

Course contents

In September 2015, the General Assembly adopted the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). Building on the principle of “leaving no one behind”, the new Agenda emphasizes a holistic approach to achieving sustainable development in all sectors. From a technical point of view, the major emphasis is of CTSE 2020 is to present and discuss the information on both the fundamental and applied research in responsible resource consumption and cleaner waste management – the two key challenges in rapid urbanization and industrialization which have to be deeply investigated under its different profiles.

The content of the workshop includes the following

- Sustainable Development Goals
- Effective Resource Utilization
- Cleaner Water and Wastewater Treatment
- 4Rs in Waste Management
- Opportunities in Achieving Clean Energy
- Policies & Regulations to achieve SDG 2030

Participants

The faculties, research scholars, PG Scholars, Government officials, engineers, and bureaucrats/technicians/participants from Industry

Resource persons

Eminent personalities and experts from various IITs, CSIR labs, and industries.

Schedule of Lectures and Profile of the Speakers

Session	Session 1	Session 2	Session 3	Session 4
Date/Time	9.30 AM-11.00 AM	11.15 AM-12.45 PM	02.00 PM-03.30 PM	3.45 PM-5.15 PM
21.12.2020	Overview of CTSE 2020	Bioprocess intensification for commercialization	e-waste management in India	Hands-on Session Life Cycle Analysis
	Dr. Ambika S, IIT Hyderabad	Dr. Venkata Mohan, Senior Principal Scientist, ICT, Hyderabad	Professor Kurian Joseph, Anna University, Chennai	Dr. Ambika S, IIT Hyderabad
22.12.2020	Pandemic and Sustainability	Soil Conservation and Carbon Sequestration for Sustainable Agriculture	Opportunities and Challenges in Achieving Clean Energy	Hands-on Session Water Foot Print
	Dr. Ambika S, IIT Hyderabad	Dr. Ranjan Bhattacharyya, Principal Scientist, ICAR, New Delhi	Dr. Yogendra Shastri, IIT Bombay	Dr. Ambika S, IIT Hyderabad
23.12.2021	Hands-on Session Sustainability Indicators I	Hands-on Session Sustainability Indicators I	Groundwater status on cities in India	Challenges in conducting ecological and health-risk estimating during water reuse activities
	Dr. Ambika S, IIT Hyderabad	Dr. Ambika S, IIT Hyderabad	Dr. Kasi Viswanathan, IIT Roorke	Dr. Arun Kumar, IIT Delhi
24.12.2021	Hands-on Session Sustainability Indicators II	Hands-on Session Sustainability Indicators II	Solid Waste Management: Barriers and Prospects	Reduce, Reuse, Recycle, and Recovery in Indian waste management industries
	Dr. Ambika S, IIT Hyderabad	Dr. Ambika S, IIT Hyderabad	Professor Aravind Kumar Nema, IIT Delhi	Mr. Shujath, Ramky Group
25.12.2022	Renewable Energy Vs Treatment and Recovery Systems in Environmental Engineering	Laser-Induced graphene for desalination and wastewater treatment	Waste Management in Indian Industries	Future of Cleaner Technologies for Sustainable Environment
	Dr. Ambika S, IIT Hyderabad	Dr. Swatantra, IIT Bombay	Dr. Suneel TS, Tata Innovation	Dr. Ambika S, IIT Hyderabad

Overview of Lectures

Day 1, 21.12.2020

Session 1 (9:30 AM – 11 AM): Overview of CTSE 2020, the technical sessions started with the lecture by Dr. Ambika S, Assistant professor, Department of Civil Engineering IIT Hyderabad. Dr. Ambika explained the technical importance and status of cleaner technologies for sustainable environment 2020 in national and global aspects. Besides, the detailed history, targets, and status of the globe and India to achieve sustainable development goals (SDG) 2035 was deeply discussed.

Session 2 (11.15 AM-12.45 PM): The technical sessions were lectured by Dr. Venkata Mohan, Senior Principal Scientist, IICT, Hyderabad. The session was focused on the bioprocess intensification for commercialization and its benefits. The step by step process of converting technology from lab scale to field scale and then to commercialization were well explained by the speaker.

Session 3 (02.00 PM-0.3.30 PM): The technical sessions were lectured by Professor Kurian Joseph, Anna University, Chennai. A detailed discussion on the classification, status, challenges, and opportunities of e-waste management in India was focused.

