Schedule for MEMS Devices

Date	9.30 am to 11.15 am	11.30 am to 1.00 pm	2.00 pm to 3.15 pm	3.30 pm to 5.00 pm
23rd Nov 15	Nanotechnology & MEMS: Introduction and some applications **(Dr. Nitin Kale)**	Materials, Thin film deposition and growth **(Dr. Nitin Kale)**	Experiments with MEMS Devices-Sensimer **(Team NanoSniff)**	Lithography & some etching followed by Q&A **(Dr. Nitin Kale)**
24th Nov 15	Etching and Bonding- Die, Wafer, Wire **(Dr. Nitin Kale)**	Architecture of Device, Fabrication and Process Integration **(Dr. Nitin Kale)**	Experiments with MEMS Devices-OmniCant **(Team NanoSniff)**	MEMS Characterization followed by Q&A **(Dr. Nitin Kale)**
25th Nov 15	Introduction to **COMSOL** Multiphysics, A general workflow, Geometry, Meshing Model Demonstration: A tunable MEMS capacitor: As a demonstration it will be shown how to compute the capacitance of a MEMS capacitor. MEMS modelling: Theory and Features: This session will focus on introductory features of MEMS module including some theory	Guided Hands-On: 1. Capacitive Pressure Sensor: This model shows how to simulate the response of the pressure sensor to an applied pressure, and also how to analyse the effects of packing induced stresses on the sensor performance. 2. Piezo ceramic Tube: This model performs a static 2D axisymmetric analysis of a piezoelectric actuator. The model shows how to simulate both direct and reverse piezo electric effects	Guided Hands-On: Electrostatically Actuated Cantilever- Static and Modal Analysis, Frequency Response Analysis	Introduction to RF Module, Theory and Features, Overview of Boundary and Domain conditions specific to RF Modelling. Guided Hands-On Dipole Antenna: The model shows how to simulate antenna configuration and also shows how to evaluate antenna parameters such as Impedance and far fields. H-bend waveguide: The transmission of a TE10 wave through a 90 degree bend in a waveguide is modelled. It will also be shown how to get S-parameters for this waveguide.
26th Nov 15	Introduction to **CoventorWare** A general workflow, Geometry, Meshing **Model Demonstration: MEMS Piezo-resistive Pressure Sensor**	MEMS Piezo-resistive Pressure Sensor modelling: · Creating Process Flow · Creating 2D Layout · Solid/3D Model building & Editing	MEMS Piezo-resistive Pressure Sensor modelling: · Assigning boundary names for 3D Model · Meshing	MEMS Piezo-resistive Pressure Sensor Simulation & Results · Simulation settings for Mechanical & PZR analysis · Post processing of simulation results
27th Nov 15	**Model Demonstration: MEMS lateral Capacitive Accelerometer**	MEMS lateral Capacitive Accelerometer modelling: · Creating Process Flow · Creating 2D Layout	MEMS lateral Capacitive Accelerometer modelling: · Solid/3D Model building & Editing · Assigning boundary names for 3D Model · Meshing	MEMS lateral Capacitive Accelerometer Simulation & Results · Simulation settings for Electrical, Mechanical & Elecro -Mechanical analysis · Post processing of simulation results
28th Nov 15	**Model Description: MEMS Cantilever**	MEMS Cantilever modelling: · Creating Process Flow · Creating 2D Layout	MEMS Cantilever modelling: · Create solid model/3D model · Assigning boundary names for 3D Model · Meshing	MEMS Cantilever Simulation & Results · Simulation settings for Electrical, Mechanical & Elecro -Mechanical analysis · Post processing of simulation results

Schedule for LabVIEW and Application Hardware Integration

Date	9.30 am to 11.15 am	11.30 am to 1.00 pm	2.00 pm to 3.15 pm	3.30 pm to 5.00 pm
LabVIEW Software applications				
30th Nov 15	Introduction to Virtual Instrumentation	Graphical System Designing	Designing user interface , Data types & display modes	Structures, Loops, Timing functions, Documenting your code
01st Dec 15	Introduction to Array, Clusters, File formats	File I/O functions, Read & write data using I/O function	LabVIEW advance programming & applications	Real Time Data Acquisition System Designing
Real time Biomedical data acquisition using sensors				
02nd Dec 15	Introduction to NI ELVIS & Real Time Systems	Circuit designing with ELVIS, Biomedical Instrumentation & applications, Hands on Biomedical sensors	ECG, EKG acquisition & analysis, filtering & FFT on acquired bio-signals, body fatigue & surface temperature measurements	Acquisition & analysis of Heart Beat, & Blood Pressure signals,
Introduction to Reconfigurable I/O Hardware for Robotics/Mechatronics Applications				
03rd Dec 15	Introduction to myRIO for robotics education	Graphical Program development with myRIO	LabVIEW FPGA applications with myRIO	Ecosystem of sensors & actuators
04th Dec 15	Embedded system design with myRIO with hands on application	Control system design with myRIO with hands on application eg: Image, Audio/video processing	Mechatronics system design, Introduction to Robotics applications	myRIO & its Robotics system designing
Image Processing using NI Smart Camera				
05th Dec 15	Introduction to Image signal processing & NI Smart Camera	Image acquisition, processing & display	LabVIEW FPGA & Image processing real time applications hands on	Vision & Motion Industrial applications, Question & Answer Session

