

COURSE SYLLABUS

1. Identification

Code and title: QUP 178 – Special Topics in Advanced Oxidation Processes Mediated by Solar Radiation

Professors: Sixto Malato (Guest) and Carla Sirtori

Level: Master and Doctorate

Credit hours: 1

Revised: October_2019

2. Summary

Main topics on Advanced Oxidation Processes mediated by Solar radiation, water treatment, coupling technologies and valorization of experimental results in scientific publications.

3. Objective

This course aims to present the most relevant topics of the main Advanced Oxidation Processes mediated by solar energy, emphasizing the possibility of coupling, analytical techniques and valorization of experimental results in scientific publications.

4. Contents

1. Solar technologies. Large European Union research scientific installation: Almeria Solar Platform
2. General introduction to water problems (water scarcity, contaminants and pathogens).
3. Solar UV radiation: basic, measurement and use for photochemical processes.
4. Water contaminants and microcontaminants. analytical techniques
5. Advanced oxidation processes. Fundamentals of heterogeneous photocatalysis. Degradation of contaminants.
6. Fundamentals of homogeneous photocatalysis (photo-Fenton). Degradation of contaminants.
7. Photocatalysis for water disinfection: fundamentals.
8. Solar photocatalytic reactors: technical issues and industrial installations.
9. Photocatalysis for water disinfection: solar reactors, research and applications.
10. Coupling of advanced oxidation processes with aerobic biological treatments. Toxicity and biodegradability assessment.
11. Coupling of advanced oxidation processes with other technologies
12. Valorization of experimental results in scientific publications

5. Assessment

Student assessment will be carried out through a written assignment that will address one of the topics discussed in more detail. The student, who obtains a final grade of A, B or C, awarded as per the list below, will be considered approved:

A: grade equal to or above 9.0

B: grade equal to or above 7.5 and below 9.0

C: grade equal to or above 5.0 and below 7.5

D: grade below 5



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FF: lack of frequency

6. Methodology

Lectures, exercises lists, seminars and examinations.

7. Bibliography

- Sirtori, C.; Lopez, A. M. A.; Rodriguez, S. M. Evaluación Analítica de Procesos de Transformación Biológica, Fotoquímica y Fotocatalítica de Fármacos en Agua. 1ª ed. Madrid: Editorial CIEMAT, 2010. 274p.
- Lopez, A.; Di Laconi, C.; Mascolo, G.; Pollice, A. Innovative and Integrated Technologies for the Treatment of Industrial Wastewater. 1ª ed. Londres: IWA Publishing, 2012, p. 94-112.