

66225 - Purification of Gaseous Effluents

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	531 - Master's in Chemical Engineering
ECTS	3.0
Course	1
Period	Second semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process that has been designed for this course is based on the following: The learning process will take place at several levels: lectures , problem solving (cases) and tutored projects, with an increasing level of participation of students. In the classes of theory it will be developed the theoretical bases that make the basics of the course and there some model problems will be solved. The classes of problems and cases are an effective complement for lectures, allowing to verify the understanding of matter and in turn help to develop in students a more applied viewpoint. Finally, tutored work will complement the above.

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5.2.Learning activities

5.3.Program

The program of the course is as follows:

1. Introduction (1h)

BLOCK 1. SULPHUR EMISSIONS (8 h)

2. Emissions of SO₂ : real context, technologies for the reduction of SO₂ emissions. Sorbent injection in boilers and fluidized beds. Dry and wet Flue Gas desulfurization .

3. Emissions of SH₂ : current context, technologies for the reduction of SH₂ emissions. Gasification processes: reactions, types of gasifiers and SH₂ generation. Gas cleaning Processes: low, medium and high temperature. Integrated Gasification Combined Cycle

2. BLOCK NO_x EMISSIONS (8 h)

4. Current context and Existing Technologies.

5. Strategies for reducing NO_x emissions from stationary sources.

6. Strategies for reducing emissions of NO_x from mobile sources.

BLOCK 3. CO₂ EMISSIONS (7 h)

7. Current Context. Minimization strategies.

8. CO₂ capture: pre-combustion and post-combustion processes.

9. Oxyfuel processes and CLC (chemical looping combustion).

BLOCK 4. VOC EMISSIONS (6 h)

10. Current context and existing technologies.

11. Separation and recovery of VOCs by using membrane technologies.

5.4.Planning and scheduling

Course planning is distributed as follows: Lectures (20 h) . Case and solving problems classes (10 h) . Tutored work group (15h). 1 activity will be proposed at the beginning of the course and it will be supervised by the corresponding teacher. Individual study (15h) . Individual tutoring teacher-student (10 hours) . Evaluation (5h) , it will consist in partial

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controls throughout the course.

The lectures and problem solving classes will be held according to the schedule established by the School of Engineering and Architecture (EINA). In addition, each professor will inform of his hours of tutoring.

5.5. Bibliography and recommended resources

LISTADO DE URLs:

Mejores técnicas disponibles. PTR.
Ministerio de Agricultura, Alimentación y
Medio Ambiente. -
[<http://www.prtr-es.es/documentos/documentos-mejores-tecnicas-disponibles>]
Registro estatal de emisiones y fuentes
contaminantes - [<http://www.prtr-es.es/>]