60642 - Environmental Chemistry

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	540 - Master's in Industrial Chemistry
ECTS	8.0
Course	1
Period	Annual
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

5.2.Learning activities

5.3.Program

Block 1: Introduction to the environment and legal framework.

1. The environment: general concepts.

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2. The environment in the international context. Global environmental problems.

3. Environmental legislation in the European context

4. Environmental legislation in the Spanish context.

Block 2: Chemistry of the atmosphere and air pollution

1. The atmosphere: general concepts, energy balance.

2. Air pollutants, power generation and associated effects

3. Control, reduction and elimination of emissions.

4. Applicable regulations.

Block 3: Chemistry of the hydrosphere and water pollution.

1. Water chemistry. Water cycle. Chemical processes in the aquatic environment.

2. Sources of water pollution

3. Treatment and water purification, according to the origin of the pollutants.

4. Applicable regulations

Block 4: Geochemistry and soil contamination.

1. Soil. Components and properties. Weathering and leaching.

2. Main soil contaminants and their origin.

3. Treatment and recovery of contaminated soils.

4. Applicable regulations.

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Block 5: Waste.

1. Characterization and type of waste.

2. Waste management according to their type.

3. Waste treatment technologies.

4. Applicable regulations.

Block 6: Polluting industrial products. Chemical Risk Analysis.

1. Main families of polluting industrial products: origin and characteristics.

2. Transport and accumulation of anthropogenic substances in the environment.

3. Reactions of anthropogenic substances in the environment.

4. Effects of xenobiotics and analysis of chemical risks.

Block 7: Environmental Analysis.

1. Basic concepts in environmental analysis.

1.1. Organic and inorganic contaminants.

1.2. Analysis in the laboratory and in situ analysis.

1.3. The general problem of sampling.

2. Analysis of water.

2.1. Sampling and water conservation.

2.2. Measurement of water quality: Determination of major components.

2.3. Determination of trace contaminants.

3. Analysis of solid environmental samples: soil, sediment and debris.

3.1. Sampling and storage of solids.

3.2. Previous treatments: extraction, dissolution and cleaning.

3.3. Determination of organic and inorganic analytes.

4. Atmospheric analysis.

4.1. Gases. Sampling, direct analysis and remote analysis.

4.2. Particulate matter. Sampling, extraction / dissolution of samples, direct analysis of solids.

Block 8: Environmental impact assessment.

1. Introduction and concepts of environmental impact.

2. Methodology and characteristics of the environmental impact study.

3. Identification and assessment of impacts.

4. Protective and corrective of an environmental impact measures.

5.4.Planning and scheduling

5.5.Bibliography and recomended resources