27229 - Environmental Physical Chemistry and Photochemistry

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	5.0
Year	4
Semester	Second semester
Subject Type	Optional
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 methodology followed in this course is oriented towards achievement of the learning objectives. It is strongly related to understanding and reasoning processes. A wide range of teaching and learning tasks are implemented, such as theoretical sessions, group work presentation and seminars.

Students are expected to participate actively in the class throughout the semester.

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Classroom materials will be available via Moodle. These include a repository of power point used in class, the course syllabus, as well as other learning resources and online support material.

Further information regarding the course will be provided on the first day of class.

5.2.Learning tasks

The course includes 5 ECTS organized according to:

- Formative activity 1 (3 ECTS): Interactive lecture classes on photochemistry and environmental physical chemistry (see section 5.3 for the topics).

- Formative activity 2 (1 ECTS): Case‐based solving classes and seminars and group work presentations. In this formative activity is essential the participation of the students.

- Formative activity 3 (1 ECTS): laboratory sessions.

5.3.Syllabus

1. The environment: atmosphere and hydrosphere. Basic concepts.

2. Physical Chemistry of the atmosphere.

- Photochemical processes.

- Kinetics of tropospheric reactions.

- Air pollution.

- Primary and secondary pollutants.

- Acid rain.

- Destruction of the ozone layer.

3. Physical Chemistry of the hydrosphere.

- Physical properties of water and aquatic systems.

- Acid-base reactions in water.

- Redox reactions in aquatic systems.

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- Photochemical processes in aquatic systems.

- Contamination of aquatic systems.

4. Fundamental of the physical removal of chemical contaminants.

5.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Facultad de Ciencias " website.

5.5.Bibliography and recommended resources

- **BB** Figueruelo, Juan E.. Química física del ambiente y de los procesos medioambientales / Juan E. Figueruelo, Martín Marino Dávila Barcelona [etc.] : Reverté, cop. 2004
- **BB** Baird, Colin. Química ambiental / Colin baird Barcelona [etc.] : Reverté, D.L. 2001
- **BR** Spiro, Thomas G.. Química medioambiental / Thomas G. Spiro, William M. Stigliani ; traducción, Yolanda Madrid Albarrán . - 2ª ed. Madrid [etc.] : Pearson Prentice-Hall, cop. 2004
- **BR** Manahan, Stanley E.. Fundamentals of environmental chemistry / Stanley E. Manahan . - 2nd ed. Boca Raton [etc.] : Lewis Publishers, cop. 2001
- **BR** Manahan, Stanley E.. Introducción a la química ambiental / S. E. Manahan . - 1ª ed. Barcelona ; México D. F. : Reverté, 2007