



Sponsored By DTE



**College of Engineering Trivandrum
Department of Civil Engineering
Thiruvananthapuram - 695 016
Kerala**

www.cet.ac.in

A Faculty Development Programme

on

Unveiling the Latest Advancements in Material Characterization in Civil Engineering

4th-8th Dec 2023

DIRECTORATE OF TECHNICAL EDUCATION

Directorate of Technical Education(DTE) deals with all the technical education activities in the state. Currently there are 12 engineering colleges functioning under the control of the Directorate. In addition to this there are around 150 self-financing Engineering Colleges both in the Govt. and private sector functioning in the state. The Directorate coordinates the various activities of these institutions, including maintaining the standards of curricular and co-curricular activities.

COLLEGE OF ENGINEERING TRIVANDRUM

The College of Engineering, Trivandrum was established in 1939 as the first Engineering College in the then Travancore State. The first classes were started in 1939 during the reign of the Travancore King, Sri Chithira Thirunal Balarama Varma. With the establishment of the Directorate of Technical Education in the late fifties, the college administration came under the control of the Government of Kerala. National Level Excellence and International Visibility in Every Facet of Engineering Research and Education is the Vision of the Institution. The college is an approved centre for the Quality Improvement Programme (QIP) under AICTE. All B.Tech Programs are accredited by the National Board of Accreditation till 2025.

DEPARTMENT OF CIVIL ENGINEERING

The Department of Civil Engineering has been in existence since the inception of the College, and has grown into a full-fledged department. The department offers an undergraduate program with an intake of 130 students and six postgraduate courses with a student strength of 18 per program. It has more than 50 research scholars in the department, pursuing their Ph.D. in various domains of Civil Engineering.



ABOUT FDP

Characterisation of Civil Engineering materials such as cement concrete, bituminous mixtures, and granular materials is carried out through different scales of measurement depending on the intended purpose. The measurement scale can be microscopic, mesoscopic or macroscopic. The proposed course is designed to familiarize faculty members of engineering colleges and student researchers with the advancements in material characterization for different classes of civil engineering materials. It may be noted that the broader term "material characterization" involves understanding the theory associated with the material's response, measurement systems, and the post-processing of the experimental data. This course aims to offer insight into all these three steps in material characterization.

COURSE OBJECTIVES :

1. To familiarise advancements in the testing of cementitious materials, bituminous materials, and granular materials at multiple scales of measurement
2. To understand the sophistication in measuring devices used to test Civil Engineering materials at multiple scales
3. To enable hands-on experience on different non-destructive testing methods for different Civil Engineering applications.



College of Engineering Trivandrum

[OFFLINE MODE]



DETAILS OF EXTERNAL EXPERTS



Dr. Manu Santhanam

Professor and Dean ICSR
Department of Civil Engineering
Indian Institute of Technology
Madras

Mechanical characterization and microscopic level measurements for concrete

Dr. R. G. Robinson

Professor and Dean Administration
Department of Civil Engineering
Indian Institute of Technology
Madras

Advancements in Soil Characterization



Dr. J Murali Krishnan

Professor
Department of Civil Engineering
Indian Institute of Technology
Madras

Rheology of civil engineering materials

Dr. U Saravanan

Professor
Department of Civil Engineering
Indian Institute of Technology
Madras

Non-contact strain measurement techniques



Dr. Pradeep Kumar

Chief Scientist
Pavement Evaluation
Center Road Research Institute
Delhi

Non-Destructive Test Techniques for Pavement Evaluation

Dr. V Anil Kumar

Scientist SG,
Deputy General Manager
MPA, MME, VSSC
Indian Space Research Organisation

Processing and Characterization of Materials for Space Applications



Dr. Sreejith Krishnan

Research Fellow
University of Leeds,
United Kingdom

Characterization of cementitious materials

Dr. Amal Azad Sahib

Associate Professor
Department of Civil Engineering
TKM College of Engineering
Kollam

Characterization of soil subjected to secondary consolidation settlements



Dr. M. R. Nivitha

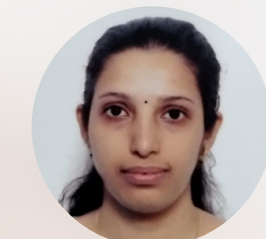
Assistant Professor
Department of Civil Engineering
PSG College of Technology,
Coimbatore

Use of FTIR for Material Characterization; Rheology of Bituminous Binders

Sankar

Assistant Director,
Kerala Highway Research Institute

Non Destructive & Partially Destructive Testing of Concrete Structures



Dr. Anu Jose

Post Doctoral Scholar,
Indian Institute of Technology
Madras

Use of FTIR for soil Characterization

Atanu Behera

Doctoral Scholar,
Indian Institute of Technology
Madras

Characterization of Bituminous Mixtures



CONTENTS PLANNED

1. Characterization of cementitious materials:

Calorimetry, X-ray diffraction, Thermal analysis, Surface area measurement, Microscopy (Optical and SEM), Image analysis, Spectroscopy techniques; Characterization of cement concrete in the fresh state and hardened state, creep and shrinkage.

2. Characterization of bituminous materials:

Rheology of binder, characterization of unmodified and modified binders, surface free energy measurements, FTIR; modulus measurement, creep and recovery, permanent deformation, and fatigue characterization of bituminous mixtures

3. Characterization of granular materials:

Index and engineering properties, Advanced triaxial testing, consolidation tests, permeability tests, resilient modulus, Geophysical soil investigation .

4. Non-contact strain measurement methods:

Photogrammetric Techniques, Digital Image Correlation, video measurement system.

5. Non-destructive testing methods:

Ground penetrating radar, ultrasound measurement techniques, falling weight deflectometer, nuclear density gauges, penetration, imaging techniques .

RESOURCE PERSONS :

The expert lectures will be handled by eminent faculty dealing with material characterization from IITs, academicians, and experts from research institutes.

WHO CAN APPLY?

Faculty members from AICTE-approved institutions, research scholars, professionals from research institutes and consultancies are encouraged to apply.

FEE STRUCTURE :

No course fee for faculty members of government and aided engineering colleges and polytechnics colleges. Faculty members from self-financing colleges and others have to pay a course fee of ₹1000/- (which is payable at the time of registration).

HOW TO APPLY?

Use the online registration link provided below to navigate to the registration form. The participants need to bring the registration form signed by the head of institution. The maximum number of seats is limited to 40, and the applicants will be selected on first cum first serve basis. The format is given below .

>>> ONLINE REGISTRATION FORM [click here](#)



>>> FORMAT OF APPROVAL FROM HEAD [click here](#)



COORDINATORS

Dr. Thushara V. T

Assistant Professor in Civil Engineering
College of Engineering Trivandrum
Email: thusharavt@cet.ac.in
Mob. 8075944677

Rheology of Bituminous Mixtures



Prof. Asha B

Assistant Professor in Civil Engineering
College of Engineering Trivandrum
Email: ashab@cet.ac.in

Mob. 9946751532
Characterization of cementitious blends