

Unidade Curricular: Monitoring and Abatement of Atmospheric Pollutants

Área Científica: ENG

Duração: Semestral

Horas de trabalho: 121.5

Horas de contacto: 45

ECTS: 4.5

Docente Responsável: João Fernando Pereira Gomes

Outros Docentes: João Miguel Alves da Silva

Learning outcomes of the curricular unit

This unit aims to provide the students knowledge on the subject of monitoring and abatement of gaseous pollutants in order to contribute to minimize its negative environmental impact. Upon approval on this unit, students will be able to identify atmospheric pollution problems, since the origin until remediation, comprising monitoring and design of abatement systems in order to be able to comply with emission standards and other relevant regulation on air quality.

Syllabus

1. Air pollution problems and contamination of gaseous effluents
2. Fuels and combustion. Combustion systems
3. Relevant legislation and regulations on air quality
4. Monitoring atmospheric pollutants and gaseous effluents
5. Objectives to attain in air pollution abatement
6. Equipment for air pollution abatement
7. Investment options for air pollution abatement
8. Process changes and use of clean technologies versus end-of-pipe treatment systems
9. Case studies

Demonstration of the syllabus coherence with the curricular unit's learning objectives.

Basic competences intended to be provided to the students are directly connected to each learning theme. Those are to be acquired by attending the classes and by attending the short tests and other evaluation activities associated to each learning theme.

Teaching methodologies (including evaluation)

Teaching is performed based on classes and study and research work. Students are expected to be actively involved in searching basic information of the learning themes as well as in solving application exercises. Evaluation in this unit comprises continuous evaluation (30%) and a final written examination (70%). To have approval in the unit one should have a minimum classification of 9.5 values, in a scale of 0 to 20, in the written examination component. The continuous evaluation component comprises 3 short tests during classes and its classification will be obtained as the mean average of the short tests. The written examination component will last 3 hours and comprises all learning themes of this curricular unit.

Demonstration of the coherence between the teaching methodologies and the learning outcomes

Classes are devoted to explanation and debate to the learning themes, and, also, resolution of exercises and case studies. This will allow students to acquire specific knowledge on technologies and equipment to perform monitoring and abatement of air pollution.

Mandatory consultation/existence bibliography:

1. De Nevers, N., "Air Pollution Control Engineering", McGraw Hill International Editions, Singapore, 2000
2. Francis, W., Peters, M., "Fuels and Fuel Technology", Pergamon Press, 2nd Edition, London, 1980
3. Gomes, J., "Poluição Atmosférica: Um manual universitário", Publindústria, 2ª Edição, Porto, 2010
4. Heck, R.M., Farrauto, R.J., Gulati, S.T., "Catalytic Air Pollution Control", 3rd ed., John Wiley & Sons, 2009