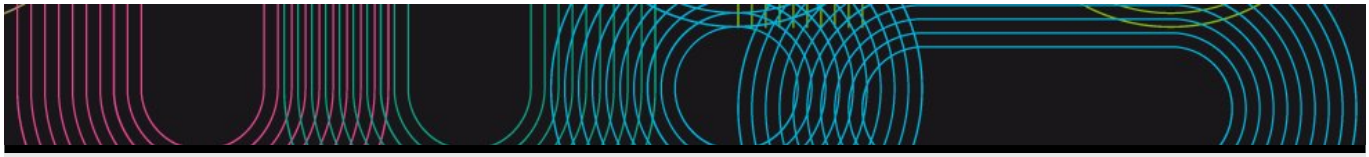

IDENTIFYING DATA				
Chemistry: Chemistry Lab I				
Subject	Chemistry: Chemistry Lab I			
Code	V11G201V01105			
Study programme	Grado en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Galician			
Department				
Coordinator	Besada Pereira, Pedro Valencia Matarranz, Laura María			
Lecturers	Alonso Gómez, José Lorenzo Besada Pereira, Pedro Pérez Lourido, Paulo Antonio Rodríguez Arguelles, María Carmen Teijeira Bautista, Marta Valencia Matarranz, Laura María			
E-mail	qilaura@uvigo.es pbes@uvigo.es			
Web	http://https://moovi.uvigo.gal/course/view.php?id=9853			
General description	The aim of this subject is that the students learn to work in a chemistry laboratory. Safety regulations must be respected and the suitable material used. Students will also study the chemical behaviour of different compounds as well as the synthesis of some of them. Finally, they will learn to interpret the data obtained and to collect the experiences in the laboratory notebook.			

Training and Learning Results	
Code	
A2	Students have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study
B2	Organization and planning capacity
C25	Safely handle chemical substances, considering their physical and chemical properties, evaluating the risks associated with their use and laboratory procedures and including their environmental repercussions
C26	Perform correctly usual procedures in the laboratory, including the use of standard chemical instrumentation for synthetic and analytical work
C27	Demonstrate the ability to observe, monitor and measure chemical processes, by systematically and reliably recording them and presenting reports of the work done
C28	Interpret data derived from laboratory observations and measurements in terms of their meaning and relate them to the appropriate theory
C29	Demonstrate ability for numerical calculations and interpretation of experimental data, with correct use of units and estimation of uncertainty
D2	Capacity for teamwork
D3	Ability to communicate in both oral and written form in Spanish and / or Galician and / or English

Expected results from this subject	Training and Learning Results
Apply the norms of safety in the laboratory.	C25 C26
Use properly the basic material of laboratory, included the one of measurement, and manipulate properly the chemical products and waste.	C25 C26

Employ basic laboratory technics and interpret the data obtained.	A2	B2	C25 C26 C27 C28 C29	D2 D3
Elaborate the laboratory notebook.			C27 C28 C29	D2 D3
Recognise the structure of the main chemical compounds and relate them with their reactivity.	A2			
Apply nomenclature norms for chemical compounds.	A2			D3
Carry out the synthesis of simple chemical compounds.	A2	B2	C25 C26 C27 C28 C29	D2 D3

Contents
Topic
P1. Laboratory safety and laboratory material recognition
P2. Preparation of solutions
P3. Reactions in organic solvents
P4. Separation by crystallization
P5. Distillation of solvents
P6. Liquid-liquid extraction
P7. Separation by liquid-liquid extraction
P8. Molecular models
P9. Separation by thin layer chromatography
P10. Formation of polymers
P11. Reactions in aqueous solutions
P12. Obtaining calcium carbonate
P13. Obtaining double salt
P14. Determination of water content in a salt
P15. Separation of the three components of a mixture
P16. Determining the stoichiometry of a chemical reaction
P17. Obtaining copper(II) oxide
P18. Obtaining a solubility curve

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	0	36	36
Laboratory practical	54	0	54
Problem solving	0	18	18
Laboratory practice	3	18	21
Laboratory practice	3	18	21

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Introductory activities	Each laboratory practice will be associated with a theoretical explanation that facilitates the students` understanding and realisation of it. Students must complete an initial questionnaire related to this experiment previously to the laboratory session, which can be found on Moovi.
Laboratory practical	Experimental practice. The laboratory experiments will be carried out individually, in sessions of 3 hours. The experimental procedure will be available to students on Moovi. It will be necessary the preparation of a laboratory notebook in accordance with the norms that are collected in Moovi.
Problem solving	After completing each practical session, the student will have to solve some questions found on Moovi.

