Universitat de Lleida

DEGREE CURRICULUM
CHEMISTRY

Coordination: CASANOVAS SALAS, JORDI

Academic year 2023-24

CHEMISTRY 2023-24

Subject's general information

<table>
<tr><td>Subject name</td><td>CHEMISTRY</td></tr>
<tr><td>Code</td><td>102107</td></tr>
<tr><td>Semester</td><td>1st Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
<table>
<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Bachelor's Degree in Automation and Industrial Electronic Engineering</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
<tr><td>Bachelor's Degree in Energy and Sustainability Engineering</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
<tr><td>Bachelor's Degree in Mechanical Engineering</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
<tr><td>Common branch in industrial engineering programs - Lleida</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
<tr><td>Double bachelor's degree: Degree in Mechanical Engineering and Degree in Energy and Sustainability Engineering</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
<tr><td>Master's Degree in Industrial Engineering</td><td>1</td><td>COMPLEMENTARY TRAINING</td><td>Attendance-based</td></tr>
<tr><td>Programa Acadèmic de Recorregut Successiu - Enginyeries Industrials</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>6</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
<table>
<tr><th>Activity type</th><th>PRAULA</th><th>TEORIA</th></tr>
<tr><td>Number of credits</td><td>3</td><td>3</td></tr>
<tr><td>Number of groups</td><td>3</td><td>3</td></tr>
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<tr><td>Coordination</td><td>CASANOVAS SALAS, JORDI</td></tr>
<tr><td>Department</td><td>ENVIRONMENT AND SOIL SCIENCES AND CHEMISTRY</td></tr>
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CHEMISTRY 2023-24

Important information on data processing	Consult this link for more information.
Language	Catalan

CHEMISTRY 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CASANOVAS SALAS, JORDI	jordi.casanovas@udl.cat	10	Arrange an individual appointment with the teacher
GALCERAN NOGUES, JOSE JUAN	josep.galceran@udl.cat	6	Arrange an individual appointment with the teacher
GIL MESTRES, ADRIA	adria.gil@udl.cat	2	

Subject's extra information

- It is advisable continuous work of students throughout the semester, reading basic references and solving exercises. Visit the Virtual Campus frequently, since there will be uploading useful material: backup of the theoretical presentations, collections of exercises, instructions for the practices ... Take advantage of office hours / tutoring with teachers.
- There are not prerequisites for this course.

Learning objectives

The main objective is to review or acquire the basic knowledge of Chemistry that is necessary to ensure the subsequent follow-up of Materials Science.

Specifically:

- Reviewing basic concepts of chemistry (Chapter 1)
- Understanding the internal structure of atoms, its electronic configuration and the information contained in the Periodic Table (Chapter 2)
- Understanding the concept of chemical bonding, predict the types of bond present in any substance Chapter 3)
- In covalent molecules, knowing how to draw Lewis structures and predict their geometry (Chapter 3)
- Understanding basic concepts of crystallography, evaluate magnitudes that characterize structurally the crystals, known of common crystal structures (Chapter 4)
- Interpreting phase equilibrium diagrams (Chapter 5)

Competences

Degree-specific competences

- **EPS1**. Capacity to solve problems and prepare and defence arguments inside the area of studies.

Degree-transversal competences

- **GEEIA4**. Capacity to understand and apply the principles of basic knowledge of general chemistry, organic and inorganic chemistry and their applications in engineering.

Subject contents

Methodology

- Lectures: introductory concepts and relevant theoretical results illustrated with examples and exercises
- Exercises: We solve exercises of increasing complexity in order to consolidate the concepts developed in the lectures. We propose exercises with real data to show the potential of the tools studied. The exercises are proposed and solved in small groups of students, thus promoting dialogue and participation.
- Other Activities
- In addition, students are responsible for improving their knowledge though autonomous work, on the basis of the material provided or recommended by the teacher.

Development plan

Week	Methodology	Chapter	Classroom hours	autonomous work (hours)
1-4	Lectures and exercises	1	16	24
5-7	Lectures and exercises Laboratory activity	2	12	18
8-10	Lectures and exercises. Laboratory activity	3	12	18
11-13	Lectures and exercises.	4	12	18
14-15	Lectures and exercises. Laboratory activity	5	8	12

Evaluation

Block 1:

- Evaluation Activity 1 (AA1). Written exam, Topics 1-3. Final score percentage: 25%
- Evaluation Activity 2 (AA2). Written exam, Topics 1-5. Final score percentage: 50%

Block 2:

- Laboratory Activities. Final score percentage: 10%

Block 3:

- Multiple choice Tests. Final score percentage: 15%

- Recovery evaluation activity. It allows to recover 75% of the Final score (equivalent to AA1+AA2)

- The possibility of carrying out an Alternative Evaluation is considered. This evaluation would take place on the same day as Evaluation Activity 2. It would consist of 2 parts: written exam similar to AA2 + additional

exam of theoretical concepts

Bibliography

Basic bibliography:

- P.Atkins y L. Jones, *"Principios de química"*, 3ª Ed., Editorial Medica Panamericana, Buenos Aires,2006
- R.Petrucci, W.S. Harwood y F.G. Herring, *"Química general"*, 8ª Ed, Pearson Educación, Madrid, 2003
- K.W. Whitten, R.E. Davis y M.L. Peck, *"Química general"*,5ª Ed., McGraw Hill. Madrid, 1998

Recommended bibliography:

- W.D. Callister y D.G. Rethwishch, "*Ciencia e Ingeniería delos Materiales"*, 2ª Ed., Ed. Reverté S.A., Barcelona, 2016
- J.F. Shackelford, "*Introducción a la Ciencia de Materiales paraIngenieros"*, 7ª Ed., Prentice Hall Iberia, Madrid, 2010
- W.F. Smith y J. Hashemi, "*Fundamentos de la Ciencia e Ingeniería deMateriales"*, 5ª Ed., McGraw-Hill, 2014

Other teaching material can be found in Campus Virtual: http://cv.udl.cat