

29914 - Chemistry extension II

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	435 - Bachelor's Degree in Chemical Engineering
ECTS	6.0
Year	2
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The learning process that is designed for this subject is based on the following:

- Theory classes as participative and interactive lectures (4.5 ECTS).
- Participative seminars (1.5 ECTS).
- Personalized tutorials.

Students matriculated in the course can log in to contents and materials in the space allocated to the subject in the Moodle platform.

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5.2. Learning tasks

The available program that will assist the student to achieve the expected results involves the following activities... Theory classes as participative and interactive lectures, participative seminar sessions and personalized tutorials. The following contents will be studied.

INORGANIC CHEMISTRY

UNIT I: AN INTRODUCTION TO THE STUDY OF THE INORGANIC CHEMISTRY .

UNIT II: REPRESENTATIVE ELEMENTS.

UNIT III : METALLURGY. INTRODUCTION TO THE STUDY OF THE TRANSITION ELEMENTS .

ORGANIC CHEMISTRY

UNIT IV: INTRODUCTION TO THE STUDY OF ORGANIC CHEMISTRY.

UNIT V : STRUCTURE AND PROPERTIES OF ORGANIC COMPOUNDS.

UNIT VI : REACTIVITY OF ORGANIC COMPOUNDS.

5.3. Syllabus

Programme

INORGANIC CHEMISTRY

UNIT I

AN INTRODUCTION TO THE STUDY OF THE INORGANIC CHEMISTRY:

- HISTORICAL EVOLUTION OF THE INORGANIC CHEMISTRY.
- REACTIONS IN INORGANIC CHEMISTRY.
- AN INTRODUCTION TO THE STUDY OF THE ELEMENTS: Study of the variation of the periodic properties.

UNIT II

REPRESENTATIVE ELEMENTS: Occurrence and abundance, extraction and uses, properties, and principal compounds .

- HYDROGEN.
- THE NOBLE GASES.
- HALOGENS.
- CHALCOGENS.
- THE GROUP 15 ELEMENTS.
- THE GROUP 14 ELEMENTS.
- THE GROUP 13 ELEMENTS.
- GROUP 1: THE ALKALI METALS

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- GROUP 2: THE ALKALINE EARTH ELEMENTS.

UNIT III

METALLURGY. INTRODUCTION TO THE STUDY OF THE TRANSITION ELEMENTS .

- CONCENTRATION OF ORES. TYPES OF METALLURGICAL PROCESSES.
- GENERAL PROPERTIES OF THE TRANSITION ELEMENTS: Applications in the chemical industry.

ORGANIC CHEMISTRY

UNIT IV

INTRODUCTION TO THE STUDY OF ORGANIC CHEMISTRY:

- HISTORICAL EVOLUTION OF CARBON COMPOUNDS CHEMISTRY.
- AN INTRODUCTION TO THE STUDY OF IMPORTANT FAMILIES OF ORGANIC COMPOUNDS.

UNIT V

STRUCTURE AND PROPERTIES OF ORGANIC COMPOUNDS:

- THE STRUCTURE OF IMPORTANT FAMILIES OF ORGANIC COMPOUNDS, ISOMERISM (CONSTITUTIONAL ISOMERS AND STEREOISOMERS), CONFORMATIONAL ANALYSIS.
- PHYSICAL, ACID-BASE AND SPECTROSCOPIC PROPERTIES OF ORGANIC COMPOUNDS.

UNIT VI

REACTIVITY OF ORGANIC COMPOUNDS.

- THE MAIN TYPES OF ORGANIC REACTIONS. SYNTHESIS AND REACTIVITY OF ALIPHATIC AND AROMATIC HYDROCARBONS. SYNTHESIS AND REACTIVITY OF CARBONYL COMPOUNDS.

5.4.Course planning and calendar

Planning and scheduling

Schedules of lectures will coincide with the officially established and will be available at: <https://eina.unizar.es/> .

The calendar will be established in coordination with the rest of matters at beginning of course. The presentation of works will be notified in advance, in the moodle page for the course, on the platform Moodle at the University of Zaragoza, <https://moodle2.unizar.es/add/> .

