



CSIR-NEERI's ONLINE SKILL/TRAINING PROGRAMS ON ENVIRONMENT (2021-2022)



(Under CSIR- Integrated Skill Initiative Phase II)



Organized by



CSIR –NATIONAL ENVIRONMENTAL ENGINEERING RESEARCH INSTITUTE (NEERI)
(Ministry of Science and Technology, Govt. of India)
Nehru Marg, Nagpur-440020 (Maharashtra). INDIA
Website: www.neeri.res.in

Online Training Program on
“Water Quality Monitoring and Management”

October 20-22, 2021

OBJECTIVES

- Strengthening of knowledge on water quality monitoring and management related to:
- Field and laboratory practices for on-site and off-site monitoring of water quality to meet the statutory requirements
 - Analysis and interpretation of water quality data
 - Water quality data management
 - Advanced understanding in water quality assessments and treatment technologies
 - Capacity building on water resources management

COURSE CONTENTS

- Introduction to Water Quality and Water Quality Standards.
- Reconnaissance Survey and Network Design.
- Collection & Preservation of Samples and Field Analyses.
- Water Quality Parameters: Physico-chemical, Bacteriological.
- Water Quality Parameters: Heavy Metals.
- Emerging pollutants in water.
- Water Quality Analysis: Instrumentation
- Instrumentation: Calibration and Maintenance.
- Water Quality Monitoring & Surveillance.
- NABL Accreditation of water testing laboratories.
- Water quality data analysis and management.
- Preparation of water safety plan.
- Preparation of water security plan.
- Water treatment technologies for geogenic contaminants.
- Water Treatment Plant: Unit operations and maintenance.
- Geophysical techniques in water resource management.

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link: https://docs.google.com/forms/d/e/1FAIpQLSfWbUrJdjm-TThsRNtGB27_vYuyhLFVqXwviMST2WMapp_nBw/viewform)
- For Sponsored/Employed/Self Payment candidates, etc.: **Rs. 15,000/- (including GST)**
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- Instructions for remittance of fee through State Bank Collect is shown below:
State of Corporate / Institution: "MAHARASHTRA"
Type of Corporate / Institution: "GOVT. DEPARTMENT"
GOVT Department Name: "NATIONAL ENVIRONMENTAL ENGINEERING RESEARCH INSTITUTE"
Payment Category: "WEBINAR / TRAINING PROGRAM REGISTRATION FEE"

NOTE:- Kindly send SBI Collect Fee receipt on email hv_singh@neeri.res.in for confirmation

CERTIFICATE OF PARTICIPATION: Certificate of Participation will be issued on successful completion.

LAST DATE OF REGISTRATION: September 20,2021

DIRECTOR	MENTORS	PROGRAM CO-ORDINATOR	COURSE CO-ORDINATOR
Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hv_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. G. K. Khadse Sr. Principal Scientist, WTMD Dr. Pawan Labhasetwar Chief Scientist & Head, WTMD

Online Training Program on
**“Eco-rejuvenation and Biodiversity Development along the
 Riverbeds and Landslides areas using Bioengineering Approach for
 Ecological Sustainability”**

November 11, 2021

OBJECTIVES

- Evaluation of physico-bio-chemical characteristics of soils/slopes/gradients/detail geology of the site
- Optimization of various soil amendments for improving the properties of soils of the site to facilitate plant diversity establishment and overall growth
- Evaluation and Isolation, screening and development of effective microbial consortium for improvement of rhizosphere
- Selection of plant species that can withstand the existing hydrological conditions of the terrain of the sites
- Preparation of design and appropriate blend of organic wastes, soil, microbes and plant for sites
- Detailed evaluation of implemented work through the bioengineering method for mitigation of the landslide/overburden dump/mining areas

COURSE CONTENTS

- Site characteristics (Physical, chemical and biological parameters)
- Site characteristics geological aspects
- Species- and site-specific Bacteria
- Site and species specific Arbuscular Vesicular Mycorrhiza and their strains (VAM)
- Organic waste material according to site characteristics
- Process and design preparation for the site
- Rhizospheric ecology of plants species
- Soil binding factors of plants species
- Selection of plants species
- Characteristics of plants species
- Eco-Rejuvenation of landslides/overburden dump/ mining areas