Personalized assistance

Methodologies	**Description**

Laboratory practical	During the practical sessions, the professor will resolve the questions regarding the experiment as well as the preparation of the laboratory notebook.
Introductory activities	The professor will resolve any doubts related to the introductory questions of each practical session prior to carrying them out. Students can consult and/or request tutorials at the following link: http://quimica.uvigo.es/en/teaching/teaching-staff/
Problem solving	The students will be able to consult the doubts related to the realisation of the final questionnaire for each practice. Students can consult and/or request tutorials at the following link: http://quimica.uvigo.es/en/teaching/teaching-staff/

Tests	**Description**
Laboratory practice	In the schedule of tutorials, students will be able to consult with the professor the questions related to the exam. Students can consult and/or request tutorials at the following link: http://quimica.uvigo.es/en/teaching/teaching-staff/
Laboratory practice	In the schedule of tutorials, students will be able to consult with the professor the questions related to the exam. Students can consult and/or request tutorials at the following link: http://quimica.uvigo.es/en/teaching/teaching-staff/

Assessment

	Description	Qualification	Training and Learning Results			
Introductory activities	A questionnaire carried out in Moovi on the material provided for each practice will be evaluated before the beginning of each session	10	A2		C29	D3
Laboratory practical	The realisation of experiments in the laboratory as well as the preparation of the laboratory notebook will be evaluated.	30	A2	B2	C25 C26 C27 C28 C29	D3
Problem solving	The questions that the student will have to do in Moovi, after the completion of each practice, will be evaluated.	10	A2		C29	D3
Laboratory practice	The student will take a practical laboratory exam in the middle of the semester	25		B2	C25 C26 C27 C28 C29	D3
Laboratory practice	The student will take a practical laboratory exam at the end of the semester	25		B2	C25 C26 C27 C28 C29	D3

Other comments on the Evaluation

A minimum grade of 3.5 out of 10 will be required in each two practical exams, as well as in each other two evaluacion sections (introductory activities, laboratory practices and problem solving). If some of the parts do not exceed this minimum, the final grade will be a weighted grade (50%) of two practical laboratory exams.

Attendance at all laboratory sessions is mandatory. The absences must be justified.

Participation in continuous assessment test or activities or attendance at laboratory sessions after the deadline established by the center for the global evaluation modality request, implies on condition of being presented.

If the student waives the continuous evaluation and opts for a global evaluation, he must take a practical test in the laboratory (qualification 100%). In the global evaluation mode, attendance at all laboratory sessions is also mandatory as they are experimental practices.

In the call for June-July, a practical laboratory test will be carried out (qualification100%).

Sources of information

Basic Bibliography

Brown, T.L.; Lemay, H.E.; Bursten, B.E.; Murphy, C.J.; Woodward, P.M.; Stoltzfus, **Chemistry: The Central Science**, 9781292407623, 15, Pearson Education Limited, 2021

Chang, R.; Overby, J., **Química**, 13, McGrawHill, 2020

Martínez Grau, M. A. y Csákÿ, A. G., **Técnicas experimentales en síntesis orgánica**, Sintesis, 2001

Petrucci, R.; Herring, F.; Madura, J.; Bissonnette, C., **General Chemistry: Principles and Modern Applications**, 9781292726137, 12, Pearson Education Limited, 2023

Whitten, K.W, **Química**, 10, Cengage Learning, 2015

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Chemistry: Chemistry Lab II/V11G201V01110

Subjects that are recommended to be taken simultaneously

Chemistry: Chemistry 1/V11G201V01104