UAB
Universitat Autònoma de Barcelona

Cutting-edge Environmental Technologies

Code: 43329
ECTS Credits: 6

2024/2025

Degree	Type	Year
4314579 Biological and Environmental Engineering	OT	1

Contact

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

Any especial requirements

Objectives and Contextualisation

The objective of this module is that the student understands the most innovative technologies for environmental remediation and streams valorization. These technologies that are currently under development at the laboratory or pilot scale will surely be the basis of future environmental engineering and their knowledge will allow simultaneous understanding of the main deficits of current technologies.

Learning Outcomes

1. CA03 (Competence) Propose strategies for energy recovery and/or solid waste.

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3. CA16 (Competence) Plan and assess the different options and feasibility of emerging technologies for the environmental remediation of contaminated sites.
4. KA13 (Knowledge) Differentiate the latest technologies for environmental remediation, comparing them against current technologies.
5. KA14 (Knowledge) Describe emerging processes in the sustainable treatment of sewage.
6. KA15 (Knowledge) Identify the concepts of mycoremediation.
7. SA17 (Skill) Design and optimise pollution remediation processes in natural environments using the knowledge of chemical engineering.
8. SA18 (Skill) Analyse and organise projects related to the recovery of sewage for the production of biofuels and the material recovery of solid waste.
9. SA19 (Skill) Analyse and apply biofilm simulation principles and instruments in environmental remediation processes.

Content

- Nanotechnology. Applications of nanomaterials to environmental remediation. Toxicity of nanomaterials.
- Bioelectrochemical systems for the production of electricity or hydrogen from waste water
- Technologies based on biofilms for the treatment of liquid and gaseous effluents.
- Bioremediation by fungi. Types of fungi. Intracellular and extracellular enzymes. Application in the degradation of pollutants.
- Production of biofuels
- Residual effluents valorisation

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Master classes	36	1.44	KA13, KA14, KA15, SA19, KA13
Study and internalization of concepts	77	3.08	CA03, CA16, SA17, SA18, CA03
Type: Supervised			
Self-taught and collective learning	30	1.2	CA16, SA17, SA18, CA16

Classes will be structured as master classes by different expert teachers in each of the subjects.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes

Works and presentations	58%	4	0.16	CA16, KA13, KA14, SA17
Written exam	42%	3	0.12	CA03, KA15, SA18, SA19

Scheduled evaluation process and activities

The subject is evaluated through the following activities:

- A written exam. 42% of the grade of the subject

- The realization of three different short works based on scientific literature and that will include team work and oral presentations. 58% of the grade of the subject.

Single assessment: There is no single assessment in this subject.

The scheduling of the evaluation activities will be given on the first day of the subject and will be made public through the Virtual Campus.

Recovery process

The recovery of the subject will be done through a written exam of the syllabus not passed in the previous tests or exam.

The student can apply for recovery whenever he has submitted to a set of activities that represent at least two thirds of the total grade of the subject.

Procedure for review of qualifications

For each evaluation activity, a place, date and time of revision in which the student can review the activity with the teacher will be indicated. In this context, claims may be made on the activity grade, which will be evaluated by the faculty responsible for the subject. If the student does not appear in this review, this activity will not be reviewed later.

Ratings

Honor plates. Granting a grade of honor registration is the decision of the faculty responsible for the subject. The regulations of the UAB indicate that MH can only be granted to students who have obtained a final grade equal to or greater than 9.00. You can grant up to 5% of MH of the total number of students enrolled.

A student will be considered not evaluable (NA) if he has not been presented in a set of activities the weight of which equals a minimum of two thirds of the total grade of the subject.

Irregularities by the student, copy and plagiarism

Without prejudice to other disciplinary measures deemed appropriate, the irregularities committed by the student that may lead to a variation of the grade of an evaluation act will be scored with a zero. Therefore, copying, plagiarism, cheating, letting copy, etc. in any of the evaluation activities will involve suspending with a zero. The evaluation activities qualified in this way and by this procedure will not be recoverable. If it is necessary to pass any of these evaluation activities to pass the subject, this subject will be suspended directly, without the opportunity to recover it in the same course.

Bibliography

The bibliography of this module is mainly based on scientific articles recently published at the time of doing the course.

In order to provide the most novel and cutting-edge references, the bibliography will be specified at the beginning of the module and each teacher will provide the references corresponding to their specialty on the virtual campus.

Innovative Wastewater Treatment & Resource Recovery Technologies: Impacts on Energy, Economy and Environment
Editor(s): Juan M. Lema, Sonia Suarez Martinez; Publication Date: 15/06/2017; ISBN13: 9781780407869; eISBN: 9781780407876; iwapublishing.com

Software

MS Office

Language list

Name	Group	Language	Semester	Turn
(TEm) Theory (master)	1	Spanish	second semester	afternoon