

Basic Chemistry I

Code: 105032
ECTS Credits: 8

Degree	Type	Year	Semester
2502444 Chemistry	FB	1	1

Contact

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Use of Languages

Principal working language: catalan (cat)

Some groups entirely in English: No

Some groups entirely in Catalan: Yes

Some groups entirely in Spanish: No

Teachers

Mariona Sodupe Roure

Laura Mallón Pernia

Gregori Ujaque Pérez

Xavier Solans Monfort

Miguel Guerrero Hernandez

Prerequisites

There are no official prerequisites. However, at the beginning of the course, students must

know the fundamental concepts corresponding to the Chemistry courses precipitation and redox). For those students who consider that their level content is not adequate, a propaedeutic course is offered:

<http://www.uab.cat/web/docencia-de-grau/propedeutics-1248648002523>
This intensive course of 15-20 hours is taught during the first weeks of S of the official course, and provides the student with a review of the most i to be able to follow this course properly.

The Academic Management of the Faculty of Sciences
(<http://www.uab.cat/web/la-facultat/gestio-academica-1192574735663.htm>) about this propaedeutic course.

Objectives and Contextualisation

The main objective of the subject is double. The first objective of this introductory course is to homogenize the lev

pre-university studies. Based on this knowledge, the second objective is to provide the student with the necessar

In particular and among other knowledge, the course must provide security to the student in complex stoichiometric calculations and the formulation and nomenclature of the most important chemical compounds; qualitative knowledge of the structure of the atom and the types of bonds present in molecules; knowledge of the most important organic functional groups and the types of isomerism they show.

Competences

- Adapt to new situations.
- Apply knowledge of chemistry to problem solving of a quantitative or qualitative nature in familiar and professional fields.
- Be ethically committed.
- Communicate orally and in writing in ones own language.
- Have numerical calculation skills.
- Learn autonomously.
- Manage the organisation and planning of tasks.
- Manage, analyse and synthesise information.
- Obtain information, including by digital means.
- Propose creative ideas and solutions.
- Reason in a critical manner
- Resolve problems and make decisions.
- Show an understanding of the basic concepts, principles, theories and facts of the different areas of chemistry.
- Show initiative and an enterprising spirit.
- Show motivation for quality.

Learning Outcomes

1. Adapt to new situations.
2. Be ethically committed.
3. Communicate orally and in writing in ones own language.
4. Describe Valence bond and molecular orbital theories.
5. Describe the properties of the different aggregation states of matter, and relate these to chemical bonding and intermolecular forces.
6. Describe the structure of the atom.
7. Determine the electronic configurations of the elements and, from these, the properties of the elements.
8. Determine the hybridisation of atoms in molecules from Valence bond theory and apply molecular orbital theory to diatomic molecules.
9. Distinguish between the different types of chemical bonds and intermolecular interactions.
10. Draw Lewis structures of molecules and describe from these, their main properties.
11. Have numerical calculation skills.
12. Identify the processes of reduction and oxidation in a redox reaction and equalise the corresponding chemical equation.
13. Learn autonomously.
14. Manage the organisation and planning of tasks.
15. Manage, analyse and synthesise information.
16. Name and formulate the organic and inorganic chemical compounds.
17. Obtain information, including by digital means.
18. Propose creative ideas and solutions.

19. Reason in a critical manner
20. Resolve problems and make decisions.
21. Show initiative and an enterprising spirit.
22. Show motivation for quality.
23. Work properly with chemical equations and the main magnitudes of matter.

Content

PART I. Matter, compounds and chemical reactions

Chapter 1. Matter and chemical compounds

Chapter 2. Introduction to chemical reactions

Chapter 3. Gases

PART II. Atomic structure and bonding

Chapter 4. Atomic structure

Chapter 5. The periodic table

Chapter 6. Chemical bonding

Chapter 7. Bonding in solids and liquids

Methodology

The course Fonaments de Química I consists of two types of supervised activities, the theoretical sessions and the problem sessions, which are distributed throughout the course in an alternating way. Theoretical sessions. Through the teacher's expositions the student must

of the subject and complement it with his/her personal study with the help of the materials that the teachers have provided through the Campus Virtual and the recommended bibliography. The theoretical sessions will be open to the participation of the students, who

the questions and clarifications that they deem necessary.

