Online Course Catalogue

Course Title	Study Field	University
Biological wastewater treatment	**Engineering, manufacturing and construction**	**University of Montpellier**

CHARM priority field

Technology and STEM;

Department

Faculté de Pharmacie

Number of credit points: 1

Study Level:

MA/MSc

Name of instructor(s): **Lesage Geoffroy**

Course code

PAM1EPER

Short description of the course

Present the main concepts associated with the biological treatment processes of domestic wastewater. This teaching makes it possible to include skills related to the treatment of urban wastewater (sanitation) or industrial, in the overall problem of resource management. The approach rests on the joint management of wastewater, by-products as well as reuse concepts, associated with the requirement to reduce energy needs.

Full description of the course

https://www.master-eau.fr/uecontaminantseauetsante/performances-des-traitements-des-eaux-et-contaminants

Learning outcomes

By the conclusion of this unit, you should have the capability to select a biological wastewater treatment process, justify your selection based on various factors such as processing goals, by-product management, economic considerations, technical and regulatory constraints, and to accurately size the treatment system, taking into account factors like efficiency, sludge output, and aeration requirements.

Additional information

Course requirements

1. Fundamental Knowledge of Chemistry

Time zone

CET (Spain, France, Germany,

and Biology: Understanding basic concepts in chemistry and biology to grasp the biochemical processes involved in wastewater treatment. 2. Basics of Environmental Science: A foundational understanding of environmental processes and sustainability issues related to wastewater treatment. 3. Engineering Principles: For those involving design and sizing of treatment processes, basic engineering principles, particularly in civil or environmental engineering, may be required. 4. Mathematics Proficiency: Comfort with mathematics, especially calculus and algebra, to handle the calculations and formulae used in process design and optimization. 5. Previous Coursework: Completion of introductory courses in environmental engineering, hydrology, or fluid mechanics might be needed.

Language of instruction
English

Start date of course:
2024-09-12 00:00:00

End date of course:
12/13/2024

Contact hours per week for the student:
20

Specific regular weekly teaching day/time
monday to friday, from 08.00 am to 6.00 pm (UTC+2)

Netherlands, Hungary, Norway)

Mode of delivery:
hybrid (students of the CHARM partners join online, local students on campus)

Planned educational activities and teaching methods
Lectures, Laboratory Experiments / Virtual Visit, Case Studies/Group Projects

Learning Management System
Google Classroom or Microsoft Teams for Education or Zoom

Assessment methods
written exam

Certification
Transcript of records

Course literature (compulsory or recommended):
Compulsory Literature "Biological Wastewater Treatment" by C.P. Leslie Grady, Jr., Glen T. Daigger, and Nancy G. Love. This book provides an in-depth look at the principles of biological wastewater treatment, including microbiology, biochemistry, and engineering aspects. "Wastewater Engineering: Treatment and Resource Recovery" by Metcalf & Eddy, Inc., George Tchobanoglous, Franklin L. Burton, and H. David Stensel. Renowned for its comprehensive coverage, this textbook is crucial for understanding both the theory and application of wastewater treatment technologies. Recommended Literature "Environmental Biotechnology: Principles and Applications" by Bruce E. Rittmann and Perry L. McCarty. Focuses on the applications of biotechnology in environmental management, including a detailed discussion on microbial communities in wastewater treatment. "Water Quality Engineering: Physical / Chemical Treatment Processes" by Mark M. Benjamin and Desmond F. Lawler. Offers insight into the chemical and

physical treatment processes that complement biological treatments, which is beneficial for integrated wastewater management solutions. "Advanced Biological Treatment Processes for Industrial Wastewaters: Principles and Applications" by Ferhan Cecen and Özgür Aktas. This book provides insights into advanced biological treatment processes, focusing on their application in treating industrial wastewaters. Supporting Materials Journal Articles and Case Studies: Access to current research through academic journals like the Water Environment Federation, Journal of Environmental Engineering, or Water Research can provide students with insights into the latest trends and technological advancements in the field. Online Resources and Databases: Websites like the EPA's or WHO's offer guidelines, case studies, and reports that keep students updated on regulatory and practical aspects of wastewater treatment.

Number of places available for CHARM students
4

Other relevant information

None