Session 4 (3.45 PM-5.15 PM): Hands-on session on life cycle analysis was focused in this session. The session was handled by Dr. Ambika S. The session had the practice on the four steps in life cycle analysis with different applications.

Day 2, 22.12.2020

Session 1(9:30 AM – 11 AM): The session on the Pandemic and Sustainability focused on the effect of the pandemic on sustainability and vice versa. The discussion involved the environment, economy, and social changes during a pandemic in the view of the SDG goals and the ways to overcome the challenges to achieve the goals.

Session 2 (11.15 AM-12.45 PM): This technical session was lectured by Dr. Ranjan Bhattacharyya, Principal Scientist, ICAR, New Delhi. The discussion was on Soil Conservation and Carbon Sequestration for sustainable Agriculture. The speaker shared multiple case studies in the same aspects.

Session 3 (02.00 PM-0.3.30 PM): Opportunities and challenges in achieving clean energy were discussed by Dr. Yogendra Shastri, IIT Bombay. The session starts with the introduction of the SDG goal of clean energy and the discussion continued “how clean is the clean energy”, the current status and technologies claiming to achieve the clean energy.

Session 4 (3.45 PM-5.15 PM): Hands-on practice on water footprint is discussed with the examples of coffee versus tea and rice versus chicken. Also, the detailed step by step analysis of green, blue, and grey water footprint was practiced. The concepts and methodology, implementation, and challenges are taught by Dr. Ambika. The audience showed keen interest in learning the practice session.

Day 3, 23.12.2020

Session 1 and 2 (9:30 AM – 12.45 PM): This practice and technical sessions handled by Dr. Ambika was focused on the Sustainability Indicators I. The discussion on the fundamentals of sustainability, the old versus new indicators was well explained. During the practice, the participants learned how to select the indicators and calculate the sustainability of a product, company, region, and country. Besides, the functions and key factors to be considered in selecting the sustainability indicators were analyzed.

Session 3 (02.00 PM-0.3.30 PM): This technical session was lectured by Dr. Kasi Viswanathan, IIT Roorkee, who discussed the groundwater status in Indian cities. The present and future challenges related to watershed management and groundwater in different cities of India were also included in the talk.

Session 4 (3.45 PM-5.15 PM): Challenges in conducting ecological and health risk estimating during water reuse activities are focused in this session and it is lectured by Dr. Arun Kumar, IIT Delhi. The acute and chronic health risks of applying nanoparticles on water reuse activities and the associated ecological effects were deeply discussed.

Day 4, 24.12.2020

Session 1 (9:30 AM – 12.45 PM): The hands-on session on the Sustainability Indicators II was the continuation of the previous day's session. During this session, the latest indicators, the factors to be considered while choosing the indicators based on the data availability, and the application were deeply practiced by the practiced. The overview and the application of the openLCA and GaBi software were discussed.

Session 3 (02.00 PM-0.3.30 PM): The technical sessions on solid waste management barriers and prospects were lectured by Professor Aravind Kumar Nema, IIT Delhi. The session focused on the practical application of solid waste management especially on the new version of the waste to achieve a sustainable environment in India.

Session 4 (3.45 PM-5.15 PM): The lecture on reducing, reuse, recycle, and recovery in Indian waste management industries was done by Mr. Shujath, Ramky Group. The 4 R concept was well discussed in the industrial level application and related prospects.

Day 5, 21.12.2020

Session 1 (9:30 AM – 11 AM): This technical session on renewable energy versus treatment and recovery systems in Environmental Engineering was handled by Dr. Ambika S. The state of art and applications were well discussed.

Session 2 (11.15 AM-12.45 PM): Laser-Induced graphene for desalination and wastewater treatment was lectured by Dr. Swatantra, IIT Bombay. The research on the topic is well explained and its application for large scale was discussed.

Session 3 (02.00 PM-0.3.30 PM): The technical sessions lectured Dr. Suneel TS, Tata Innovation, and focused on the topic of Waste Management in Indian Industries. The challenges faced by the industry and the ideas to overcome them were also the focused topic of the discussion in this session.

Session 4 (3.45 PM-5.15 PM): This concluding session on Future of Cleaner Technologies for Sustainable Environment was handled by Dr. Ambika S. The future scope, way forward, and the wider application of sustainability in the industry and the domestic circuit was disused.

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