



**ORGANISER:**

Department of Chemical Engineering National Institute Of Technology (NIT) Durgapur West Bengal, India in association with Globus Spirits, Panagarh Unit.



**ABOUT THE DEPARTMENT:**

Department of Chemical Engineering of National Institute of Technology (NIT) Durgapur was established with active support of UNESCO in 1964. Presently there are 17 faculty members in the Department. Department is well-equipped with high-end instrumental research facilities for carrying out qualitative and quantitative experimental studies in the field of waste management & energy utilization.

**Short Term Programme (STP)**

on:

**Waste management, Treatment and Valorization**  
**July 17-21, 2023 (Hybrid mode)**



**COURSE COORDINATORS:**



**Prof. T Mandal**



**Mr. P. K. Tyagi**  
 (President Operations  
 Globus Spirits)



**Prof. G Halder**



**Dr. D. Das**

**PROGRAMME OVERVIEW :**

Developing environmentally feasible methods of waste treatment, utilization is of utmost importance.

The aim of the programme is to train the participants in waste management for societal benefit.. The main objectives are

- Sources of waste generation, treatment & its effect on society.
- Waste management & valorization
- Zero discharge
- Green technology & sustainable development.

**Waste valorization, value recovery** is the process of recycling of waste products or residues to create economically useful materials.

**Registration Link:**

<https://forms.gle/a2inUAF7dGr23aNbA>

**Registration fees:**

- Online students: Rs 1000
- Other participants (Online) : Rs 2000
- Internal participants: Rs 1500
- Students outside NITDGP: Rs 2000
- Faculty: Rs 3000
- Industry personnel: Rs 5000
- Payment in A/c no: 37850318679
- IFSC code: SBIN0002108



***COURSE BROCHURE***

**STP**

**(SHORT TERM PROGRAMME)**

**COURSE 2023**

**ON**

**Waste management, treatment, and Valorization**

**(July 17 – July 21, 2023)**

**ORGANIZING COMMITTEE**

***CHAIRPERSON***

***Prof. Indrajit Basak***

***Director, NIT Durgapur***

***VICE- CHAIRPERSON***

***Dr. Jaya Sikder***

***Head, Chemical Engg Department***

**COURSE COORDINATORS:**

**Coordinator: Prof. Tamal Mandal**

**Joint Co-Ordinator's: Prof. Gopinath Halder**

**Dr. Debayan Das**

**DEPARTMENT OF CHEMICAL ENGINEERING NATIONAL**

**INSTITUTE OF TECHNOLOGY DURGAPUR, MAHATMA**

**GANDHI AVENUE, DURGAPUR, WEST BENGAL, INDIA-**

**713209**

**IN**

**ASSOCIATION WITH**

**Mr. Pankaj Kumar Tyagi**

**President Operations, GLOBUS SPIRITS LTD**

**PANAGARH UNIT**



## **ABOUT STP:**

### **Overview:**

A short term programme (STP) has been organized to encourage young scientists and faculties engagement with the institutes of higher Education in India to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence. To innovate new materials and technology from different waste materials. To (I) gather the best experience of research world into our systems of education, (ii) enable interaction of students and faculty with the best academic and industry experts, (iii) share their experiences and expertise to motivate students for higher educations and research experiences.

### **Objectives:**

The proposed STP is envisaged to achieve the following objectives:

1. Provide opportunity to the faculties from different areas and institutes to learn and share knowledge and teaching skills in cutting edge areas.
3. To provide an opportunity for our students to seek knowledge and experience from reputed scientists and faculties.
4. To create an avenue for possible collaborative research with the international research world.
5. To increase participation and presence of students in the academic Institutes.
6. Opportunity for the students at different Institutes/Universities to interact and learn subjects in niche areas through collaborative

learning process.

7. Provide opportunity for the technical persons from Indian Industry to improve understandings and update their knowledge in relevant areas.

## **ABOUT THE INSTITUTE:**

The National Institute of Technology, Durgapur (formerly Regional Engineering College, Durgapur), was established by an Act of Parliament in 1960 as one of the eight such colleges aimed to function as a pace setter for engineering education in the country and to foster national integration. It is a fully-funded premier Technological Institution of the Government of India and is administered by an autonomous Board of Governors. The Institute is a university which awards B.Tech., M.C.A., M.Sc., M.B.A., MTech. and Ph.D. degrees to students after their successful completion of the specified courses. The Institute imparts education in the disciplines of Chemical Engineering, Civil Engineering, Computer Science and Engineering, Electrical Engineering, Electronics and Communication Engineering, Mechanical Engineering, Metallurgical and Materials Engineering, Information Technology, Biotechnology, Physics, Chemistry, Mathematics, Environmental science, Materials Science and Management Studies. As decided by the Ministry of Human Resource Development, Government of India. In addition to the normal intake, a few seats are reserved for Foreign Students who are nominated by the Ministry of External Affairs, Government of India, and the Indian Council for Cultural Relations, Government of India.