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

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Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hv_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. Lal Singh Senior Scientist, EBGD

OBJECTIVES

Impact Assessment is broadly intended to provide perspective, insights and knowledge required for effective and efficient management of environment. The specific aim of the training program is to enhance the capacities of the participants in EIA. The main objectives are:

- Exposure to all aspects of EIA
- EIA process-screening, scoping, data collection to impact assessment, role of public consultation etc.
- Specific reference to the environmental and social impacts of the industrial and developmental projects
- Reviewing EIA reports and identifying its strengths and weaknesses
- How to enhance ability regarding playing active role in post-EIA monitoring
- New possibilities for EIA/EMP using appropriate S&T Tools
- How to delineate pragmatic Environmental Management Plans

COURSE CONTENTS

- Environmental Impact Assessment (EIA): Introduction & NABET Requirements
- Baseline environmental quality of EIA studies
- Ambient Air Quality Monitoring, Analysis and Reporting
- Air Pollution Modelling, Meteorology, Dispersion of Stack and Fugitive Emissions
- Water Quality – Monitoring, Analysis and Reporting, Hydrogeology, Groundwater Pollution
- Water Management, Socio-Economic Aspects
- Noise and Vibration – Monitoring, Modelling and Management Plans
- Soil Quality Parameter, Soil Erosion and Soil Conservation Plans
- Solid & Hazardous Wastes – Characterization, Classification, Transport – Guidelines and Regulations
- Bio-diversity studies for Terrestrial and Aquatic Ecosystems – Forest and Wildlife Clearance
- Risk Assessment and Hazard Management
- Advance tools of EIA
- Environmental Management Plans for different Sectors

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

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LAST DATE OF REGISTRATION: October 22,2021

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**Online Training Program on
"Soil Quality Assessment and Land Management"**

December 14-15, 2021

OBJECTIVES

Land, a non-renewable resource, is central to all primary production system and its contamination has attracted considerable public attention in recent decades. Increase in industrialization / urbanization / agricultural practices and indiscriminate land use during the past several years has resulted in extensive degradation of forests, agricultural lands and biodiversity in India. Deforestation is a contributor to global warming and is cited as one of the major causes of the enhanced greenhouse gases. Deforestation also affects the water cycle, increases rates of soil erosion, by increasing the amount of runoff and reducing the protection of the soil from tree litter. Thus, there is a necessity to restore such degraded lands in forest and the restoration strategies must address soil structure, soil fertility, microbe populations, top soil management and nutrient cycling in order to return the land as closely as possible to its pristine condition and continue as a self-sustaining ecosystem. Thus, in order to preserve the biodiversity and the productivity of the land, control measures are to be taken in achieving the sustainable land use and management systems, to balance productivity and environmental protection. CSIR-NEERI has vast experience in the field of soil quality assessment and successfully implemented soil remediation technologies for various private, public and state / central government agencies in different parts of the country. The major objective of the training programme is to impart training on soil quality assessment and management of degraded land practices to make participants well acquainted with interpretation of data related to soil quality and land management practices to be adopted for restoration of biodiversity

COURSE CONTENTS

- Categories of Indian Soils.
- Collection, Preservation and Preparation of Soil Samples for Laboratory Analysis.
- Soil Quality Parameters: Physical, Chemical and Biological.
- QA/QC Procedure in Analysis, Accuracy, Precision and Concepts of Uncertainty Measurement.
- Preparation of Soil Test Report.
- Regulations for industrial land management
- Land Management - I (Case Study on Ecological Restoration of Mine Spoil Dumps)
- Land Management – II (Case study on Green Corridor for Eco-capital Built up)
- Land Management – III (Case study on Remediation of Contaminated Site)

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link:
https://docs.google.com/forms/d/e/1FAIpQLSedrBxKJcAYc4ZxbOsveRtGaHtb8PcxzJYVpH5VKc8e-3-VHw/viewform?usp=sf_link)
- For Sponsored/Employed/Self Payment candidates, etc.: **Rs. 10,000/- (including GST)**
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CERTIFICATE OF PARTICIPATION: Certificate of Participation will be issued on successful completion.

