


Department has well equipped laboratories and faculty rooms.

Name of the laboratory and Details	Lab View
<p>Analog Electronics Lab: Cathode Ray Oscilloscopes, DC Regulated Power supplies, Pulse Generators, Digital Multi meters, Analog voltmeters and Ammeters, decade resistance box, decade capacitance box, decade Inductance box,, Electronics component tester, Function Generator-2Mhz,Function Generator-1Mhz, Sine/Square Generator, AF Oscillator, Function Generator-3Mhz, Auto Compute LCR-Q-METER.</p> <p>Outcomes:</p> <ul style="list-style-type: none">• Design and verify the operation of rectifiers and wave shaping circuits for a given specification using diodes.• Explore the applicability of Thevenin's and maximum power transfer theorem.• Design and obtain the frequency response of series and parallel resonance circuits.• Design RC amplifier and evaluate DC and AC performance parameters.• Design and verify various oscillator circuits using active devices.• Design and obtain the frequency response of multistage and negative feedback amplifiers.	

Logic Design Lab:

Digital IC Trainer Kits, Digital IC Tester, CRO, Function Generators, DC Power Supplies.

Outcomes:

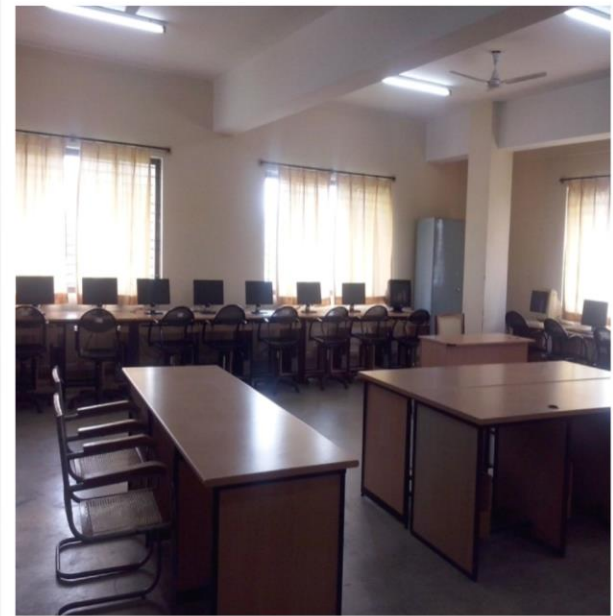
- Realize logic circuits with basic & universal gates for simplified Boolean expressions.
- Realize combinational circuits - adders, subtractors, mux, demux, comparator, encoder, decoder and code converters.
- Verify the functional table of various types of flip-flops.
- Design and analyze sequential logic circuits - counters, registers.
- Design and implement sequence generator.

**HDL Lab:**

US-FND-EXP-PC-XILINX Foundation Express Software, SIMS-CPLD-DB-CPLD-Demonstration Evaluation Board, SIMS-FPGA-DB-FPGA-Demonstration Evaluation Board with Interfaces, Chipmax pattern generator cum logic analyzer, US-FND-STD-PC of XILINX Foundation Express (09additional users), PF 51 SIMS microcontroller development board C compiler with target board, Universal CPLD/FPGA trainer board interface 64 bits I/P 64 bits O/P Universal FPGA kit with 400K FPGA PROM & Interface kits, Chipmax pattern generator cum logic analyzer XILINX ISE 9.2 I S/W, Universal VLSI Board CPLD x C2S 200, 24 computers.

Outcomes:

- Design, Simulate and Implement Combinational circuits - ALU, MUX, DEMUX, DECODER, ENCODER and Code CONVERTERS in Data flow and Behavioral models.
- Design, Simulate and Implement Sequential circuits like FLIP – FLOP, COUNTERS in Behavioral model.
- Implement the adder using data



flow, behavioral and structural modeling.

- Design and Implement the Seven – Segment display, Elevator operation in Behavioral model and to control the external light using Relay in data flow.
- Control the speed and direction of Stepper motor and DC motor.
- Interface the DAC and ADC for specific applications.

DSP Lab:

MATLAB Version 7.0.4, -SIMULINK 4.0, - Signal Processing tool box, - Communication tool box, - DSP Block sets, - Symbolic Math, - Control System tool box, 24 computers-Dell make (14 nos.), HCL make(10 no.s), TMS 320C 6713 DSK, TMS 320C 5416 DSK with CCS, CCS TMS 320 C6000 full version (S/W),DSP kit TMS 320 C6711, DSP CCS simulator multi users, 10 KVA UPS, 24 computers.

Outcomes:

- Study about Sampling Theorem in Time Domain
- Study about how to plot the impulse Response of an Linear Time Invariant system, Linear and Circular convolution, Auto correlation and Cross correlation of the given sequences and their properties.
- Study about how to find the Discrete Fourier Transform (DFT) and Inverse Discrete Fourier Transform (IDFT) of an Linear Time Invariant system.
- Study the design and implementation of Infinite Impulse Response and Finite Impulse Response of Digital Filters.
- Implementation of Convolution, Impulse response and Filters on TMS320C6713 Processor.



