

## About the College

PSG College of Technology, an institution of academic excellence, was founded in the year 1951 by PSG & sons Charities Trust. PSG College of Technology an AICTE approved institution is affiliated to Anna University and ISO 9001 certified. Most of our programmes have been accredited by National Board of Accreditation (NBA). Recognizing the excellent infrastructure, faculty, progressive outlook, high academic standards and record performance, PSG College of Technology was conferred Autonomous status in the year 1978. One unique feature at PSG College of Technology is the close collaboration of educational institution and industry, resulting in the cross fertilization of theory with practice.

## About the Department

The Department of Electronics and Communication Engineering came in to existence in the year 1968. Ever since its inception, it has been splendid in providing dynamic and quality engineers to the society till date. The department has Undergraduate programme in Electronics & Communication Engineering and Post Graduate Programme in Communication Systems, VLSI Design and Wireless Communications offering high class technical experience to the students. The department has received the AICTE-CII Award for the Best-Industry linked Institute for the Electronics & Communication Engineering subject stream for the year 2013. Research programmes have been nurtured in the department effectively in various fields of Electronics & Communications.

## About Coreel Technologies

CoreEL University Technologies is a CASPS technology company with business spread across design services & product development, distribution and training. Head Quartered in Bangalore, India, CoreEL is a leading provider of VLSI & Embedded Systems design services and IP. Since its inception in 1999, CoreEL Technonogies a privately held corporation has always strived to deliver quality solutions & support in all the business areas that it serves. Our Services offerings include Distribution of Silicon solutions, EDA tools, COTS products, Engineering Services, Education and Manufacturing. These services are offered to Defense and Aerospace, Telecommunication and Networking, Homeland Security, Broadcast Video and Education segments.

**CoreEL University Program:** CoreEL University Program provides Eco-System support to Indian Academia in Engineering

Higher Education, in the field of Embedded systems thereby enabling the delivery of quality education. CoreEL university achieves this by providing state of the art products from **XILINX, MENTOR GRAPHICS, MATLAB, Ansys, VxWorks (WIND RIVER), Speedgoat, PCB Design Tools for Mentor Graphics Analog Discovery Kits from Digilent.**

## Objectives of the Training Course

This workshop provides an introduction to broaden the bridge that covers the gap between the biomedical science community and engineers, by encouraging the developers and the users of biomedical equipment to apply at a large scale and to promote the FPGA. Through hands-on exercises, you are going to realize biomedical sub system designs from algorithm to Real-time hardware implementation.

### Highlights

- ✓ Understanding why FPGAs lend to high-performance DSP based Biomedical Applications?
- ✓ Model and Simulate a System Generator designs in Simulink Environment.
- ✓ DSP-Targeted Reference Design – Introduces DSP-targeted hardware boards and software tools.
- ✓ Emphasis on real-time Biomedical Image/Signals Detection, Processing, Analyzing in hardware.
- ✓ Design & Implementation of Filters, Face Detection, DWT, FFT, ECG, MRI Design & Techniques.
- ✓ Witness the power, ease of use, and design efficiency of Xilinx DSP tools and IP.
- ✓ Xilinx application notes on MRI Design, ECG, and Detection system for Biomedical and available board solutions.

## Eligibility

This workshop is open to all Students of UG/PG, Engineering College Faculties, Research scholars and industry persons.

## Prerequisites

The participants are familiar with the following prerequisites:

- ✓ Digital Design Experience & Xilinx FPGA architecture and design flow
- ✓ Fundamental DSP concepts.
- ✓ Basic Knowledge on Biomedical Applications.

## Two Days Workshop on Reconfigurable Architectures for Biomedical Signal and Image Processing

21<sup>st</sup> and 22<sup>nd</sup> February 2015



## Organized by

Department of Electronics & Communication  
Engineering  
PSG College of Technology  
Coimbatore – 641 004

## In association with



## Course Content

### Schedule

#### Day1: Morning Session:

- ✓ The advantages of using FPGAs over traditional processors for DSP designs.
- ✓ Recognize a new generation of Biomedical Equipments based on FPGA Technology.
- ✓ A brief recall of this technology and of its key advantages: high electrical performances, short TTM, high reliability, flexibility, portability.
- ✓ Construct different FIR filter and Face Detection System implementations and how to optimize these implementations in the FPGA.

#### Day1: Afternoon Session:

- ✓ **Lab 1:** Signed Number Conversion, Quantization and Rounding, Adders, Subtractors and Accumulation.
- ✓ **Lab 2:** Filter Design & Implementation on Hardware and Real-time Application in Image processing.
- ✓ **Lab 3:** Face Detection System Design & Hardware Implementation for Biomedical Authentication, Resource, Performance and Efficiency Estimation.

#### Day2: Morning Session:

- ✓ Xilinx DSP Design flow and concepts of Hardware co-simulation with Demo.
- ✓ Construct Digital Wavelet Transform (DWT) Techniques implementations and how to optimize these implementations in the FPGA.
- ✓ Digital Biomedical electrical impedance tomography (EIT) system is developed with the aid of FPGA & Implementation - Possibilities for Low power.
- ✓ Design Discussion on Biomedical Equipments like ECG, MRI application notes a design Implementation on Hardware.

#### Day2: Afternoon Session:

- ✓ **Lab 4:** Digital Wavelet Transform (DWT) Design & Implementation for Biomedical Application using FPGA.
- ✓ **Lab 5:** CORDIAC Design & Implementation of on FPGA for Biomedical Application.
- ✓ **Lab 6:** MRI Design & Implementation for Biomedical application using XUP FPGA. Optimization for Low power and High efficiency.

## Registration

Filled up registration form are to be submitted along with the DD for registration fee drawn in favor of "PSGCNCE" payable at Coimbatore. Send through post to the below address

The Dean  
PSG Non-formal & Continuing Education Cell  
New Admin Block,  
PSG College of Technology  
Peelamedu, Coimbatore – 641 004.

#### Registration Fee:

Students: Rs. 2,000/-

Faculty Members: 2,500/-

#### Limited seats available.

For technical queries contact: {usk, krr}@ece.psgtech.ac.in  
Mobile: +91 95970 72632, +91 99446 63820

## Important Dates

Last date for the receipt of applications : 17<sup>th</sup> February 2015  
Confirmation : 19<sup>th</sup> February 2015

## Resource Persons

Mr. H. Balachander, Manager FAE,  
Mr. K. Vidhyasagar  
Technical team from Coreel Technologies, Bangalore  
Faculties from PSG College of Technology

## Committee

#### Convener

Dr.S.Subha Rani  
Professor & Head, Department of ECE,  
PSG College of Technology, CBE

#### Coordinators

Dr. U. Saravanakumar  
Mr. K. R. Radhakrishnan  
Assistant Professors, Department of ECE,  
PSG College of Technology, CBE

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## Registration form

Name :

Designation :

Institution Address :

E-mail :

Mobile No :

D.D.No :

Date :

Bank Name & Branch :

Signature of the applicant