LAST DATE OF REGISTRATION: November 14,2021

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Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hv_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. S.K. Singh Sr. Principal Scientist, SEAF Dr. Amit Bansiwal Sr. Principal Scientist & Head, SEAF

**Online Training Program on
"Eco-rejuvenation of Fly Ash Dump using Bamboo Diversity for Pollution
Mitigation and Ecological Sustainability"**

December 23, 2021

OBJECTIVES

Assessing the risk to the environment and to human health from contamination, specifically in relation to source of contaminants, type, physical/chemical/microbiological, form, mobility, extent of contamination, significant pathways and their potential receptors. The main objectives are:

- Determination of the concentration and distribution pattern of contaminants in fly ash/ Earth subsidence.
- Evaluation the degree of fly ash site remediation on the basis of which the appropriate remediation strategy is preferred.
- Evaluation of selection of plants/bamboo species, amendments, biofertilizers and eco-rejuvenation plan on contaminated areas/fly ash dumped/overburden dumped/mine spoil areas
- Evaluation the role of bamboo species on contamination/fly ash dumped areas
- Evaluation the strategies for Eco-Rejuvenation of fly ash dumped areas and pollution mitigation

COURSE CONTENTS

- Characteristics of fly ash
- Selection of species on fly ash/over burden dump
- Characteristics/geology of overburden dump/mine dump
- Characteristics of bamboo/ plants
- Fly ash Pollution Mitigation and Control Systems
- Biodiversity assessment on fly ash dump
- Rhizospheric ecology on fly ash dump areas
- Soil/fly ash Quality Parameter, Soil/fly ash Erosion and Soil/fly ash/mine over burden dump Conservation Plans
- Bio-diversity studies for contaminated Ecosystems – before and after restoration
- Different techniques of Ecological restoration
- Eco-rejuvenation techniques/for contaminated areas/overburden dump/mine areas/pollution mitigation

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link:
https://docs.google.com/forms/d/e/1FAIpQLSf_zRBj8rIZ7sBM4rC9jCBHGRoJ3VrJNrCBWja9SEpTsBaw8w/vi/ewform?usp=sf_link)
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OBJECTIVES

The ecology and biodiversity are a challenging and skillful studies require expertise in flora and fauna of terrestrial and aquatic system. Any change in the ecological component causes harm to the keystone species of developing area. Therefore, while conducting the baseline status it is very essential to understand the ecological processes and its stability. Stakeholders working in EIA have to face problems in protecting the species which require complete understanding of ecological niche. Therefore, to strengthen the capacity of stakeholders and to manage with the ecological problems and to enable them to play their role and shoulder their responsibilities effectively, a training program has been proposed. The professionals working in this sector need to be sensitized with the knowledge/skill and attitude through a proper training.

COURSE CONTENTS

- Introduction to the basics of Ecology and Biodiversity
- Principals and concepts of biodiversity laws
- Biodiversity Act 2002
- Wildlife protection act
- IUCN category of plants listing and species of Red data book
- Phytosociological studies of flora
- Calculation of Index and interpretation of results
- Role of invertebrates as an ecological indicator
- Planktons: Zooplankton and Phytoplankton: an ecological indicator
- Sampling, identification by microscopic studies and index calculation
- Study of trophic status of lakes
- Study of biomonitoring of benthos
- Sampling, identification by microscopic studies and index calculation
- Prediction of impacts
- Greenbelt Development plan

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link:
https://docs.google.com/forms/d/e/1FAIpQLSdhI0uvtdEAgQvzazmQAWdozcYgrnrAfUyGb8vvaqxiJNwzw/vie/wform?usp=sf_link)
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Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hv_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. Sharda Kosankar Senior Scientist, EBGD

OBJECTIVES

The organic pollutants are chemicals of global concern due to their potential for long-range transport, persistence in the environment, ability to bio-magnify and bio-accumulate in ecosystems, as well as their significant long term and toxic effects on human health and the environment. Due to automation, modernization and urbanization many organic pollutants are present in environment including polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), Pesticides, Persistent organic pollutants (POPs), Volatile organic carbon (VOCs), Pharmaceuticals and personal care products (PPCPs), Dioxin and Furans etc. These pollutants include hundreds of organic contaminants belonging to diverse compound classes and usually detected in concentrations at the level between ng/L and µg/L. Advances in analytical techniques make it possible to measure even the smallest amount of contaminants present in environmental matrix such as soil, water, air, etc. after extraction in the suitable solvents.

