

# Treatment and valorization of industrial wastes

---

## Overview

This course deals with the problems associated with the generation of industrial wastes and their impact on the environment and public health. The course presents, analyzes and discusses the available technologies for the management, treatment and valorization of industrial wastes. The course will focus in the minimization of wastes, reuse and recycling of materials, and waste valorization process and technologies. Urban wastes and the facilities for their treatment will also be included in the course. The concept of sustainability and circular economy will be of major interest in the analysis and design of any waste management system.

This course targets undergraduate and graduate students for various engineering disciplines interested in the management and treatment of wastes, as well as professionals, regulators and administrators associated with the waste management. The course will be delivered by experts who have several years of practical and consulting experience as well as experiences on material science, environmental technology and Geoenvironmental applications.

## Course Objectives

The main objectives of the course are as follows:

- (i) Understand the problems associated with the generation of waste and the impact on the environment and public health
- (ii) Analyze the technical solutions available for the management and treatment of wastes
- (iii) Understand the principles of sustainable engineering applied to the management and valorization of wastes
- (iv) Design the waste management systems in a context of sustainability and circular economy

Course participants will learn these topics through lectures and case studies. The assignments will be shared to stimulate research motivation of participants.

|                                |   |
|--------------------------------|---|
| <b>Schedule</b>                | <b>Course: December 14-December 18, 2020.</b><br><b>Number of participants for the course will be limited to fifty.</b>   |
| <b>Syllabus</b>                | Generation of waste. Types and Classification of wastes, Management of wastes, Hazardous waste: Codification and labeling. Recycling of materials, Physicochemical treatment, Industrial Ecology, Life cycle analysis of Industrial wastes, Ecological footprint and carbon footprint, Valorization of the inorganic and fraction.  |
| <b>You Should Attend If...</b> | <ul style="list-style-type: none"><li>• Student students at all levels (B. Tech. / M.Tech. / Ph.D.) or faculty from reputed academic institutions and technical institutions.</li><li>• Executives, engineers and researchers and working professionals from various Public Sector Undertaking (PSU) and private companies operating mines.</li><li>• Officials from regulatory bodies like Housing and Urban bodies, Central and state pollution control board and other R&amp;D laboratories.</li></ul>   |
| <b>Fees</b>                    | The participation fees for taking the course is as follows:<br><b>Participants from abroad : US \$200</b><br><b>Industry/ Research Organizations: INR 10,000</b><br><b>Faculty Members/Researchers from Academic Institutions: INR 5,000</b><br><b>Students from Academic Institutions: INR 2,000</b><br>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr. free internet facility. The participants will be provided with accommodation on payment basis. |

## The Faculty



**Prof. Claudio Cameselle** is an Associate Professor at the University of Vigo, Spain. He has over 25 years of teaching and research experience with focus on (i) treatment and valorization of industrial wastes and (ii) advanced treatment processes for industrial effluents. He has published 2 books, 7 book

chapters, more than 70 journal publications and presented 26 papers in teaching innovation conferences. He is co-author of the book “Sustainable Engineering: Drivers, Metrics, Tools, and Applications”. He prepared a set of teaching videos (12.6 h of recording) for the subject “degradation and reutilization of industrial products”, available at UVigo-TV. His areas of expertise, which includes: engineering solutions for industrial effluents, wastes and recycled materials; and valorization. His research is leading to practical solutions to the real-world problems. He has collaborated in international projects with researchers in USA, Mexico, Colombia, Chile, Denmark, Finland, Portugal, Algeria, Turkey and Korea. He participated in 25 research projects funded by the administration (UE, Spanish gov. and Regional gov.), 7 research contracts with companies, 7 research projects for international cooperation (AECID), and 14 other funding for conference organization, scientific infrastructure and research networks.



**Prof. Sarat Kumar Das**, Department of Civil Engineering, IIT (ISM), Dhanbad has guided 04 Ph.D thesis with few research projects and granted one patent on the subject related to Industrial waste management. He is reviewer of more than 60 International journals and 3 NPTEL courses and two text books. His present research includes

development of sustainable geomaterial from industrial and mining wastes.

## Course Co-ordinator

**Prof. Sarat Kumar Das**

Phone: 0326-2235223

E-mail: saratdas@iitism.ac.in

---

<http://www.gian.iitkgp.ac.in/GREGN>