Labs

Laboratory experience is an indispensable part of the educational process and a key factor in preparing students for real engineering practical life; for this reason, the College of Engineering and Technology operates more than 40 laboratories within its premises. All the laboratories are equipped with state of the art tools and facilities that provide hands-on practice for students; furthermore, the laboratories also provide a test bed for research to the faculty. Professional personnel are always available to give help and support to students in projects and experiments; hence, a free access policy outside the regular lab hours in a safe and secure environment for experimentation and research is one of the privileges enjoyed by our students.

In this appendix, we list the laboratories used by courses offered in the program. In addition, all the laboratory facilities within the College of Engineering and Technology are briefly descried.

Laboratories List

Lab Name	Code-Course	Term
COMPUTER LAB (1) (A-102)	EC322 Introduction to Comm. Sys.	6th Term
	CC411 Introduction to Microprocessors	7th Term
	EC421 Random Signals and Noise	7th Term
	EC422 Introduction to Digital Communications	8th Term
	EC321 Signals and Systems	5th Term
COMPUTER LAB (2) (A-103)	CC111 Introduction to Computers	1st Term
	CC112 Structured Programming	2nd Term
	EC321 Signals and Systems	5th Term
	EC322 Introduction to Comm. Sys.	6th Term
	CC411 Introduction to Microprocessors	7th Term
	EC533 Digital signal Processing	10th Term
	EC422 Introduction to Digital Communications	8th Term
COMPUTER LAB (3) (A-202)	CC213 Programming Applications	3rd Term
	EC322 Introduction to Comm. Sys.	6th Term
	EC421 Random Signals and Noise	5th Term

	CC524 Neural Networks	9th Term
	EC533 Digital signal Processing	10th Term
	EC321 Signals and Systems	5th Term
	EC530 Micro-Electro Mechanical Systems	9th Term
COMPUTER LAB (4) **(A-203)**	EC322 Introduction to Comm. Sys.	6th Term
	EC523 Signal space & applications	9th Term
	EC535 Digital VLSI Design	9th Term
	EC538 Selected Topics in Electronics	9th Term
	EC533 Digital signal Processing	10th Term
	EC422 Introduction to Digital Communications	8th Term
	CC213 Programming Applications	3rd Term
COMPUTER LAB (5) **(A-203)**	CC112 Structured Programming	2nd term
	CC213 Programming Applications	3rd term
	CC111 Introduction to Computers	1st term
	EC523 Signal space & applications	9th term
ELECTRICAL CIRCUITS LAB **(A-210)**	EE231 Electrical Circuits 1	3rd Term
	EE232 Electrical Circuits 2	4th Term
DIGITAL AUTOMATIC CONTROL LAB **(A-223)**	EE418 Automatic Control Systems	7th Term
ADVANCED ELECTRICAL CIRCUITS LAB **(B-101)**	EE232 Electrical Circuits 2	4th Term
ELECTRONICS DEVICES AND CIRCUITS LAB **(A-302)**	EC332 Electronic Devices 2	5th Term
	EC432 Microelectronic Circuits	7th Term
	EC434 Analog Signal Processing	8th Term
PCB, ANTENNA AND MICROWAVE LAB **(A-310)**	EC544 Antenna Engineering	9th Term
	EC443 Electromagnetic Transmitting Media	8th Term

	EC501 Project1	9th Term
	EC502 Project2	10th Term
SOLID STATE ELECTRONICS LAB (A-311)	EC210 Solid State Electronics	3rd Term
	EC217 Measurements & Instrumentation	4th Term
	EC134 Fundamentals of Elec.& Electronics	3rd Term
	EC339 Electronics 2	5th Term
ANALOG AND DIGITAL COMMUNICATION LAB (A-323)	EC217 Measurements & Instrumentation	4th Term
	EC237 Measurement CE	4th Term
	EC501 Project1	9th Term
	EC502 Project2	10th Term
PHYSICS LAB (1) (B-306)	BA113 Physics 1	1st Term
PHYSICS LAB (2) (B-307)	BA114 Physics 2	2nd Term
CHEMISTRY LAB (A-219)	BA118 Chemistry	1st Term
MANUFACTURING TECHNOLOGY WORKSHOP (B-001)	IM112 Manufacturing Technology	2nd Term
NETWORK LAB (NATIONAL TELECOMMUNICATION INSTITUTE)	EC521 Communication Networks	10th Term
Microprocessors Lab	CC411 Introduction to Microprocessor	7th Term
Analog Automatic Control Lab (A-223)	EE419 Modern Control Engineering	8th Term