The objective of this training program is to impart basics and advanced knowledge on analytical instrumentation techniques for instrumental methods and analysis of environmental organic contaminants using sophisticated instrumentation, which is needed in monitoring of environmental pollution and in investigation and mitigation of related environmental issues. Providing theoretical and analytical aspects for qualitative and quantitative analysis of organic contaminants in environmental samples. Strengthening analytical capabilities on analysis of trace organic contaminants in environmental samples.

COURSE CONTENTS

- Importance of environmental monitoring
- Basics of Chromatography
- Sample Processing Techniques for Organic Contaminants
- Theory and principles of Gas Chromatography (GC)
- Theory and principles of Gas Chromatography-Mass Spectrometry (GC-MS)
- Theory and principles of High-Performance Liquid Chromatography (HPLC)
- Theory and principles of Liquid Chromatography-Mass Spectrometry (LC-MS)
- Practical aspects for analysis of organic contaminants using GC, GC-MS, HPLC and LC-MS

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link: https://docs.google.com/forms/d/e/1FAIpQLSeNCP0OXlgaJoFgI11-huHSMrx_CmSV2dUzXj2SAokGAKVwQg/viewform?usp=sf_link)
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LAST DATE OF REGISTRATION: December 18,2021

DIRECTOR	MENTORS	PROGRAM CO-ORDINATOR	COURSE CO-ORDINATOR
Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hv_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. Amit Bansiwala Senior Principal Scientist & Head, SEAF Dr. G.S. Kanade Senior Principal Scientist, SEAF

**Online Training Program on
“Analytical Instrumentation Techniques for Environmental
‘Inorganic Contaminants’ ”**

February 09-11, 2022

OBJECTIVES

Toxic metals are playing a greater role in changed scenario due to its presence in soil, air and water at appreciable quantity. The group of most concern toxic metals includes mercury, lead, cadmium, aluminium, and arsenic. These metals are detrimental to health for a variety of reasons and unfortunately are prevalent in the environment due in considerable part to the activities of modern society. Individuals may be exposed occupationally or due to factors such as consuming contaminated food and water. Thus, it is severely affecting the health of living beings and deteriorating the quality of life. Hence, there is a great need to identify and quantify the toxic metals in the environments which will help to develop suitable measures for mitigation.

The objective of this training program is to impart basics and advanced knowledge on analytical instrumentation techniques for instrumental methods and analysis of environmental in-organic contaminants using sophisticated instrumentation, which is needed in monitoring of environmental pollution and in investigation and mitigation of related environmental issues. Providing theoretical and analytical aspects for qualitative and quantitative analysis of organic contaminants in environmental samples. Strengthening analytical capabilities on analysis of trace organic contaminants in environmental samples.

COURSE CONTENTS

- Importance of environmental monitoring
- Basics of Spectroscopy
- Sample Preparation Techniques for Inorganic Contaminants
- Theory and principles of Ion Chromatography (IC)
- Theory and principles of Direct Mercury Analyzer (DMA)
- Theory and principles of Atomic Absorption Spectrometry (AAS)
- Theory and principles of Inductively Couple Plasma-Optical Emission Spectrometer (ICP-OES)
- Theory and principles of Inductively Couple Plasma- Mass Spectrometry (ICP-MS)
- Practical aspects for analysis of organic contaminants using IC, DMA, AAS, ICP-OES/MS

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link:
https://docs.google.com/forms/d/e/1FAIpQLSesKMA6zMQPjvRMmBupudzWFSm_UBhOLv_yypiSLiTLh4f8bg/viewform?usp=sf_link)
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LAST DATE OF REGISTRATION: January 09,2022

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Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hy_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. Amit Bansiwala Senior Principal Scientist & Head, SEAF Er. V.M. Shinde Senior Technical Officer, SEAF

**Online Training Program on
"Pesticide Residues Analysis in Environmental Matrices and
its QA/QC in context of ISO-17025 Framework "**

February 22-23, 2022

OBJECTIVES

Pesticides are toxic in nature and their contamination in the environment may affect soil health besides posing threat to the ground water contamination. Pesticides can also lead to surface water contamination through run-offs. This requires pesticide monitoring to be an important aspect of water monitoring programs. The specific aim of this training program is to enhance the capacities of the participants for monitoring of pesticide residues in environmental matrices. CSIR-NEERI has an accredited facility for pesticide residue analysis. So, this training also has a special focus on the QA/QC aspect in context of ISO-17025:2017 framework. The main objectives of the training program are:

