Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India

Announcement

Five Week Faculty Development Programme
on
'Advanced Technologies in Electronics Engineering'
(23rd Nov 2015 to 26th Dec 2015)

Organized by

Department of Electronics Engineering,
Sardar Patel Institute of Technology,
Munshi Nagar, Andheri (W),
Mumbai 400 058
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http://www.spit.ac.in/2015/09/22/fdp-on-advanced-technologies-in-electronics-engineering/
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About us

Sardar Patel Institute of Technology is under the umbrella of Bharatiya Vidya Bhavan academically affiliated to the University of Mumbai. Institute runs four UG, three PG and two Ph.D. programmes. Department of Electronics Engineering has earned a great reputation in the field of engineering education, as well as industry. The department has well equipped laboratories to cater the curriculum. The department regularly organizes value added courses and STTPs. Department is provisionally accredited by National Board of Accreditation.

About the FDP

The demand for the human resources in the area of advanced electronics engineering technologies is increasing day by day due to increase in demand for consumer electronics. In accordance with this, University of Mumbai revised the curriculum of Electronics Engineering and introduced courses like MEMS, ASIC Verification and CMOS Analog VLSI Design. To impart training on these courses, S.P.I.T. is organizing a series of workshops to be conducted by domain experts in co-ordination with industry. **Teachers from AICTE recognized institutes teaching in the area of MEMS, CMOS Analog VLSI Design, Virtual Instrumentation, ASIC Verification and Power Electronics can attend this course**.

Total Modules: 05

Duration of Each Module: 01week

Module 1	MEMS Devices	23rd Nov to 28th Nov 2015
Module 2	Virtual Instrumentation with Labview	30th Nov to 5th Dec 2015
Module 3	CMOS Analog VLSI Design	7th Dec to 12th Dec 2015
Module 4	Control Design with EICASLAB and Power Electronics with PSIM	14th Dec to 19th Dec 2015
Module 5	ASIC Verification with SystemVerilog	21st Dec to 26th Dec 2015

Fee Structure:

S.N.	Number of Modules	Before 30th Oct. 2015	Between 30th Oct. to 6th Nov. 2015
1	One Module	Rs. 4200/--	Rs. 6000/--
2	Any 2 modules	Rs. 8000/--	Rs. 11000/--
3	Any 3 modules	Rs. 12000/--	Rs. 16000/--
4	Any 4 modules	Rs. 16000/--	Rs. 21000/--
5	All modules	Rs. 20000/--	Rs. 26000/--

Take-away:

1. Course material including Breakfast-Tea-Lunch
2. One 8GB Pen Drive
3. Certificate as per the number of modules attended e.g. if participant attend any one module then one week certificate will be given. If participant attend two continuous modules then two week certificate will be given.

Registration:

Cheque or DD drawn in the name of "SPIT, Allied division" payable at Mumbai should reach on or before 6th Nov 2015 along with the online registration. For online registration please visit
http://www.spit.ac.in/2015/09/22/fdp-on-advanced-technologies-in-electronics-engineering/
Please note that registration charges are **non-refundable** under any circumstances.

Contact for Registration:

Prof. Payal Shah (Mobile: 9867368965)
Email: payal_shah@spit.ac.in

Selection Criteria:

Selection of participants will be done on **'First Come First Serve Basis'**. Organizing committee's decision will be final in selecting the participants.

Important Dates:

Last Date for Registration/DD: 6th Nov 2015
Notification of Selection: 16th Nov 2015
Commencement of FDP: 23rd Nov 2015

Who Should Attend:

1. Faculty who teach MEMS, CMOS Analog VLSI Design, ASIC Verification, Virtual Instrumentation and Power Electronics
2. Faculty who wish to set-up Laboratory for subjects like MEMS and CMOS Analog VLSI Design
3. Faculty who want to pursue research in the above mentioned areas
4. Faculty pursuing P.G./Ph.D. who wish to do projects and research work in the above mentioned areas

Resource Persons:

Resource persons from IIT Bombay and other institutes will also be associated. Hands on sessions will be handled by industry experts and also by domain experts.

Module	Module Name	Resource Person/ Industry
Module 1	MEMS Devices	Dr. Surendra Rathod
		Prof. P. V. Kasambe
		FTD Infocom, Bangalore
		Nanosniff Technologies, Mumbai
Module 2	Virtual Instrumentation with Labview	Dr. Surendra Rathod
		Prof. P. V. Kasambe
		Prof. D. D. Ambawade
		Prof. Manoj Gophane
		Prof. Shailesh Rokade
		Mr. Sanket Yevalkar (SAMEER Mumbai)
		National Instruments /Trident Techlabs
Module 3	CMOS Analog VLSI Design	Dr. Surendra Rathod
		Prof. Narendra Bhagat
Module 4	Control Design with EICASLAB and Power Electronics with PSIM	Dr. Y. S. Rao
		Dr. Rajendra Sutar
		Prof. G. T. Haldankar
		Prof. Payal Shah
		Trident Techlab
Module 5	ASIC Verification with SystemVerilog	Dr. Prachi Gharpure
		Dr. D. R. Kalbande
		Dr. Surendra Rathod

Important Links:

For Registration: **http://www.spit.ac.in/2015/09/22/fdp-on-advanced-technologies-in-electronics-engineering/**
Email: fdp@spit.ac.in
Other: www.spit.ac.in

How to Reach:

1. By Air: Santacruz Airport (5 Km)
2. By Train: Andheri Station (1.5 Km)
3. By Metro: Azadnagar Station (0.5 Km)
4. By Bus From Andheri (W) station: 249/250/254/257/259

Venue:

Electronics Engineering Department
Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar,
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Patrons:

Prof. S. G. Chitale, Director
Dr. Prachi Gharpure, Principal
Dr. Y.S. Rao, Vice-Principal

Coordinator:

Dr. Surendra S. Rathod
Phone: 26707440/26708520 Extn. 350
Mobile: 9920228275
Email: surendra_rathod@spit.ac.in

Organizing Committee:

1. Dr. Rajendra Sutar
2. Prof. Narendra Bhagat
3. Prof. Prashant Kasambe
4. Prof. Govind Haldankar
5. Prof. Manisha Bansode
6. Prof. Payal Shah
7. Prof. Vijayalaxmi Bhat
8. Prof. Jagdish Mali
9. Prof. Manoj Gophane
10. Prof. Shailesh Rokade

Address of Correspondance:

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Module 1: MEMS Devices

Introduction:

Micro-Electro-Mechanical Systems, or MEMS, is a technology that in its most general form can be defined as miniaturized mechanical and electro-mechanical elements that are made using the techniques of microfabrication. MEMS has been one of the thrust areas for the laboratory for the last ten years in India. Particularly; design and fabrication of sensors, actuators, switches, resonators, microfluidics and stiction in surface micromachined devices are the areas of study for researchers all around the globe. This research tends to be interdisciplinary that encourages collaborations in biology, chemical engineering, bioengineering, computer science, mechanical engineering and other departments. The applications of this technology are far wider than any single technology ever known in the human history.

The bigger objective of this course is to train the manpower in the area of MEMS. Training will be provided on CoventorWare and COMSOL from the industry experts. These are worldwide used industry standard software used for the design and analysis of MEMS devices.

Objectives:

1. To teach fundamentals of MEMS materials, devices and applications
2. To teach the issues in fabrication and packaging of MEMS devices
3. **To impart hands-on training on CoventorWare, COMSOL and Sensiemer** (from Nanosniff Tech.)

Contents:

1. Introduction to MEMS
2. MEMS Materials and Their Properties
3. MEMS Fab Processes
4. MEMS Devices
5. MEMS Device Characterization
6. Hands on practice on MEMS CAD tools

Module 2:Virtual Instrumentation with Labview

Introduction:

LabVIEW software is an ideal for any measurement or control system and the heart of the NI design platform. It integrates all the tools that engineers and scientists need to build a wide range of applications in dramatically less time. LabVIEW is a development environment for problem solving, accelerated productivity and continual innovation. LabVIEW provides a single graphical design tool for algorithm development, embedded system design, prototyping and interfacing with real-world hardware.

Objectives:

1. To teach fundamentals of virtual instrumentation
2. To demonstrate different toolkits of Labview
3. To impart hands on training on National Instrumentals Platforms that can be interfaced to Labview e.g. Smart Camera, DC motor Control, NI ELVIS, Bioinstrumentation Sensors and Mechatronics components

Contents:

1. Introduction to Graphical system designs
2. Instrument and Control Systems
3. Data Acquisition and measurements
4. National Instruments ELVIS
5. Bioinstrumentation Sensors
6. Mechatronic Components

Module 3: CMOS Analog VLSI Design

Introduction:

Integrated circuits incorporating both digital and analog functions have become increasingly prevalent in the semiconductor industry. Millions of transistors are integrated to design digital circuits such as microprocessors and memories. However, complete system in general cannot be exclusively digital. Analog function blocks are required at least at the input and output stages. Tradeoffs primarily govern the design of analog circuits. Skill required in designing analog circuits is much higher than needed for digital circuits. Complex digital circuits are now commonly combined with analog circuits as part of the continuing drive toward higher levels of electronic system integration. For example, complex microprocessors are frequently combined with high performance analog and mixed-signal circuits to form so-called "system-on-a-chip" devices. An example of this is a single chip modem combining a digital signal processor with precision analog-to-digital and digital-to-analog functions on a single silicon die. Such devices offer the semiconductor customer significant savings in manufacturing costs due to the resulting reduction of chip-to-chip interconnections. Putting analog and digital circuits on the same chip throws additional challenges. Apart from difficult task of optimization, we have to consider various nonidealities introduced by devices.Now necessity of analog circuit designers is being acutely felt by electronic industry.

Analog circuit design is therefore challenging task. This training primarily addresses important issues in analog circuit design.

Objectives:

1. To teach design concepts of CMOS analog VLSI circuit
2. To impart hands-on training on circuit simulators

Contents:

- CMOS analog building blocks
- MOS Models
- Passive and Active Current Mirrors
- Band Gap References
- Single Stage Amplifiers
- Differential Amplifiers
- MOS Operational Amplifiers
- Switch Capacitor Circuits
- Oscillators
- Phase-Locked Loop
- Analog Layout Techniques
- AMS design flow

Module 4: Control Design with EICASLAB and Power Electronics with PSIM

Introduction:

EICASLAB is the professional software suite for automatic control design and forecasting that represents an innovative approach to the design of automatic controls in several fields e.g. robotics, aerospace, automotive etc. EICASLAB supports the automation of industrial processes through powerful tools for modelling plants, designing and testing embedded control system architectures. EICASLAB assists all the phases of the control design process: from system concept to generation of the code to be transferred in the final target.

Research in power electronics nowadays is carried out with PSIM as one of the advanced simulation tool. PSIM is one of the fastest simulators for power electronics simulation. There are many optional add-on Modules available to address specific needs in various applications, such as motor drives, digital control, renewable energy, or DSP and FPGA support. PSIM's control library provides a comprehensive list of components and function blocks, and makes it possible to build virtually any control scheme quickly and conveniently. Various research laboratories and institutes are pursuing research activities using PSIM.

Objectives:

1. To teach fundamentals of power electronic devices and systems
2. To give hands-on training on PSIM simulator

Contents:

1. Control Design with EICASLAB
2. Power electronic devices and systems
3. PSIM Basics
4. Motor Drive Module in PSIM
5. Digital Control Module in PSIM
6. Renewable energy Module in PSIM

Module 5: ASIC Verification with SystemVerilog

Introduction:

The SystemVerilog language includes features for design, verification, assertions, and more. Some of the typical features of an hardware verification language that distinguish it from a Hardware Description Language such as Verilog or VHDL are Constrained-random stimulus generation, Functional coverage, Higher-level structures, especially object-oriented programming, Multithreading and interprocess communication, Support for HDL types such as Verilog's 4-state values and Tight integration with event-simulator for control of the design. There are many other useful features that allow you to create testbenches at a higher level of abstraction than you are able to achieve with an HDL or a programming language such as C.

Objectives:

1. To teach basics of programmable devices, verilog language and verification process
2. To impart training on SystemVerilog for verification

Contents:

1. Programmable Devices
2. Verilog HDL
3. Verification Basics
4. Data types, procedural statements and testbench
5. OOP and Randomization
6. IPC and advanced OOP
7. Assertions and Functional Coverage
8. Advanced interfaces and interfacing with C