Microcontroller Lab:

Optional Programmer, PIC Micro controller Board Optional ICD for 16F877, Optional IC (16F877), 8085 CPU Card, 8051 CPU Card, ALS - NIFC -12 LCD Interface, ALS - NIFC - 08 12 Bit ADC Interface, ALS - NIFC - 07A 8 Bit ADC Interface, ALS - NIFC 06A Dual DAC Interface, ALS - NIFC-21 8251 A - 8253 Study Card, Intelligent Universal Programmer , Model-ESA IUP-XP(LT-48XP) ALS-SDA-89C 61*2 Flash Program Evaluation Board with Interfaces, Lab Volts _PIC Micro starter pack Model-48001, Lab Volts Mobile Communication Trainer with GPS Module Model-48003, Arcoms - Embedded Development system Intel Arm PXA 255X Scale Based Embest university, Keil - Pk 51-e010, Keil-c51 profess, Developers Kit [users-16] MSP-430, 20 Computers, 2.4ghz, 2GB RAM, 80GB,2.4GHZ 2GB RAM 160GB HDD-HCL Make, 10KVA UPS

Outcomes:

- Develop simple assembly level programs using 8051 instruction set to incorporate different addressing modes.
- Perform arithmetic operations, Boolean functions and serial communication using assembly language.
- Generate time delays using timers.
- Write subroutines to understand modular programming concepts.
- Interface I/O devices - DAC, ADC, Keypad, LCD Display and Temperature sensor.
- Develop a C code to control the speed and direction of the Stepper Motor.



VLSI Lab:

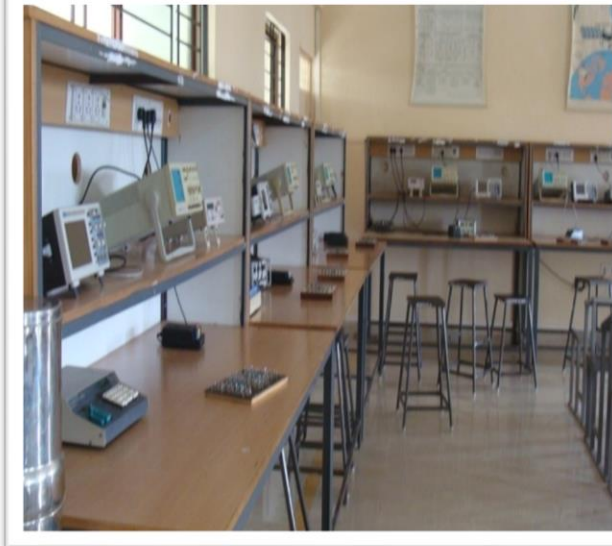
Cadence EDA Tools 26 user licenses, Micro wind Package multi users users licenses, RHEL 5.1 Operating system 26 user licenses, 26 Computers, 2.4ghz, i5 processor 4GB RAM, 500GB HDD-dell make, 10KVA UPS

Outcomes:

- Design and simulate the Inverter, Buffer and Transmission gates using switch level modeling.
- Design, simulate and synthesize the Basic/Universal Gates using dataflow modeling.
- Design, simulate and synthesize FLIP FLOPs, COUNTERS, ADDERS, and SAR using Behavioral modeling.
- Draw the schematic, layout and perform Transient, AC, DC analysis and RC extraction for the Inverter.
- Draw the schematic, layout and perform Transient, AC, DC analysis and RC extraction for the Common source, Common drain and Differential amplifier.
- Draw the schematic, layout and perform Transient, AC, DC analysis and RC extraction for the Op-amp and 4-bit R2R DAC.

**Communication Lab:**

60MHz, 2 Channel DSO, 25MHz, 2 Channel colour DSO, 20 MHz Dual Trace Oscilloscope, 50 MHz, Color DSO 20 MHz, 20Vpp, 20db, F.G., 1 MHz, 20Vpp, F.G., AM / FM Generators Model 2029, Pulse Generators, DC Regulated Power Supplies, QPSK Modulation & Demodulation Module, DPSK Modulation & Demodulation Module, AM Radio Receiver Kit, SSB Modulator & Demodulator Module, PAM/PPM/PWM Modulation & Demodulation Module using CODEC, Advanced Fiber Optic communication kits Falcon make, Klystron Source Microwave test bench and Microwave components, Klystron Power Supply Model-LMKP-600, LCR Meter Model-4901, Micro strip trainer Kits and



Components

Outcomes:

AC Lab:

- Interpret the concept of Time Division Multiplexing using discrete components.
- Assess and evaluate different digital modulation and demodulation techniques - ASK, FSK, BPSK, QPSK, PCM and DPSK.
- Analyze and compare the performance of different microstrip antennas - radiation pattern, directivity and antenna gain.
- Distinguish the characteristics of microstrips and microwave guides and their advantages.
- Understand the characteristics of Optical fiber.

