



## Course guide

### 240EQ311 - 240EQ311 - Environmental Chemistry

Last modified: 14/06/2023

**Unit in charge:** Barcelona East School of Engineering  
**Teaching unit:** 713 - EQ - Department of Chemical Engineering.

**Degree:** **Academic year:** 2023 **ECTS Credits:** 4.5  
**Languages:** Catalan, Spanish

#### LECTURER

**Coordinating lecturer:** JOAN DE PABLO RIBAS

**Others:**

#### TEACHING METHODOLOGY

#### LEARNING OBJECTIVES OF THE SUBJECT

Analizing the sources and problems associated with chemical pollution and how to solve them considering sustainability and prevention

Knowing the environmental compartments, their problems and the interactions between them

Understanding the concepts of Green Chemistry and Industrial Ecology and its role in the prevention and treatment

Analytical techniques for environmental monitoring

#### STUDY LOAD

Type	Hours	Percentage
Hours small group	40,5	36.00
Self study	72,0	64.00

**Total learning time:** 112.5 h



## CONTENTS

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### ENVIRONMENTAL CHEMISTRY

**Description:****1- INTRODUCTION**

The five environmental spheres. Definition of Environmental Chemistry. The cycles of matter. Human impact and pollution. Transport and Chemical fate.

**2- ANTHROPOSPHERE. INDUSTRIAL ECOLOGY**

Industrial ecosystems. Environmental impacts of industrial ecology. Lifecycles. Analysis of the life cycle. Green chemistry and industrial ecology. Sustainability.

**3- HYDROSPHERE**

Water properties. Hydrological cycle. Chemical processes in the water. Water Pollution: metals, inorganic, organic pollutants emerging species.

**4- GEOSPHERE**

Nature of the solids in the geosphere. Environmental Geochemistry. Phenomena associated with interfaces Earth - ocean and land - atmosphere. Pollution in the geosphere. The soil and food production: macro and micro nutrients, fertilizers, pesticides. Green chemistry and sustainable agriculture.

**5- ATMOSPHERE**

Chemical and photochemical reactions. Transport and Chemical fate. Air pollutants: particulate inorganic gases, organic compounds. Photochemical smog. Threats to the global atmosphere: global warming, acid rain, destruction of the ozone layer.

**6- ENVIRONMENTAL MONITORING**

Water analysis. Analysis of hazardous waste in solid phase. Atmospheric assessment

**Full-or-part-time:** 110h

Theory classes: 40h

Guided activities: 10h

Self study : 60h

## GRADING SYSTEM

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## RESOURCES

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**Audiovisual material:**

- Transparències QUÍMICA AMBIENTAL. ENVIRONMENTAL CHEMISTRY slides