

Lecturer

Tuhin Subhra Santra
Department of Engineering Design
Inidan Institute of Technology Madras, India

Schedule of the Intensive Course(Temp.)

May 19(Fri) 18:00-21:00
May 20(Sat) 10:00-12:00 13:00-17:00
May 26(Fri) 18:00-21:00
May 27(Sat) 10:00-12:00 13:00-17:00

1. Objectives:

The objective of this course to teach students how to design and fabricate advanced Biomedical Micro/Nanodevices and their therapeutic and diagnostics applications.

2. Course Contents:

Introduction: Introduction to Bio-Micro/Nano devices, device design, implementation, device materials etc.

Fabrication

Fabrication pathways of Bio-Micro/Nanosystems: clean room, wafer cleaning, Lithography, Oxidation, wet/dry etching, Silicon wet etching, glass wet etching, Electroplating, Diffusion, Evaporation, sputtering, Chemical Vapor Deposition, Physical vapor deposition, plasma enhance chemical vapor deposition (PECVD), direct reactive ion etching (DRIE), microfluidic devices made by PDMS/PMMA. Nanofabrication by replication, Nanofabrication by self-assembly.

Bio-Micro/nano devices in life science- Biomedical microfluidic process technology, biomedical nanotechnology, cellular therapy and diagnostics, single-biomolecule detection and analysis, single cell technologies, single cell electroporation, photoporation, mechanoporation. Single cell therapy and diagnostics.

Evaluation: Test: 80%, Attendance: 10%, Discussion: 10%