Computer Lab (1)

Laboratory Information

Lab name: Computer Lab One
Room no.: A-102
Capacity: 25 students

Major Equipments

- 25 Personal Computer
- 2 Printers

The laboratory serves the following courses

Course Code	Course Title	Semester
CC111	Introduction to Computers	1st Term
CC213	Programming Applications	3rd Term
EC421	Random Signals and Noise	7th Term
CC316	Object oriented programming	6th Term
CC418	Operating system	8th Term
CC319	Advanced programming	5th Term
ME455	Computer aided design	7th Term
CC416	Computer graphics	8th Term
EC322	Introduction to Comm. Sys.	6th Term
CC411	Introduction to Microprocessors	7th Term
EC422	Introduction to Digital Communication	8th Term
EC321	Signals and Systems	5th Term

Computer Lab (2)

Laboratory Information

Lab name: Computer Lab Two
Room no.: A-103
Capacity: 25 students

Major Equipments

- 25 Personal Computer
- 2 Printers

The laboratory serves the following courses

Course Code	Course Title	Semester
CC114	Introduction to programming	2nd Term
CC213	Programming application	3rd Term
CC414	Database Systems	7th Term
CC111	Introduction to computers	1st Term
EC533	Digital signal processing	10th Term
CC524	Neural networks	7th Term
CC511	Introduction to artificial intelligent	9th Term
CB557	Inspection and repair	10th Term
CC416	Computer graphics	8th Term
CC112	Structured programming	2nd Term
CC319	Advanced programming	5th Term
EC321	Signals and Systems	5th Term
EC322	Introduction to Comm. Sys.	6th Term
CC411	Introduction to Microprocessors	7th Term
EC422	Introduction to Digital Communications	8th Term

Computer Lab (3)

Laboratory Information

Lab name: Computer Lab Three
Room no.: A-202
Capacity: 25 students

Major Equipments

- 25 Personal Computer
- 2 Printers

The laboratory serves the following courses

Course Code	Course Title	Semester
CC412	Computing algorithms	7th Term
CB517	Tech. Of planning	9th Term
EC533	Digital signal processing	10th Term
CC213	Programming application	3rd Term
CC111	Introduction to computers	1st Term
CC431	Computer networks	8th Term
CC114	Introduction to programming	2nd Term
EC322	Introduction to Comm. Sys.	6th Term
EC421	Random Signals and Noise	5th Term
CC524	Neural Networks	9th Term
EC321	Signals and Systems	5th Term
EC530	Micro-Electro Mechanical Systems	9th Term

Computer Lab (4)

Laboratory Information

Lab name: Computer Lab Four
Room no.: A-203
Capacity: 25 students

Major Equipments

- 25 Personal Computer
- 2 Printers

The laboratory serves the following courses

Course Code	Course Title	Semester
EC 322	Introduction to Comm. Sys.	6th Term
EC 535	Digital VLSI design	9th Term
CB 557	Inspection and repair	10th Term
CC 431	Computer networks	8th Term
CC 216	Digital logic design	4th Term
CC 524	Neural networks	7th Term
EC 560	Modern electronic circuit	10th Term
EC533	Digital signal processing	10th Term
EC 422	Introduction to Digital Communications	8th Term
EC 523	Signal space & applications	9th Term
EC 538	Selected Topics in Electronics	9th Term

Computer Lab (5)

Laboratory Information

Lab name: Computer Lab Five
Room no.: A-404
Capacity: 25 students

Major Equipments

- 25 Personal Computer
- 2 Printers

The laboratory serves the following courses

Course Code	Course Title	Semester
CC518	Computer system security	8th Term
CC412	Computing algorithms	7th Term
CC112	Structured programming	2nd Term
CC213	Programming application	3rd Term
CC316	Object oriented programming	6th Term
CC415	Data acquisition system	8th Term
CC111	Introduction to computers	1st Term
CC311	Computer architecture	6th Term
EC523	Signal space & applications	9th Term
CC215	Data structure	4th Term

