29604 - Chemistry

Información del Plan Docente

Academic Year	2018/19
Subject	29604 - Chemistry
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	430 - Bachelor's Degree in Electrical Engineering
ECTS	6.0
Year	1
Semester	Half-yearly
Subject Type	Basic Education
Module	

1.General information

1.1.Aims of the course

The subject and its expected results meet the following proposals and goals:

The aim is that the students would acquire a general view of the chemistry and its importance in our society and would be able to apply the theoretical and practical knowledge of chemistry in the development of his/her profession as industrial engineer.

1.2.Context and importance of this course in the degree

This subject is programmed in the first semester of the first academic year of the degree in Electrical Engineering and belongs to the module of basic learning of the degrees in the branch of Industrial Engineering. The basic concepts learnt in this subject will serve as a basis for other subjects of subsequent academic years, such us, Technical thermodynamics, Foundations of transmission of heat, Materials engineering and Environmental engineering.

1.3.Recommendations to take this course

To have acquired the competences own to the previous educational stages

2.Learning goals

2.1.Competences

When passing the subject the student will be more competent to...

Solve problems and take decisions with initiative, creativity and critical reasoning (C4)

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Learn in a continued way and develop strategies for an autonomous learning (C11)

Understand the principles of basic knowledge of general chemistry, organic chemistry and inorganic chemistry and apply them to engineering (C15)

2.2.Learning goals

To pass this subject the student must demonstrate the following results...

He/she handles the basic principles of general chemistry, organic chemistry and inorganic chemistry.

He/she handles the basic laws that regulate the reactions: thermodynamics, kinetics and equilibrium

He/she solves exercises in a complete and reasoned way

He/she suitably applies the theoretical concepts in the laboratory by means of a correct and sure use of the basic material and equipments

He/she uses a rigorous language in chemistry

He/she suitably presents and discusses data and results

2.3.Importance of learning goals

They provide tools for subsequent learnings and for the professional activity of electrical engineers

3.Assessment (1st and 2nd call)

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

The student should show that he/she has reached the expected learning results by means of the following activities of evaluation:

Written exam of nomenclature of Inorganic Chemistry and Organic Chemistry. The mark will range between 0 and 10 points and will suppose the **10 %** of the final mark in the subject.

Written exam comprising definitions, ~~questions of multiple answer~~ multiple-choice questions, and theoretical ~~questions of open answer~~ short answer questions. The mark will range between 0 and 10 points and will suppose the **40 %** of the final mark in the subject.

Written exam to assess the student skills in the ~~resolution of problems~~ problem-solving questions. The mark will range between 0 and 10 points and will suppose the **40 %** of the final mark in the subject.

Realisation of laboratory sessions, delivery of a report for each practice according to the guidelines indicated at the beginning of each session, and realisation of a written exam. The mark in this part will range between 0 and 10 points and will suppose the **10 %** of the final mark in the subject.

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Procedure of assessment of the subject

For the assessment of the subject, a procedure of **GLOBAL evaluation assessment** will be followed.

This will take place in each one of the two announcements of the subject, in the period fixed and programmed by the centre for the realisation of examinations and will consist of several written exams (exam of Nomenclature (10%), exam of Theory (40%) and exam of Problems (40%)).

The mark of laboratory practices (10%) will be obtained during the realisation of the laboratory sessions of practices of laboratory, according to the calendar fixed by the centre for them. The mark of practices will be calculated according to the following equation:

Practices mark = 0,3 x exam mark + 0,7 x laboratory mark

A minimum mark of 3.0 points in the written exam of practices is required to apply the previous equation. If this mark is not reached, it will be considered that the student has failed in the part of practices. If the student has not made the laboratory sessions, in addition to the written exams previously indicated, he/she should do a practices exam in the laboratory, in which it will carry out one experience related with those programmed in the laboratory sessions of laboratory. This exam will suppose the 10% of the final mark.

To pass the subject it will be necessary to have a minimum note of 4.0 points in each one of the exams as well as in the practices, and a minimum average mark of 5.0 points.

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The learning process designed for this course is based on:

The subject is planned to improve the active learning of the students so that the lectures are conceived as general introductions to each chapter, introductions that will be completed afterwards by the rest of proposed activities, including the resolution of questions and problems, the assistance to tutoring sessions tutorials and the realisation of laboratory sessions

4.2.Learning tasks

The program offered to the student in order to help him/her to attain the expected results consist of the following activities...

On site theory and ~~problem solving~~ practice sessions (5,0 credits)

Lectures with the support of TIC's will be mainly used . In the ~~problem solving~~ practice sessions the participation of the student will be encouraged.

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Laboratory sessions (1,0 credits)

The laboratory sessions will be oriented towards the acquisition by the student of skills in handling the material of laboratory as well as to develop his/her deduction. communication, team working and analysis abilities, communicative. Besides, special attention will be paid to the importance of security guidelines in the laboratory and to the correct handling of wastes.

Subject in the platform Moodle 2.0.

Academic ~~tutoring~~ tutorials sessions

Possibility for students of 1st course of the Degree of following the subject "Gestión de la Información para el Grado en Ingeniería Eléctrica" (nivel básico)" managed by the Biblioteca Hypatia.

4.3.Syllabus

The program of theory sessions consists of 10 chapters:

Chapter 1. Periodic table and properties

Chapter 2. Chemical nomenclature

Chapter 3. Chemical bonds

Chapter 4. States of aggregation of the matter

Chapter 5. Chemical reactions and solutions

Chapter 6. Thermochemistry

Chapter 7. Chemical thermodynamics

Chapter 8. Chemical equilibrium

Chapter 9. Chemical kinetics

Chapter 10. Electrochemistry

The program of ~~practices of laboratory~~ laboratory sessions consists of three sessions:

Session 1. Security in the laboratory. Study of solids in function of the type of bond

Session 2. Chemical equilibrium

Session 3. Electrolysis. Energy interconversor

4.4.Course planning and calendar

Schedule of classroom teaching and work presentation

The lectures, ~~problem solving~~ practice sessions and laboratory sessions will be given according to schedule established by the Centre which is published prior to the date of beginning of the course.

Each professor will inform of his/her schedule of tutoring sessions, schedule that also will be available in the web of the centre.

The detailed schedule of the activities to be developed will be established once the University and the Center have approved the academic calendar (which could be consulted in the web of the center)

4.5.Bibliography and recommended resources