- To introduce the participants with the types of pesticides and their environmental fate
- To make the participants familiar with the various environmental sampling techniques.
- To train for sample processing techniques and equipment for the environmental analysis of pesticides
- To detail the QA/QC in the background of ISO-17025:2017 particularly with reference to pesticide residue analysis

COURSE CONTENTS

- General Overview of types of pesticide residues, their persistence and fate in environment
- Sampling techniques for Environmental Matrices
- Sample processing techniques for pesticides in Environmental Matrices
- Analytical equipment and procedures for trace analysis and confirmatory analysis
- Documentation procedures for NABL accreditation for Pesticide Residue Laboratories as per ISO/IEC 17025:2017
- Method validation and Measurement of Uncertainty in Pesticide Residue Analysis
- QA/QC of residue analysis required with respect to ISO-17025:2017 compliance
- Laboratory demonstration of residue analysis

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link:
https://docs.google.com/forms/d/e/1FAIpQLSc4h7KmPz3LyUI1GECHhldrJqeEGY0ZjOfgL-SBA8gNXRwDVQ/viewform?usp=sf_link)
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OBJECTIVES

The proposed Skill Development Program on Municipal Solid Waste and Hazardous Waste Management for SLF Operators and Industries is broadly intended to provide outlook, understanding and knowledge required for effective and efficient management of solid and hazardous waste to protect environment and public health. The specific aim of the training program is to enhance the capacities of the participants in SHWM.

- Exposure to all aspects of SHWM
- Interpretation of different Schedules and Forms
- Issues related to implementation of rules
- Quantification and characterization of MSW and HW
- Issues related to consent within Rules 2016

COURSE CONTENTS

- Classification of HW
- Design of SLF for HW
- Manifest System
- Hazardous waste management
- Assessments of performance of TSDF
- Remediation of HW contaminated sites
- Case studies on legacy waste management, utilization of HW
- Methods of analysis of heavy metals
- Leachate Management
- Soil, water and gaseous emissions- Quality Parameters
- Solid & Hazardous Wastes – Characterization, Classification, Transport –Guidelines and Regulations

MODE OF TRAINING: Online training through MS Team comprising Live lectures, Interactions, Q&A session, etc.

REGISTRATION FEE

- For Students (Graduate & above): **Free of Cost**
(Application through Google Link:
https://docs.google.com/forms/d/e/1FAIpQLScnd8z5GBoBqhJoyggw3UtrS_5bwL5yMN395A8Ruq3AjChSg/vi_wform?usp=sf_link)
- For Sponsored/Employed/Self Payment candidates, etc.: **Rs. 10,000/- (including GST)**
- **Fee will be paid online through SBI Collect link as mentioned below:**
<https://www.onlinesbi.com/sbicollect/icollecthome.htm>
- Instructions for remittance of fee through State Bank Collect is shown below:
State of Corporate / Institution: "MAHARASHTRA"
Type of Corporate / Institution: "GOVT. DEPARTMENT"
GOVT Department Name: "NATIONAL ENVIRONMENTAL ENGINEERING RESEARCH INSTITUTE"
Payment Category: "WEBINAR / TRAINING PROGRAM REGISTRATION FEE"

NOTE:- Kindly send SBI Collect Fee receipt on email hv_singh@neeri.res.in for confirmation

CERTIFICATE OF PARTICIPATION: Certificate of Participation will be issued on successful completion.

LAST DATE OF REGISTRATION: February 09,2022

DIRECTOR	MENTORS	PROGRAM CO-ORDINATOR	COURSE CO-ORDINATOR
Dr. S. Chandrasekhar Director	Dr. Sadhna Raylu Chief Scientist & Head, EMD Dr. Atul Vaidya Chief Scientist & Head, CHWMD	Dr. Harshvardhan Singh Senior Principal Scientist & Head, TSDD Email: hv_singh@neeri.res.in Ph.0712-2249885 ext. 344 / 645	Dr. Atul Vaidya Chief Scientist & Head, CHWMD