Electrical Circuits Lab

Laboratory Information

Lab name: Electrical Circuits Lab
Room no.: A-210
Capacity: 25 students

Major Equipments

- Spectrum Analyzers
- Digital Oscilloscopes
- Analog Oscilloscopes
- Multiplexer
- Wattmeter
- Digital power Supply
- Analog power Supply
- Function Generator
- Digital LCR Meter
- Digital Multi-meter
- Analog Multi-meter
- Test Boards

The laboratory serves the following courses

Course Code	Course Title	Semester
EE238	Electrical Eng. Fundamentals	3rd & 4th Terms
EE231	Electrical Circuits 1	3rd Term
EE235	Electrical Circuits	2nd Term
EE236	Electrical Engineering 1	4th Term
EE232	Electrical Circuits 2	4th Term
EE312	Electric Measurement & Inst. 2	5th Term

Digital Automatic Control Lab

Laboratory Information

Lab name: Digital Automatic Control Lab
Room no.: A-223
Capacity: 25 students

Major Equipments

- Programmable Logic Controller "OMRON"
- Programmable Logic Controller "SIEMENS S5-115U"
- Programmable Logic Controller Trainer
- Lab-Volt 32 Bit Microprocessor Trainer
- Heat Kd-ETW 3800 Microprocessor Trainer
- DC Motor Control Simulator
- Rotary Transfer Unit Simulator
- Traffic Control Simulator
- Washing Machine Simulator
- Mentor Robot Arm
- Digital Multi-meter
- 1 Computers PII
- 2 Computers PIII
- Printer
- Scanner

The laboratory serves the following courses

Course Code	Course Title	Semester
EE312	Measurements Instrumentation 2	6th Term
EE412	Control System 2	8th Term
EE418	Automatic Control Systems	7th Term
EE419	Modern Control Engineering	8th Term
EE502	Project 2	10th Term
EE514	Robotics	10th Term
EE515	Comp. Control of Dynamic Systems	9th Term

Advanced Electrical Circuits Laboratory

Laboratory Information

The lab provides various tests and runs numerous experiments to out the following research activities:
- Making basic measurements with the HP8590 E-Series and L- Series spectrum Analyzer.
- Decreasing the frequency span using the marker
- Tracking unstable signals using marker track and the max. hold and min. hold function.
- Tracing of the output of some power electronic circuits using the storage oscilloscope
- Transferring of output data of different circuits is done using a system of storage oscilloscope and Computer PC.
- Studying of different shapes available in the function generation and comparison between their average root mean square value and instantaneous values.

Lab name: Advanced Electrical Circuits Lab
Room no.: B-101
Capacity: 20 students

Major Equipments

- Digital Oscilloscopes
- Digital RLC Meters
- Digital Power Supply
- Analog Power Supply
- Function Generator
- Digital Multimeter
- Analog Multimeter
- Test Boards

The laboratory serves the following courses

Course Code	Course Title	Semester
EE238	Electrical Eng. Fundamentals	3rd term
EE231	Electrical Circuits 1	3rd term
EE236	Electrical Engineering 1	4th Term
EE232	Electrical Circuits 2	4th Term
EE312	Electric Measure. & Inst. 2	5th Term

Electronic Devices & Circuits Lab

Laboratory Information

Lab name: Electronic Devices & Circuits Lab
Room no.: A-302
Capacity: 25 students

Major Equipments

- 1 Digital Oscilloscope
- 13 Analog Oscilloscopes
- 13 Frequency counter
- 14 power Supply
- 12 Function Generators
- 1 L.C.R Meter
- 13 Digital Multi-meter
- 3 Analog Multi-meter

The laboratory serves the following courses

Course Code	Course Title	Semester
EC332	Electronic Devices II	5th Term
EC333	Electronic Amplifiers	6th Term
EC432	Microelectronic Circuits	7th Term
EC434	Analog Signal Processing	8th Term

PCB, Antenna and Microwave Lab

Laboratory Information

Lab name: Antenna and Microwave Lab
Room no.: A-310
Capacity: 25 students

Major Equipments

- Antenna System Demonstrator.
- RF Generator.
- 3 Oscilloscopes
- Transmission Line Demonstrator
- RF Generator
- