



Engineering Staff College of India

Autonomous Organ of The Institution of Engineers (India)
Old Bombay Road, Gachi Bowli, Hyderabad – 500 032. Telangana, India



Centre for Climate Change Division

Continuing Professional Development Programme

Smart River Basin Management: IoT, Remote Sensing, GIS and AI for River Monitoring, Restoration and Sustainable Management

18 - 20 November 2026

Interactive Sessions | Digital Learning | Assessments | 24/7 Experts Online/Offline Support

Introduction

River basins are interconnected systems comprising rivers, tributaries, watersheds, groundwater systems, reservoirs, wetlands and surrounding ecosystems. Increasing water demand, climate variability, land-use change, sedimentation, pollution, floods and droughts are creating significant challenges for sustainable river-basin management. Conventional monitoring systems often provide spatially and temporally limited information. The integration of IoT-based sensors, remote sensing, GIS, artificial intelligence (AI) and real-time data analytics can provide a comprehensive framework for monitoring river discharge, water levels, water quality, sediment dynamics, groundwater interactions and basin-scale hydrological processes. This three-day programme focuses on the application of emerging technologies for river-basin assessment, integrated water-resources management, flood and drought risk management, ecological restoration and climate-resilient basin planning.

Objectives

The programme aims to:

- ❖ Understand the river-basin system, hydrological processes and integrated basin management principles.
- ❖ Introduce IoT-based systems for real-time monitoring of river discharge, water level and water quality.
- ❖ Apply GIS and remote sensing for watershed delineation, river-network mapping, land-use assessment and basin characterization.
- ❖ Explore AI/ML applications for streamflow forecasting, flood prediction, drought assessment and water-quality modelling.
- ❖ Understand sediment transport, erosion, reservoir sedimentation and river morphology.
- ❖ Assess the impacts of climate change and land-use changes on river-basin hydrology.
- ❖ Develop approaches for integrated surface-water and groundwater management.
- ❖ Introduce river restoration, ecological-flow management and nature-based solutions at basin scale.
- ❖ Develop an integrated digital river-basin monitoring and decision-support framework.

Course Coverage

This training program will broadly cover the following key areas:

- **River Basin Monitoring and IoT Technologies:** River Basin Systems and Integrated Management, IoT-Based River and Basin Monitoring, Basin Hydrological and Water-Resources Data.
- **GIS, Remote Sensing and AI for River Basin Assessment:** GIS-Based River Basin Delineation and Assessment, Remote Sensing Applications, AI and Machine Learning for Basin Management.
- **Sustainable River Basin Management and Restoration:** Climate Change and River Basin Resilience, River Restoration and Ecological Management, Integrated River Basin Management.

(An ISO 9001:2015 Certified, AICTE & CEA Recognized Institution)

Centre for Promotion of Professional Excellence

Methodology

Methodology of the programme includes classroom Sessions with Lectures/discussions, with audio visual aid; bench - marked video shows, Chalk & Talk sessions, group discussions, case studies, debates, sharing of experiences, etc. All the sessions will be interactive, demanding active participation from all the participants.

Target Participants

The programme is designed for engineers and officials from Water Resources, Irrigation and allied departments, river-basin and reservoir-management agencies, CWC and CGWB professionals, hydrologists, environmental experts, GIS and remote-sensing professionals, disaster-management authorities, researchers, academicians, consultants and practitioners involved in river-basin planning, water resources and sustainable environmental management.

Programme Dates, Timings & Code

Dates: 18 - 20 November 2026, Timings: 10 AM Onwards. & Code: 8078

Course Director

Dr. K. Chandrakala Sr. Faculty, Centre for Climate Change **Dr. Aadhi Naresh**, Faculty, CCC
Engineering Staff College of India,
Phone: Direct 040 6630 4164/4137, Fax: 040 - 6630 4163,
Mob: 94948 72533 Email: ccc@escihyd.org

Faculty/Speaker Details

Apart from the core internal faculty, experienced professionals/faculties/sector experts will be delivering the lively lecture with practical knowledge & case study.

Course Fee

- **Course Fee (Residential): – Rs. 18,500/-** (Rupees Eighteen Thousand Five Hundred only) per participant. Fee includes course material, course kit, twin-sharing/single AC accommodation as per availability, breakfast, lunch, dinner, tea / coffee and snacks during the actual days of training programme. ESCI provides complimentary accommodation and boarding to the participants one day before commencement (Check-in 1200 h) and one day after conclusion (Check-out 1200 h) of the programme duration. Overstay charges will be applicable as per ESCI rules (subject to availability of accommodation)
- **Non-Residential Fee: 10% discount** on course fee is allowed for non-residential participants
- **Group Incentive: 10% discount** for five or more participants, if sponsored by the same Organization

GST @18% is to be paid extra over and above the training fee. **PAN Card No. AAATT3439Q. GST No:36AAATT3439Q1ZV, HS No.: 999293** (under commercial training or coaching services – clause 65(105) (ZZC) of Finance act – 1994).

Programme fee is to be paid in favour of **“THE INSTITUTION OF ENGINEERS (INDIA) – ENGINEERING STAFF COLLEGE OF INDIA”** in the form of demand draft payable at Hyderabad. Alternatively, the payment may be made by **Electronic Fund Transfer (EFT)** to ESCI – **SB A/c No. 10007111201 with The SBI, PBB, Rajbhavan Road Branch, Khairatabad, Hyderabad-500004 by NEFT/ RTGS. IFSC Code No. SBIN 0004159 – MICR No.500002075. PAN Card No AAATT3439Q; GSTIN No. 36AAATT3439Q1ZV.** While using EFT method of payment, please ensure to communicate us your company name, Contact details, our invoice reference and programme title.

Registration

Online registration shall be available on ESCI web portal: www.escihyd.org

To register manually please send your nominations giving details of name, designation, contact address, email address, mobile no, telephone and fax number of the participant along with the details of mode of payment of fee, addressed to: Course Directors.

Each participant will receive a Certificate of Participation upon program completion.