29914 - Chemistry extension II

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	435 - Bachelor's Degree in Chemical Engineering
ECTS	6.0
Course	2
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

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.

5.2.Learning activities

The available program that will assist the student to achieve the expected results involves the following

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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 CHEMYSTRY **.**

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 CHEMYSTRY.

UNIT V : STRUCTURE AND PROPERTIES OF ORGANIC COMPOUNDS.

UNIT VI : REACTIVITY OF ORGANIC COMPOUNDS.

5.3.Program

Programme

INORGANIC CHEMISTRY

UNIT I

AN INTRODUCTION TO THE STUDY OF THE INORGANIC CHEMYSTRY:

- 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: Ocurrence 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
- GROUP 2: THE ALKALINE EARTH ELEMENTS.

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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 CHEMYSTRY:

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

UNIT V

STRUCTURE AND PROPERTIES OF ORGANIC COMPOUNDS:

- THE STRUCTURE OF IMPORTANT FAMILIES OF ORGANIC COMPUNDS, ISOMERISM (CONSTITUCIONAL 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 ALYPHATIC AND AROMATIC HYDROCARBONS. SYNTHESIS AND REACTIVITY OF CARBONILIC COMPUNDS.

5.4.Planning and scheduling

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 maters 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 recomended 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