Electrical, Electronics & Instrumentation Student Association

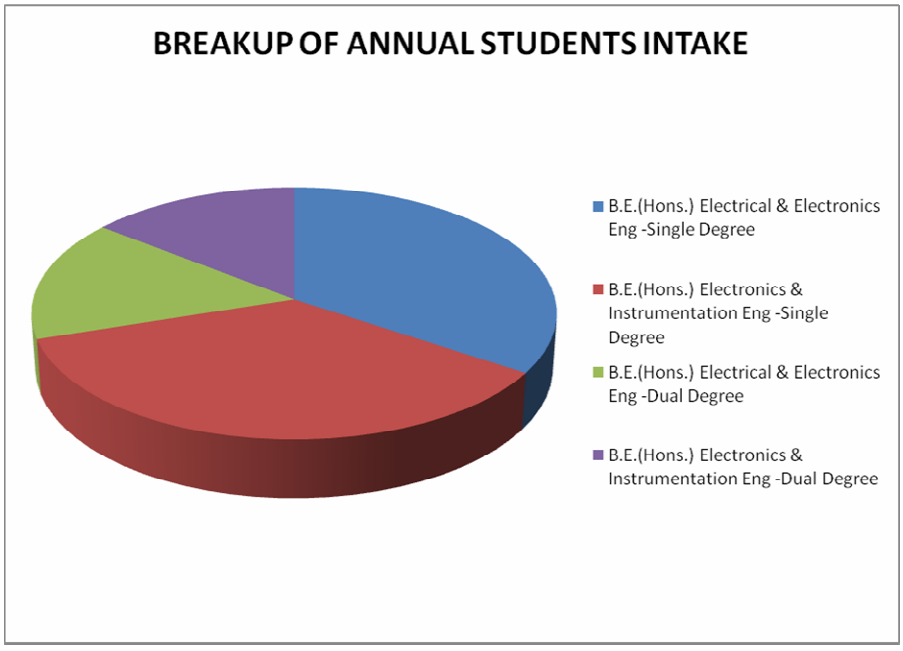
Information Brochure for Placements Jan-2008

CONTENTS

INTRODUCTION

The Electrical Electronics & Instrumentation department (EEE&I dept) offers broad and systematically structured courses in Analog & Digital VLSI design ,Digital Electronics, Analog Electronics, Power Electronics, Micro electronics, Microprocessor programming etc. The department aims to inculcate aptitude for research and development in Electrical, Electronic and Instrumentation Engineering by means of an in-depth curriculum, exposure to the Industry's best practices, state of the art technology, and research methodologies thereby equipping the students with skill sets required to successfully pursue a career in electronics and/or instrumentation after graduation.

To keep in sync with the ever changing technology and needs of the industry, the department is equipped with latest facilities and state of the art labs and also a regular feedback through Industry exposure programmes like Practice School.



ACTIVITIES OF THE EEE AND E&I ASSOCIATIONS

- **Student-organized lectures**
  - Lectures on MATLAB, LabVIEW, Microcontrollers, etc. were organized by the Assoc. members. An awareness session focusing on the PSoC development boards present in the university was also organized. The motivation behind this - students having expertise in a certain field can come forward and share their knowledge with the rest.

- **Guest lectures**
  - Mr. Sunil Nanda, Senior Director from NVidia, Bangalore on *Cache management*.
  - Comm. G.S.Bajwa, Air Traffic controller, Dabolim Airport, Goa, on *Importance of instruments and electronics in air traffic management.*
  - Dave Van Ess of Cypress Semi-conductors on *PSoC Design.*

- **Lab visits**
  - To make the students aware of the lab facilities available in the university, a lab visit was arranged for 2nd year students.
  - A basic understanding of CRO's, Bread boards, Function generators, IC testers, DMM, and basic electronic circuits was provided.

- **FTP Server**
  - Database collected along with a few basic electronic projects, has been put up on an ftp server accessible to all students. This project bank aims at giving beginners a starting point to experience working at electronics.
  - This server also contains information about Practice School I /II, Placement procedures and further studies.