Schedule for Analog CMOS VLSI Design

Date	9.30 am to 11.15 am	11.30 am to 1.00 pm	2.00 pm to 3.15 pm	3.30 pm to 5.00 pm
7th Dec 2015	Introduction to CMOS analog VLSI (Dr. S. S. Rathod)	MOS Models (Dr. S. S. Rathod)	Passive and Active Current Mirrors (Dr. S. S. Rathod)	Hands-on session
8th Dec 2015	Band Gap References (Dr. S. S. Rathod)	Single Stage Amplifiers (Dr. S. S. Rathod)	Single Stage Amplifiers (Dr. S. S. Rathod)	Hands-on session
9th Dec 2015	Differential Amplifiers (Dr. S. S. Mande)	MOS Operational Amplifiers (Dr. S. S. Mande)	MOS Operational Amplifiers (Dr. S. S. Mande)	Hands-on session
10th Dec 2015	Switch Capacitor Circuits (Dr. S. S. Rathod)	Switch Capacitor Circuits (Dr. S. S. Rathod)	Current Mode Circuits (Prof. N. A. Bhagat)	Hands-on session
11th Dec 2015	Oscillators (Dr. S. S. Rathod)	Phase-Locked Loop (Dr. S. S. Rathod)	Phase-Locked Loop (Dr. S. S. Rathod)	Hands-on session
12th Dec 2015	Analog Layout Techniques (Dr. S. S. Rathod)	Analog Layout Techniques (Dr. S. S. Rathod)	AMS design flow (Dr. S. S. Rathod)	Hands-on session

Schedule for Control Design with EICASLAB and Power Electronics and drives with PSIM

Date	9.30 am to 11.15 am	11.30 am to 1.00 pm	2.00 pm to 3.15 pm	3.30 pm to 5.00 pm
14th Dec 2015	Converters	Converters	DC Drives	AC Drives
15th Dec 2015	Control Design	Control Design with EICASLAB (FTD Infocom Bangalore)		
16th Dec 2015	Soft Starter based Motor Drive Systems using PSIM (Trident Techlabs Pune)			
17th Dec 2015	PWM Generation and Interfacing with TI DSP Hardware using PSIM (Trident Techlabs Pune)			
18th Dec 2015	System Analysis in Z-domain	Loss calculation of Power Electronics Devices (Trident Techlabs Pune)		
19th Dec 2015	Application of Power Electronics in Renewable energy field (Solar, Wind and Battery) using PSIM			

Schedule for ASIC Verification with SystemVerilog

Date	9.30 am to 11.15 am	11.30 am to 1.00 pm	2.00 pm to 3.15 pm	3.30 pm to 5.00 pm
21st Dec 2015	Fundamentals of Object Oriented Programming (Dr. Prachi Gharpure)	Hands-on session on Object Oriented Programming (Classes, inheritance, polymorphism, arrays, virtual function etc.) (Dr. D. R. Kalbande)		
22nd Dec 2015	Programmable Devices (Mr. Pawan Fakatkar)	Verilog HDL (Mr. Pawan Fakatkar)	Verilog HDL (Mr. Pawan Fakatkar)	Hands-on session on Verilog HDL
23rd Dec 2015	Verification Basics (Dr. S. S. Rathod)	Data Types (Dr. S. S. Rathod)	Procedural Statements (Dr. S. S. Rathod)	Hands-on session on SystemVerilog
24th Dec 2015	OOP for SystemVerilog (Dr. S. S. Rathod)	Randomization (Dr. S. S. Rathod)	Randomization (Dr. S. S. Rathod)	Hands-on session on SystemVerilog
25th Dec 2015	Interprocess Communication (Dr. S. S. Rathod)	Interprocess Communication (Dr. S. S. Rathod)	Assertions (Dr. S. S. Rathod)	Hands-on session on SystemVerilog
26th Dec 2015	Functional Coverage (Dr. S. S. Rathod)	Functional Coverage (Dr. S. S. Rathod)	Interfacing with C (Dr. S. S. Rathod)	Hands-on session on SystemVerilog