

e-ITEC Training program
on
Emerging technologies for water/wastewater treatment
Organised by
Department of Hydrology
Indian Institute of Technology Roorkee, India
(28-30 November 2022)

Course outline: The proposed intensive training is intended to provide a platform for thoroughly addressing recent advances and challenges in water treatment technology, from theory to practice, with a special focus on sustainable water treatment in developing and under-developing nations. It is further dedicated to creating a stage for sharing the latest research results and details about the advanced, innovative and eco-friendly technologies necessary for sustaining availability of water resources. Topics to be discussed include, but are not limited to: conventional and advanced membrane-based treatment technologies, and their hybridization along with different pre-treatment configurations for producing energy efficient clean water from waste. Various water treatment and management guidelines including some important national initiatives and international agreements / frameworks would also be discussed.

Programme duration: 3 days (28-30 November 2022)

Justifications/rationale: Water scarcity due to rise in population, industrialization and urbanisation has become a key issue specially in developing and under-developed nations. Discharge of untreated wastewater (municipal and industrial) causes contamination of freshwater resources. In addition, the technological limitations of existing treatment technologies restrict the availability of safe water. In this training course, participants will get exposure to various advance, innovative and eco-friendly technologies for water/wastewater treatment, reuse of water and desalination.

Aims: Understanding about different emerging treatment technologies including desalination and their application to address current and future water scarcity.

Programme Objectives:

1. To understand the limitations of existing technologies for water/wastewater treatment and emerging approaches.
2. To share the details of available innovative eco-friendly approaches and their performance.
3. To share the details of various membrane-based techniques and their feasibility of use in producing potable/treated water.
4. Discuss the economy and energy efficiency related aspects of the discussed approaches for sustainable water management.
5. Share the national/international best practices, challenges and way forward

Expected outcome of the course: Awareness about different technologies and policies/guidelines, encouragement for conducting novel research scalable for industry related applications, Improvement in skills and employability.

Eligibility conditions of the participants: Graduation in Civil/Chemical/Environmental/Water resources/Agricultural engineering or Post-graduation in environmental science with some interest/background in treatment systems.

TIMETABLE

Date	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00
Day-1	Online Registration, Inaugural Function and Course orientation	L1	L2	L3
Day-2	L4	L5	L6	L7
Day-3	L8	L9	Group Discussion	Filling of Online Response Form & Valedictory Function

Lecture No.	Topics
1.	Overview of different water treatment and resource recovery technologies
2.	Bioremediation of contaminated groundwater
3.	Phytoremediation for municipal wastewater treatment
4.	Electrochemical and advanced oxidation processes
5.	Low- and high-pressure membranes in treating industrial wastes: Concepts
6.	Employing pressure-based membranes for treatment of industrial effluents
7.	Emerging membrane technologies for zero liquid discharge and resource recovery
8.	Recent development in nanofibrous membranes for applications in water treatment
9.	Resource Recovery: concepts and applications

Course coordinators:

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