 1/610G01007
Subjects that continue the syllabus
General Chemistry 2/610G01008 General Chemistry 3/610G01009
Other comments
In order to successfully pass the subject, it is essential that the student have a series of previous knowledge of chemistry, according to the level required in secondary and high school, such as: nomenclature and chemical formulation, adjustment of chemical reactions and stoichiometric calculations.Gender perspective:- According to the different applicable regulations for university teaching, the gender perspective must be incorporated in this matter (non-sexist language will be used, a bibliography of authors of both sexes will be used, intervention in class of male and female students...).- Work will be done to identify and modify prejudices and sexist attitudes and the environment will be influenced to modify them and promote values of respect and equality.- Situations of discrimination based on gender must be detected and actions and measures to correct them will be proposed. Green Campus Program Faculty of SciencesTo help achieve a sustainable immediate environment and comply with point 6 of the "Environmental Declaration of the Faculty of Sciences (2020)", the documentary work carried out on this matter: a.- They will be requested mostly in virtual format and computer support. b.- If done on paper: - No plastics will be used. - Double-sided printing will be done. - Recycled paper will be used.- Drafts will be avoided.

(*)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.