AC+LIC Lab:

- Design and implement Filters, Rectifiers, Schmitt trigger and Converters using OPAMP.
- Design and implement Monostable, Astable multivibrator, Pulse width modulation and Pulse Position Modulation using Timer IC and OPAMP.
- Design and analyze the performance of different Analog modulation and demodulation techniques.
- Understand the use of Phase Locked Loop for Frequency Synthesis & FM demodulation.
- Understand the importance of Class C tuned Amplifier and apply the concept for Amplitude modulation.

Power Electronics Lab:

Dual trace Oscilloscope, Power scope, Isolation transformer, Dimmer stat, Dc regulated power supply 0-32v/2amp,9 in 1 test lab , Digital Multi meters, Rheostats, 0-300v power supply, SCR, TRIAC and DIAC characteristic module, IGBT characteristic study unit, study of lead lag compensating network, UJT firing circuit, Ramp and Pedestal network, DC position control system, P.I.D controller, Second order study unit, stepper motor control digital firing circuit, AC regulator, gate-turn off Thyristor characteristic, SCR and Triac tester, Resistance triggering for Thyristor RC trigger for Thyristor, Diode module, Diac module, Mosfet module, Triac module, SCR module, speed control of dc motor using SCR, Fully controlled converter power circuit with firing module, Half controlled converter power circuit with firing module, DC –Chopper power circuit with firing circuit unit, Forced commutation study unit, Series inverter and Parallel inverter, Universal motor, Tachometer.

Outcomes:

- Demonstrate the V-I characteristics of Power Semiconductor Devices -SCR, TRIAC, DIAC, IGBT.
- Design and analyze different Gate triggering circuits.
- Demonstrate the working of power modules – Controlled Rectifiers, Choppers, Inverters and AC Voltage controllers.
- Demonstrate the working of different types of commutation circuits.
- Control the speed of Electrical Motors through DC converters and AC Converters.
- Simulate and analyze different Firing circuits and Power Converters using PSPICE software.

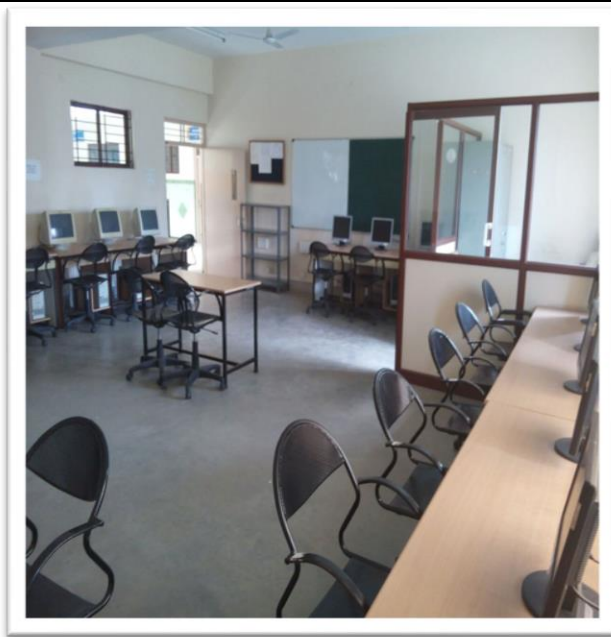


Micro Processor Lab:

TASM Microprocessor 8086 S/W, EPROM Programmer, EPROM Eraser, 24 lines I/O card with 26 core cable, SDA-UNI-01 Basic Universal Mp/Mc kit with Interfaces, ALS-NIFC-21 8051A-8253 study card with Interfaces, ALS-SDA-UNI-01 Basic Universal Mp/Mc Trainer kit with P.S (+5v), DOT matrix printer, 22 Computers, LED Intensity Controller & Wave Generator Board, Stepper Motor Interface Board, Analog Interface, Serial port Interface, Printer Interface, ALS-NIFC-12 LCD Interface, ALS-NIFC-08 12 bit ADC Interface, ALS-NIFC-07A 8bit ADC interface, ALS-NIFC-17 Elevator, ALS-SDA –HC11 68 HC11 Microcontroller kit with P.S, 10 KVA UPS.

Outcomes:

- Write an assembly level program to demonstrate the operations of different operators
- Implement an assembly level code for branch, loop and sub-routine
- Write an assembly level program for string operations
- Write an assembly level code to interface I/O devices and to control the speed and directions of the stepper motor.

**R&D LAB/ Research Centre:**

The Lab Was established in association with Philips, NXP, ARM, ESA, TCS, ARM Boards (10 Nos.) Were Donated to the Lab, Philips TV with Sound System, HP Pro Desk Make- 27Nos., 10 KVA UPS, LCD Projector

