MMTTC IIITDM KANCHEEPURAM

Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram

Biomedical Microsystems: Design, Fabrication and Translational Applications

Short Term Programme

Date: 30-11-2026 - 05-12-2026
Mode: Online

About MMTTC:

The Malaviya Mission Teacher Training Center (MMTTC) at IIITDM Kancheepuram is funded by the Ministry of Education (MoE) under the Malaviya Mission Teacher Training Programme. The mission aims to transform higher education by integrating Indian values and ethos into teaching, research, publications, patents, and institutional development. Established as one among the 116 centers in the country, the MMTTC at IIITDM Kancheepuram focuses on design and manufacturing education. It develops e-learning materials, low-cost laboratory instruction modules, and innovative projects for students and teachers.

Registration: NIL

About the programme:

The Short-Term Programme on "Biomedical Microsystems: Design, Fabrication and Translational Applications" is designed to provide faculty members with comprehensive knowledge and practical insights into the rapidly evolving field of biomedical microsystems. The programme will focus on the fundamental principles, engineering design, materials selection, fabrication methodologies and functional integration of microscale biomedical devices. Key topics will include microfluidics, lab-on-chip technologies, microfluidic flow physics, micromixer design, photolithography, 3D printing, laser micromachining, polymer processing and computational modelling using COMSOL Multiphysics. The programme will also introduce participants to biosensors and their integration with microfluidic systems for point-of-care diagnostics.

The programme will bring together eminent academicians, researchers and domain experts from premier institutions to share their expertise through technical lectures, interactive discussions, demonstrations and hands-on training sessions. Special emphasis will be given to the design, fabrication, assembly and characterization of biomedical microsystems, enabling participants to gain practical exposure to device development and performance evaluation. Emerging applications such as organ-on-chip, tumor-on-chip, microphysiological systems, drug screening, disease modelling and toxicity assessment will be explored, highlighting their potential in personalized medicine and next-generation healthcare. Furthermore, the programme will address experimental validation, clinical translation, regulatory considerations and commercialization of biomedical technologies. Overall, the STP aims to strengthen interdisciplinary research capabilities, encourage collaborative research initiatives and equip faculty members with the knowledge and skills required to translate innovative biomedical microsystem technologies into clinically relevant and commercially viable healthcare solutions.

Topics covered:

- Fundamentals of microfluidics: principles, flow physics and emerging trends.
- Lab-on-Chip technologies: design, components and biomedical applications.
- Materials and fabrication techniques for microfluidic devices.
- Advanced manufacturing: 3D printing, photolithography, laser cutting and CNC machining.
- Microfluidic chip assembly: bonding, sealing and packaging.
- Computational modelling and simulation using COMSOL and CFD.
- Biosensor fundamentals: electrochemical, optical and colorimetric sensing.
- ntegrated and multiplexed biosensing for point-of-care diagnostics.
- Organ-on-Chip and Tumor-on-Chip for drug screening and disease modelling.
- Device characterization, clinical validation, regulatory aspects and commercialization.

Registration:

1. Register and login as a participant in mmc.ugc.ac.in
2. In the dashboard click on "Apply for Guru Dakshta (FIP), Refresher Course & Short Term Programme"
3. Select Apply for "Short Term Programme" and from the dropdown select the Programme Name and Center Name as "Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram (30/11/2026-05/12/2026)"
4. Choose the title from the dropdown menu and enter the remaining personal information including year of joining, total years of experience etc.
5. Upload the NOC on Institute/College/University letterhead as per the format provided in https://docs.google.com/document/d/1-lgQyeNjISjJw14cMFylJMiJhw2Hq4PI/edit?usp=sharing&ouid=113470780355660812398&rtpof=true&sd=true
6. Click on Submit to complete the registration process.

Resource Persons :

The course content will be delivered by resource persons from leading and prestigious academic institutions, research labs and industry.

Eligibility:

Faculty members working in universities and colleges that are included under Section 2(f) of the UGC Act are eligible to attend STP.

This programme shall be taken into consideration for fulfillment of the requirements as laid down in Career Advancement Scheme as per UGC Regulations.

Coordinators :

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