

TEQIP-III Sponsored Short-Term Course

**Functional & Technical Textiles – Design,
Structure, Testing & Applications**

(7-9 December 2019)

Venue: Indian Institute of Technology Delhi, Sonipat Campus



Course Coordinator

Bipin Kumar
Assistant Professor,
Department of Textile and Fiber Engineering, IIT Delhi



IIT Delhi, established in 1961, is one of the premier technical engineering institutions in the country, with a vision to contribute to India and the world through excellence in scientific and technical education and research. The institute is located at center of the city, Delhi, a symbol of the country's rich past and thriving present, where ancient and modern blend seamlessly together. The institute has nearly 35 academic units that imparts knowledge on Engineering, Science, Design, Social Science, among others. The institute has always been the source of valuable resource for industry and society, and to remain a source of pride for all Indians. Recently, IIT Delhi has been elevated to the status of "Institution of Eminence" by Govt. of India.

Contact us:

Website: http://cepqip.iitd.ac.in/teqip_prog.php
Email: bipin@iitd.ac.in; bipiniitd18@gmail.com
Phone: 011-26597240

Course Scope

Functional and Technical Textiles provide new opportunities to the Global Textile Industry to have long term sustainable future. R&D in last 20 years indicates one of the major opportunities in the global technical textile market, reaching to different application domains including vehicles, construction, agriculture, sports, health care, defense and security, electronics, power, environmental technologies and many more. This course will cover selected topics of the functional and technical textiles for their application in wearable technology, energy harvesting, composites and protection. The course contents are systematically arranged to include the whole gamut of science, engineering, technology and design principles that are required for the research and development of these functional textile products. Both theory and practical components have been included to help participants gaining hand on experience in products designing and analysis.

Course Contents

Functional and Smart Textiles – Potential and Application; Textile based Wearable Technology – Materials, Design, Principles, Evaluation and Application; Fiber Reinforced Composites – Material Selection, Structure Engineering, Testing and Characterization; Testing of Technical Textiles – Geotextiles, Extreme Protection Clothing (hot and cold), Textile Reinforced Composites; Energy Harvesting Textiles – Piezoresistive and Triboelectric Principles, Materials/Structure Design, Poling, Testing and Standardization; Protective Textiles for Soft Body Armor – Design and Engineering Principles

Accommodation

Boarding and lodging will be arranged for the selected candidates, as per TEQIP-III norms, on sharing basis from 6 Dec 2019 (night) to 10 Dec 2019 (till 11 am). However, due to a limited number of rooms in the guest house (Sonipat Campus, IIT Delhi), the allotment will be on first-come, first-served basis.

Travel

Travelling Allowances will be provided for the candidates (who belongs to institutions listed under TEQIP-III) from their hometown to IIT Delhi Sonipat Campus up to a maximum of the 3rd A/C train fare.

Registration

No registration fee for TEQIP-III participants.

For **non TEQIP-III participants'** mandatory registration fee for participation as following:

- INR 5,000/- + GST – Research Scholars
- INR 10,000/- + GST – Faculty
- INR 30,000/- + GST – Industry participants
- Accommodation will be provided upon request and subject to availability. Cost of accommodation will be borne by the participant.

Fee is payable online (via net banking) to the IIT Delhi CEP Account. Account Details here,

Account holder: **IITD CEP Account**

Account number: **36819334799**

Name of the Bank: **SBI, IIT Delhi**

IFS Code: **SBIN0001077**

SWIFT Code: **SBININBB547**

MICR Code: **110002156**

IITD PAN no.: **AAATI0393L**

GSTN: **07AAATI0393L1ZI**

Course Plan

Day 1: Smart Textile for Wearable Technology / Energy Harvesting Textiles

E-Textiles Introduction, Basic Electronic Principle, Textile Material and Structure Selection, Designing and Integration Technologies, Characterization and Standardization, Application

Theory of Piezoresistivity, Piezoresistive Textiles – Material and Development Principles, Testing and Characterization, Poling, Application in Energy Harvesting and Healthcare Monitoring

Day 2: Textile Reinforced Composites / Technical Textile Testing

Textile Reinforced Composite – Material, Structure, and Technology, Hybrid Yarn Composites – Design and Engineering, Application

Testing Principles for Technical Textiles; Testing of extreme heat, fire and cold protective clothing, Testing of Geotextiles, Testing of filter fabrics, Testing of Fibre Reinforced Composites

Day 3: Textiles for Soft Body Armor Applications / Lab Demo

Overview of Textile Materials and Structures used in Soft Body Armor Applications, Role of Shear Thickening Fluid, Structure Engineering, Testing and Standardization,

Lab Demonstration - Advanced Knitting for Designing Wearable Textile, Composite Development and Analysis, Combing Machine, Piezo-Characterization, Soft Body Armor Development and Analysis

Coordinator

Bipin Kumar

Assistant Professor
Department of Textile and Fiber Engineering
Indian Institute of Technology Delhi
Hauz Khas, Delhi 110016, India

Email: bipin@iitd.ac.in
bipiniitd18@gmail.com

Tel: +91-11-26597240
Mob: +91-9990240340

Website: http://cepqip.iitd.ac.in/teqip_prog.php

Important Dates

Application Deadline – 15 Oct 2019

Fee Payment (for non-TEQIP participants) – 28 Oct 2019

Confirmation – 1 Nov 2019

Supplement Information

Registration form – as attached

Institution List under TEQIP III -

http://cepqip.iitd.ac.in/teqip_prog.php

Venue:

<https://goo.gl/maps/BqxpFJjWtsVfbBn6>

IIT Delhi Technopark, Sonipat Campus, Plot #4-B,
Rajiv Gandhi Education City Kundli, Sonipat Haryana –
131028

PARTICIPANT REGISTRATION FORM

1. Name: Prof./Dr./Mr./Ms. _____

2. Designation: _____

3. Department: _____

4. University/Institute: _____

5. Address: _____

6. Email ID: _____

7. Mobile/Phone: _____

Place:

Date:

Signature of the Applicant

Signature of Principal or Head of Institution
(Forwarding by the Principal/ Head of the Institution)