

SUBJECT TEACHING GUIDE

G389 - Fundamentals of Chemistry

Degree in Mining Resources Engineering First Degree in Mining Resources Engineering

Academic year 2024-2025

| 1. IDENTIFYING DATA | | | | | |
|----------------------------------|--|------------------|--------------------|------------------|------------------------------------|
| Degree | Degree in Mining Resources Engineering First Degree in Mining Resources Engineering | | | Type and Year | Compulsory. Year 1 Core. Year 2 |
| Faculty | School of Mines and Energy Engineering | | | | |
| Discipline | Subject Area: Advanced Basic Training Module: Training in Common with the Mining Branch | | | | |
| Course unit title and code | G389 - Fundamentals of Chemistry | | | | |
| Number of ECTS credits allocated | 6 | Term | Semester based (1) | | |
| Web | | | | | |
| Language of instruction | Spanish | English Friendly | No | Mode of delivery | Face-to-face |

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|------------------|---|--|--|--|--|
| Department | DPTO. INGENIERIAS QUIMICA Y BIOMOLECULAR | | | | |
| Name of lecturer | MARIA MARGALLO BLANCO | | | | |
| E-mail | maria.margallo@unican.es | | | | |
| Office | E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. SEMINARIO S2062 (S2062) | | | | |
| Other lecturers | AURORA GAREA VAZQUEZ | | | | |

3.1 LEARNING OUTCOMES

- Understanding the chemical principles of thermochemistry, spontaneity and chemical equilibrium, and calculations of chemical reactions (stoichiometry, reactants, products, yield). These subjects are oriented to applications in energetic and mining resources.

4. OBJECTIVES

Introducing and motivating to students to the applications of some chemical principles related to the stoichiometry and thermochemistry in the calculations of chemical reactions, oriented to case studies of interest in the fields of energetic and mining resources.

| 6. SUBJECT PROGRAM | |
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| CONTENTS | |
| 1 | PART I. Elements and chemical compounds. |
| 2 | PART II. Liquids, solids, chemical reactions in aqueous media. |
| 3 | PART III. Gases. |
| 4 | PART IV. Thermochemistry. |
| 5 | PART V. Chemistry of transition-metal elements. |
| 6 | PART VI. Organic chemistry. |
| 7 | PART VII. Chemistry and environment. |

| 7. ASSESSMENT METHODS AND CRITERIA | | | | |
|--|--------------|-------------|-----------|--------|
| Description | Type | Final Eval. | Reassessn | % |
| Working case studies and practice evaluation Minimum mark: 5,00 Date: during the semester after each activity is completed, attendance required for the evaluation. Contribution to the overall grading mark: 40%. | Work | No | Yes | 40,00 |
| Written exams of the subject Minimum mark: 5,00 Date: Halfway through the semester and in dates fixed by the School for the ordinary and extraordinary evaluation calls. Contribution to the overall grading mark: 60%. | Written exam | Yes | Yes | 60,00 |
| TOTAL | | | | 100,00 |
| Observations | | | | |
| The recovery will take place in the special period dedicated to the effect (extraordinary evaluation call) and in the same form of the tests of the ordinary evaluation. Those students who have not passed the parts of practices and work, will be able to return the corrected reports before the dates of the examination calls fixed by the School, in order to be evaluated again. | | | | |
| Observations for part-time students | | | | |
| The evaluation of the subject can be adapted to the partial time students upon request. | | | | |

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Teh Fu Yen, Chemistry for Engineers, 2008, Imperial College Press.

James Wei, Product Engineering, 2007, Oxford University Press.

Raymond Chang, Química, 2010, 10ª ed, McGraw Hill.

Jerry Bell, Química: Un proyecto de la American Chemical Society, 2005, Reverté.

Guillermo Calleja Pardo, Introducción a la Ingeniería Química, 1999, Síntesis.

Angel Vian Ortuño, Introducción a la Química Industrial, 1994, Reverté. Impresión digital a partir de 2006.

Theodore L. Brown, H. Eugene Lemay, et al., Química. La Ciencia Central, 2009, 11ª ed, Pearson.

Peter Atkins, Loretta Jones, Principios de Química, 2006, 3ª ed, Panamericana.