- **Industrial visits**
  - Industrial visit to Reliance Energy, Dahanu was organized.
  - An educational visit to Air Traffic Control Station at Dabolim Airport, Goa was also organized.

ACTIVITIES OF THE EEE AND E&I ASSOCIATIONS

- **Social Gatherings**
  - A freshman party for interaction with juniors and a Farewell for outgoing batch were conducted grandly. The outgoing seniors shared their experiences with their juniors.

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- **Pre-QUARK workshops**
  - These were conducted by the event managers providing information of the events to be held during QUARK '08, the annual technical festival of BITS-Pilani, Goa Campus.
  - The association played an active role in coming up for events for QUARK.

- **Publications**
  - PROBE, a newsletter by the E&I association (ENIGMA) is published monthly.
  - EEE Association comes up with a magazine annually consisting of articles contributed by students.

STUDENT PROJECTS

The students of the department have worked on projects under the broad areas of

- Embedded Systems Design
- Digital Signal Processing and Image Processing
- Wireless and Digital Communication
- Electric Machines and Power Systems
- Instrumentation

Some of the projects on which work has been done by students of the EEE&I department are:

Implementation of RSA algorithm using VHDL

This project involves implementing the RSA algorithm in hardware using VHDL. In this project modular exponentiation is done using the square and multiply algorithm. All modules are implemented in VHDL employing XILINX 8.21 AND ModelSim.

PSoC- Development, analysis and options for future development

This project aims to develop courseware for EEE GC 512 Embedded systems and to incorporate as modules in either a full semester course as relevant modules at the end of regular CDC courses conducted by BITS , Pilani. A complete curve of available application notes have been done and categorized for relevancy to BITS, Pilani courses.

Generalization of Transformer Design using MATLAB and its Optimization using Genetic Algorithms

The project is aimed at generalizing the transformer design using MATLAB based on the inputs given by the user. To simultaneously optimize the goals of minimum cost and maximum efficiency, the fitness functions have been derived for cost and efficiency and the pareto-optimal solution has been obtained using Genetic Algorithms. GA optimizes the fitness functions based on 3 parameters: K, Flux density and Current Density. Various comparisons have been obtained for different values of population and generations while implementing Genetic Algorithms.

Implementation of Secure Wireless Communication using PSoC for MEMS Accelerometer

The sampling algorithm is implemented on the Cypress Programmable System On Chip (PSoC) on the transmitter end. The data obtained by processing samples is then securely transmitted. The communication algorithm is implemented using Wireless USB. On the receiver end the algorithm is implemented using Assembly code. The motion can then be captured using the motion capture algorithm and stepper motors. Thus motion is captured at the receiver end using the motion of the MEMS accelerometers at the transmitter end using secure wireless link.

Implementation of FIR filters with Distributed Arithmetic technique

The project was based on design of digital FIR filter using the concept of "Diatributed Arithmetics" (DA) in the architecture. The use of DA technique improved upon the latency and throughput of the FIR filter by a great amount than obtained in the conventional MAC (Multiplier & Accumulator) based architecture.

New model for operating the common vending machines using a biometric fingerprint scanner and a microcontroller-based system

The project entails design of a 89C450-microcontroller based system to decode the data sent by the finger print scanner to control a vending machine, and remotely manage the accounts of the customers through an Ethernet based system.

Achievements:

- The students of the EEE&I department won numerous prizes at various techfests at IIT Bombay, IIT Kanpur, IIT Madras, NIT Nagpur, NIT Trichy, NIT Surathkal, IIT Delhi, BITS Pilani etc.

- Two students of the department were part of the college team which placed second in the All India Round of the Imagine Cup organized by Microsoft.

- The students of the department have presented papers/ in several contest and conferences like the National Instruments VI Mantra Challenge, the International Conference on Trends in Intelligent Electronic Systems, and the International Conference on Imaging Engineering and the High Performance Grid Computing Conference.

- The students of the department have worked on several projects based on the PSoC range of Microcontrollers.. These have received critical acclaim from Cypress, Inc.

- Students of the department have organized some of the biggest events at Quark ‘07 and ‘08, the techfest of BITS-Pilani Goa Campus.