

Year : 2018/19

28907 - Chemistry II

Syllabus Information

Academic Year:	2018/19
Subject:	28907 - Chemistry II
Faculty / School:	201 -
Degree:	437 - Degree in Rural and Agri-Food Engineering
ECTS:	6.0
Year:	1
Semester:	Second semester
Subject Type:	Basic Education
Module:	

General information

Aims of the course

Context and importance of this course in the degree

Recommendations to take this course

Learning goals

Competences

Learning goals

Importance of learning goals

Assessment (1st and 2nd call)

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

Methodology, learning tasks, syllabus and resources

Methodological overview

The learning methods and strategies designed for the "Chemistry II" course include lectures (classes regarding the subject theory contents), a teamwork project (this activity involves bibliographic search and group work tutorials), lab sessions and problem-solving classes and seminars.

Learning tasks

1. Lectures (25 h). The lectures are designed to provide the students with basic knowledge about organic chemistry, ion exchange equilibria, soil colloidal systems structure and chemistry, fertilizers and pesticides. The main objectives of each lesson will be highlighted and an interactive environment will be created for the discussion of theory contents.
2. Problem-solving sessions and seminars (10 h). The goal of this activity is the understanding reinforcement of several subject contents and a better knowledge of critical aspects of the course.
3. Lab sessions (15 h). The goal of this activity is to provide the students with basic skills in chemical laboratory work. The practicals contents involve organic chemistry and agricultural chemistry experiments. The students should self-study the protocols and instructions for planned experiments before going to the lab.
4. Project (10 h). This activity will be carried out in groups. The students will undertake a bibliographic search on a topic beyond the subject contents, elaborate a written report and make an oral exposition. The tutor will give the students regular feedback on progress. The project requires the students to construct logical reasoning to communicate efficiently.

Syllabus

Theory

TOPIC 1: FORMULATION AND NOMENCLATURE OF ORGANIC CHEMISTRY

Saturated and unsaturated hydrocarbons. Halides. Alcohols. Ethers. Amines. Nitriles. Nitrocompounds. Aldehydes. Ketones. Carboxylic acids and their salts. Esters. Anhydrides. Acid halides. Amides.

TOPIC 2: INTRODUCTION TO ORGANIC CHEMISTRY

Carbon and its compounds. Sources of organic compounds. Isolation and identification of organic compounds. Classification of organic compounds. Isomers and stereochemistry. Reactions in organic chemistry.

TOPIC 3: ION EXCHANGE EQUILIBRIA

Natural and synthetic materials and the exchange of ions. Ion exchange equilibria. Application of ion-exchange resins. Ion exchange in soils.

TOPIC 4: COLLOIDS

Generalizations. Colloidal systems of the soil.

Topic 5: THE PLANT, THE SOIL AND FERTILIZERS

Types of nutrients.

TOPIC 6: NITROGEN

Nitrogen. Nitrogenous fertilizers.

TOPIC 7: PHOSPHOROUS

Generalizations. Phosphated fertilizers.

- Directory to Comprehension and Application of its Basic Principles. Berlin: Springer [english friendly]
- BC** Kolay, A.K. (2007). Manures and fertilizers. New Delhi: Atlantic Publishers & Distributors [english friendly]
- BC** Laboratorio de química : Generalidades y aspectos básicos / Carmen Fernández González...[et al.] Cáceres : Universidad de Extremadura. Servicio de Publicaciones, 2009
- BC** McMurry, J. (2011). Organic Chemistry. Cengage Learning [english friendly]
- BC** Singh, D.K. (2012). Pesticide Chemistry and Toxicology. New Delhi: Bentham Science Publishers [english friendly]
- BC** Tan, Kim H.. Principles of soil chemistry / Kim H. Tan . 3rd ed., rev. and expanded. New York [etc.] : Marcel Dekker, cop. 1998 [english friendly]

The updated recommended bibliography can be consulted in:
<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=2220>