

Academic Year/course: 2022/23

## 27229 - Environmental Physical Chemistry and Photochemistry

### Syllabus Information

**Academic Year:** 2022/23

**Subject:** 27229 - Environmental Physical Chemistry and Photochemistry

**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

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. 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.

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.

#### 4.2. 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.

#### 4.3. Syllabus

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

2. Physical Chemistry of the atmosphere.

- Photochemical processes in the atmosphere.
- Kinetics of tropospheric reactions.
- Air pollution. Primary and secondary pollutants.

- Smog. Acid rain. Destruction of the ozone layer.

### 3. Physical Chemistry of the hydrosphere.

- Physicochemical properties of and aquatic systems.
- Acid-base and redox equilibria in natural waters.
- Photochemical processes in aquatic systems.
- Contamination of aquatic systems.

### 4. Physicochemical processes for the removal of chemical contaminants.

#### **4.4. Course planning and calendar**

For further details concerning the timetable, classroom, assesment dates and other information regarding this course, please refer to the "Facultad de Ciencias " website (<https://ciencias.unizar.es/grado-en-quimica-0>).

#### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=27229>