Environmental Technology

Academic Year: (2019 / 2020) **Review date: 04-05-2020**

Department assigned to the subject: Materials Science and Engineering and Chemical Engineering Department, Thermal

Coordinating teacher: BATUECAS FERNANDEZ, ESPERANZA

Type: Compulsory ECTS Credits : 3.0

Year : 2 Semester : 2

OBJECTIVES

By the end of this subject, students will be able to have:
1. knowledge and understanding of the key aspects and concepts of environmental pollution problem, sustainability and industrial waste treatment
2. awareness of the wider multidisciplinary context of engineering.
3. the ability to apply their knowledge and understanding of environmental technologies and sustainability to identify, formulate and solve engineering problems using established methods;
4. an understanding of different methodologies, and an ability to use them.
5. the ability to select and use appropriate equipment, tools and methods;
6. an understanding of applicable environmental and sustainability techniques and methods, and of their limitations;
7. an awareness of the non-technical implications of engineering practice.
8. demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environmental context, and commit to professional ethics, responsibilities and norms of engineering practice;

DESCRIPTION OF CONTENTS: PROGRAMME

The bilingual course addresses urban and industrial wastes, including the main pollutants appearing in air and wastewater systems. Several aspects such as pollutant origin (sources and formation mechanisms), dispersion processes, environmental and health impact, and risk assessment are covered. Special attention is given on green engineering and its close relation to sustainable development.
The program is divided into the following blocks:
I. General concepts about environment, sustainability, pollution and effluent treatment, and green chemistry.
II. Air pollution, its sources, analysis, treatment, transport and dispersion pollutants atmospheric, impact on health.
III. Water pollution, sources, analysis and treatment

LEARNING ACTIVITIES AND METHODOLOGY

Learning activities and methodology followed through the bilingual course:

-Lectures covering the main topics described within the course program.
-Problem solving and case study lectures, where some issues are addressed from a practical point of view.
-Readings: Complementary material such as research articles, journal articles and virtual material is provided to the student to help the understanding of the environmental pollution problem.
-Class assignments: within the classes some exercises will be proposed to revise the main topics covered during the session, besides any positive contribution given by the student related to the issues discussed through the classes will be very welcome.
-Workgroup projects where the student will be asked to work on a relevant topic related to wastewater or air pollution, green chemistry, waste management, renewable energies, or other current issues.
-Students will attend a laboratory practical session. The manual will be distributed to all students through Aula Global before the session.
-Two partial exams.
-Final Exam.

ASSESSMENT SYSTEM

Assessment system:
-Three partial exams 40%
Individual exams proposed by the master class and tutorial class teachers. Dates will be notified at least one week before the exam.
-Practical laboratory session 10%
Assessment of the methodology and realization of the laboratory session as well as the written report.
Attendance to practical laboratory session and handing in reports on time are not mandatory to pass the subject.
-Project 10%
-Final Exam 40%
Final exam of the subject. To pass the exam and consider the continuous assessment mark, the mark of the final exam must be above 4 points of 10.
In order to pass the lecture course the total mark must be at least 5

% end-of-term-examination:	40
% of continuous assessment (assigments, laboratory, practicals…):	60

BASIC BIBLIOGRAPHY

- C. Baird, M Cann Environmental Chemistry, Reverté.
- S. E. Manahan Environmental Chemistry, CRC Press.