## **ABOUT THE DEPARTMENT:**

The Department of Chemical Engineering of National Institute of Technology, Durgapur, was established with active support of UNESCO. The department was built up by a team of dedicated faculty members with the help of a host of visiting professors deputed by UNESCO to NIT Durgapur. Some of the faculty members were trained abroad under UNESCO

programme, and several equipment and instruments were donated by UNESCO to the department. The B.E. course in Chemical Engineering was started in 1964, and the first batch of students were awarded the degree in 1969. The Post-graduate programme with the specialisation 'Production Fertilisers' was introduced in 1968, along with the doctoral programme in Chemical Engineering. The department has a sanctioned intake of 30 students for the B.E. course per year. For admission to the M. Tech. course, 10 seats are available in regular full-time course with duration of 1.5 years, while 10 seats are reserved for part-time students from industries with a course duration of 3 years. Curriculum and syllabi of the courses offered were continuously updated over the years to keep pace with rapidly changing technological developments. Since 1999 new curricula and syllabi were implemented in the college for undergraduate studies.

### **RESOURCE PERSONS:**

Prof. P. Bhattacharya, Ex Professor Heritage Institute of Technology

Prof. S. Datta, Ex Professor Jadavpur University

Prof. S. Bhattacharya, Ex Director NIT Durgapur & NIT Surathkal

Prof. S. De, IIT Kharagpur

Prof. R. Sen, IIT Kharagpur

Prof. D. Deka, Tezpur University

Prof. S. Kansale, Panjab University

Dr. S. Karmarkar, IIT Madras

Prof. P. Pal (HAG), NIT Durgapur

Prof. T. Mandal, NIT Durgapur

Prof. D.D. Mandal, NIT Durgapur

Prof. B. Bhunia, NIT Agartala

Prof. S. Bajpayee, NIT Jalandhar

Prof. G. Halder, NIT Durgapur

Prof. S. Dutta, NIT Durgapur

Prof. A. Dey (HAG), NIT Durgapur



# **ABOUT THE PROGRAMME:**

## **Overview**

Disposal of residual waste nowadays has been a great problem. Solid waste comprises disposal through unsanitary practices and piling up around cities and different countries because of economic problems, lack of technologies and facilities. So, developing environmentally feasible methods of waste utilization is of utmost importance. Two important issues have been addressed for the present study: waste management and valorization.

**Waste valorization, value recovery** is the process of waste products or residues from an economic process being valorized, by reuse or recycling to create economically useful materials. The term comes from practices in sustainable waste management. The term is usually applied in industrial processes where residue from creating, or processing one good is used as a raw material or creating feedstock for another industrial process.

Biochemical processes have been realized as the ideal option for replacing physicochemical processes in an efficient, eco-friendly, and economical manner. Understanding of the enzymes, their catalysis, and their applications are mandated for the scientists and engineers working in the industry. Today most industries, which were making use of microbial processes, have replaced most of their processes with processes with enzymes and other degradation processes. Different enzymes have been explored for real time applications in various industries such as biofuel, detergent, brewing, culinary, dairy, paper industry, food processing, starch, molecular biology research, as well as biosensor development. Microbial degradation is the use of biodegradation and bioremediation processes for the removal of contaminants.

Biofertilizers are those that produce supplementary substances needed for the growth, development, and productivity of plants. These fertilizers contain live and efficient formulates of bacteria, fungi, or blue-green algae either separately or in combination those can fix atmospheric nitrogen, solubilize phosphorus, and decompose organic matter.

## **OBJECTIVES OF THE PROGRAM, EXPECTATIONS AND STUDENT LEARNING OUTCOMES:**

The primary objectives of the course are to teach the following concepts to participants:

- Fundamentals of Waste management and valorization
- Introduction to Waste: Types, Advantages, and Applications
- Utilization of Waste to Value and its industrial applications.

- Hands-on Experiences on lab scale experiments on waste treatment and management.
- Recognize current trends in different types of waste and its treatment in response to current demands from various sectors of industry.

## **FEES DETAILS:**

Participants from outside: Rs 2000

Industry: Rs 5000

Students/Scholars from NIT: Rs 1500

The above fee includes all instructional materials and computer use for tutorials. Tea & a working lunch will be served. The participants may be provided with budget accommodation on payment basis upon advance request in the university premises subject to availability.

## **ELIGIBILITY:**

- Student students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.
- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.

## **REACHING NIT DURGAPUR:**

The Institute is located about 160 KMs north-west of Kolkata on the Howrah-Delhi Main Railway-Route and overlooking the National Highway No. 2 (the great Grand- Trunk Road) and 8 KMs from Durgapur Railway station via City Centre near Gandhi More.

For more information you may please visit our institute website:

<http://www.nitdgp.ac.in>.

## REGISTRATION PROCESS:

Register at google form link:  
<https://forms.gle/a2inUAf7dGr23aNbA>.