Problem sessions. The objective of this supervised activity is to solve problems that have been previously raised to students through the Campus Virtual and were asked to be resolved

previously, in group or individually. Due to the lower number of students in this activity we aim to stimulate the participation of students in the discussion of alternative problems, taking advantage of it to consolidate the knowledge acquired during the theoretical sessions.

and during their personal study.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Exercice lessons	20	0.8	16, 3, 21, 22, 6, 5, 4, 8, 7, 10, 9, 14, 12, 2, 18, 19, 20, 11, 23
Study	104	4.16	1, 16, 13, 3, 21, 22, 6, 5, 4, 8, 7, 10, 9, 14, 15, 12, 2, 17, 18, 19, 20, 11, 23
Theoretical lessons	50	2	16, 6, 5, 4, 8, 7, 10, 9, 12, 23

Assessment

The final grade of the subject is obtained from the exam marks and the continuous work of the student.

Weighted average of the exams of the subject = $0.30 \times$ mark exam part I

Final mark of the course = $0.80 \times$ weighted average mark of the exams +
To pass the course, the following two conditions must be fulfilled:

1) The final grade of the subject should be ≥ 5.0

2) The exam mark for each part of the course (I and II) must be ≥ 4.0

The marks of the students that have passed the course may be increase distribution between 'aprovats', 'notables', 'excel·lents' and 'MHs' that lect
do not pass the course because the mark of the exam of one of the two parts
overall mathematical average mark they will get a maximum final grade c

Continuous work:

1) Evidences for each student will be collected during the two parts through individually or in groups, self-assessment on the Campus

Virtual, short tests in class, etc.)

2) The mark of the continuous work of the course will be the average of the course without considering the one with the lowest mark.

Exams:

1) An exam will be carried out at the end of each part during the course (exams).

2) At the end of the course, and throughout a single day, exams of the two exams).

To participate in those, students must have been previously evaluated in a set of activities whose weight equals

3) There is the possibility that students who do not need it take second-choice exams for improving the qualification of the course. For students who present them of the exam corresponding to that part of the course will be:

- a) equal to that of the second-choice exam, if the mark of the second-ch

b) equal to the average of the previous course exam exam and the second-choice exam, if the mark of the second-choice exam <

previous course exam mark

4) Use of unauthorized methods during any exam (copy or communication "suspens" in the global mark of the current course.

5) To attend an exam of any part of the course, it is essential to bring an identification document (ID or university card) with a recent and good quality photograph.

6) "No avaluable":

The course will be rated as "No avaluable" if the student has not participated of one of the parts (or both) into which the course is organized.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Continuous work	20	20	0.8	1, 16, 13, 3, 21, 22, 6, 5, 4, 8, 7, 10, 9, 14, 15, 12, 2, 17, 18, 19, 20, 11, 23
Exams	80	6	0.24	1, 16, 13, 3, 21, 22, 6, 5, 4, 8, 7, 10, 9, 14, 15, 12, 2, 17, 18, 19, 20, 11, 23

Bibliography

Textbook

QUIMICA GENERAL: PRINCIPIOS Y APLICACIONES MODERNAS, R. H. Petrucci, F. G. Herring, J.D. Madura i C. Bissonnette , Pearson Educación SA, 10^a edició, Madrid 2011 (ISBN: 978-84-8322-680-3).

http://www.ingebook.com.are.uab.cat/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1262

Other useful books

PRINCIPIOS DE QUÍMICA, P. Atkins i L. Jones, Médica Panamericana, 3^a edició, 2006.

QUÍMICA, R. Chang, McGraw-Hill, 9^a edició, 2010.

PRINCIPIOS DE FÍSICO-QUÍMICA, Ira N. Levine, McGraw-Hill 6^a edició, 2014

INTRODUCCIÓ A LA NOMECLATURA QUÍMICA INORGÀNICA I ORGÀNICA, J. Sales i J. Vilarrasa, Reverté,
5^a edició, 2003.

INTRODUCCIÓN A LA NOMENCLATURA DE LAS SUSTANCIAS QUÍMICAS, W. R. Peterson, Reverté, 2010.