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UNITS	ACTIVITY	HOURS	GROUPS
An introduction to the study of the Inorganic Chemistry (UNIT I)	Theory	2	1
	Questions	1	1
	Tutorial	1	1
Eepresentative elements (UNIT II)	Theory	18	1
	Questions	2	1
	Tutorial	2	1
Metallurgy. Introduction to the study of the Transition elements (UNIT III)	Theory	2	1
	Questions	1	1
	Tutorial	1	1
Introduction to the study of the Organic Chemistry (UNIT IV)	Theory	2	1
	Questions	1	1
	Tutorial	1	1
Structure and properties of Organic compounds (UNIT V)	Theory	12	1
	Questions	2	1
	Tutorial	2	1
Reactivity of Organic compounds (UNIT VI)	Theory	8	1
	Questions	2	1
	Tutorial	2	1

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ACTIVITY	PRESENCIAL (hours)	HOMEWORK	TOTAL
Theory classes	44	66	110
Seminars	9	8	8
Tutorials	9	8	8
Examinatios	6		6
TOTAL	68	82	150

5.5. Bibliography and recommended resources

- BB** Carey, Francis A. : Química orgánica / Francis A. Carey ; traducción, Jorge Alberto Velázquez Arellano, Virgilio González y Pozo ; revisión técnica, Rosa Zugazagoitia Herranz . - 6ª ed., [reimp.] Madrid : Mac Graw-Hill, D.L. 2011
- BB** Greenwood, Norman Neill. Chemistry of the elements / N. N. Greenwood and A. Earnshaw . 2nd ed., repr. with corr. Amsterdam [etc.] : Elsevier Butterworth Heinemann, 2008
- BB** Housecroft, Catherine E.. Química inorgánica / Catherine E. Housecroft, Alan G. Sharpe ; traducción, Pilar Gil Ruiz ; revisión técnica, José Ignacio Álvarez Galindo ... [et al.] . 2ª ed. Madrid [etc.] : Pearson Prentice Hall, D.L. 2006
- BB** Lee, John David. Concise inorganic chemistry / J. D. Lee . 5th ed., [repr.] Oxford : Blackwell Science, 2008
- BB** Moeller, Therald. Química inorgánica / Therald Moeller ; versión española por Aurelio Beltrán y Daniel Beltrán . Nueva versión puesta al día Barcelona [etc.] : Reverté, D.L.1994
- BB** Nomenclatura de química inorgánica : recomendaciones de la IUPAC de 2005 / producida por la División de Nomenclatura Química y Representación Estructural en colaboración con la División de Química

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- Inorgánica ; preparada para su publicación por Neil G. Connelly ... [et al.] ; versión española elaborada por Miguel A. Ciriano, Pascual Román Polo . Zaragoza : Prensas Universitarias de Zaragoza, D.L. 200
- BB** Organic chemistry / William H. Brown ... [et al.] . - 6th ed. [Melbourne (Australia)] : Brooks/Cole Cengage Learning, cop. 2012
- BB** Rayner-Canham, Geoff. Química inorgánica descriptiva / Geoff Rayner-Canham . Ed. en español México [etc.] : Pearson, cop. 2000
- BB** Rodgers, Glen E.. Química inorgánica : Introducción a la química de coordinación, del estado sólido y descriptiva / Glen E. Rodgers ; traducción M. Victoria Cabañas... [et al.], revisión técnica María Vallet Regi . [1a. ed. en español] Madrid [etc] : McGraw-Hill, D.L. 1995
- BB** Shriver & Atkins Química inorgánica / Peter Atkins ... [et al.] ; traducción técnica, Emilio Sorde Zabay ; revisión técnica, Rodolfo Álvarez Manzo, Oralia Orduño Fragoza. 4ª ed., 1ª ed. en español México D. F. : McGraw-Hill/Interamericana, cop. 2008
- BB** Solomons, T. W. Graham. Química orgánica / T. W. Graham Solomons ; [colaboradoras en la traducción, María Cristina Sanginés Franchini, Mayra Lerma Ortíz . 2ª ed., 3ª reimp. México : Limusa/Wiley, cop. 2004
- BB** Vollhardt, K. Peter C. Química orgánica : estructura y función / K. Peter C. Vollhardt, Neil E. Schore ; traducción y coordinación, David Andreu Martínez . - 5ª ed. Barcelona : Omega, D.L. 2007
- BB** Wade, Leroy Grover, Jr. Organic chemistry / L. G. Wade, Jr. 7th ed. Upper Saddle River : Prentice Hall, cop. 2010