## MODULES:

**Number of participants for the course will be limited to fifty.**

## THE FACULTIES:

**Prof. Pinaki Bhattacharya**- Professor and Head, Department of Chemical Engineering, Heritage Institute of Technology. His expertise includes mathematical models, Kinetics, Thin films, Fermentation, and Process Engineering. He has over 135 publications with 2134 citations.



**Prof. Siddhartha Dutta** - Pro Vice chancellor, Professor, Department of Chemical Engineering Department, and Department of Advanced Studies in Industrial Pollution Control, Jadavpur University. His expertise is mainly on mass transfer and Environment and Pollution Control. He has at least 205 publications.



**Prof. Swapan Bhattacharya**- Professor, Former Director NIT Durgapur. Former Director NIT Surathkal. Former Professor, Department of CSE, Jadavpur University. His expertise mainly focuses on Physical Chemistry. He has 101 publications with above 153 citations.





**Prof. Sirshendu De** – Professor, Department of Chemical Engineering department, Indian Institute of Technology, Kharagpur. His research expertise includes membrane separations, transport processes and flow through micro-channels. He has won almost every award in the field of Chemical Engineering. He was also selected for the Dorr Oliver award of Indian Institute of Chemical Engineers (IICHE) in 2017. His major interest includes the application of mathematical modelling for transport processes.



**Prof. Ramkrishna Sen**- Professor & Former Head, Department of Biotechnology, IIT Kharagpur. Former Chairperson (School of Bioscience), Former Chairman (Central Research Facility). He served as a visiting Professor at Columbia University, New York, USA. His research areas include Biopolymers, Environmental management, Micro-algal biofuels, and waste valorization in biorefinery models. He has guided almost 30 PhD scholars and has 250 publications in reputed journals.



**Prof. Dhanapati Deka**- Professor and Head, Department of Energy, Tezpur University, Assam, India. He is the PI of Biomass Conversion Laboratory, Department of Energy, Tezpur University, Assam. His research areas include biofuel, biomass conversion, and value-added products from biomass. He has around 150 publications.



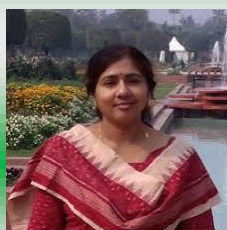
**Prof. Sushil Kansale**- Professor, Dr. S.S. Bhatnagar University Institute of Chemical Engineering and Technology. Also, Former Dean, International Students. His thematic areas of research include Environmental Science and Engineering, Nanotechnology. He has a total of 155 publications and about 7109 citations.



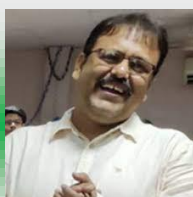
**Prof Parimal Pal-** Professor (HAG), Department of Chemical Engineering, NIT Durgapur. He is Fellow of the Royal Society of Chemistry (London). His thematic areas of research include water treatment, membrane unintegrated hybrid treatment system. He has been recognized as one of the top 2% scientists of the world as per ranking by Stanford University. He has 5734 citations and about 600 publications.



**Prof. Susmita Dutta** – Professor, Department of Chemical Engineering, NIT Durgapur. Her research interests include Biochemical Reaction Engineering, Phycoremediation, Environmental Engineering, Solid Waste Management, and Adsorption. She has several publications in International and National peer reviewed journals. She has over 90 publications with 1391 citations.



**Prof. Tamal Mandal-** Professor of Chemical Engineering Department, NIT Durgapur. He expertise in subjects like Reaction Engineering, Advanced technologies for waste Management, Process development. His research focusses on Biodegradation, Environmental Biotechnology, Advance Oxidation process, Adsorption and Industrial wastewater Treatment for resource recovery and reuse. Dr. Mandal has authored over 25 publications.



**Prof. Gopinath Halder-** Prof in the of Chemical Engineering Department, NIT Durgapur. He has several publications in National and International Peer reviewed journals and has authored a book on thermodynamics. His research interests are Pressure swing adsorption, chemical adsorption, bioremediation, biofuels, and catalyst preparation.



**Prof. Apurba Dey** – Professor (HAG), Department of Biotechnology, NIT Durgapur. His expertise includes Biochemical Engineering, Industrial Biotechnology, and Environmental Biotechnology. He has authored almost 70 publications. He has several book chapters and journal articles in renowned journals.



**Prof. Dalia Dasgupta Mandal** –Professor of Dept of Biotechnology, NIT Durgapur. She has expertise in Biotechnology/Cell Signaling in Infectious disease, Molecular Biology Tissue Culture. She has numerous publications and is supervising some heavily funded projects under DBT AND DST.



## **FOR MORE DETAILS, PLEASE CONTACT THE PERSONS**

### **Weblinks**

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**[http:// www.nitdgp.ac.in](http://www.nitdgp.ac.in)**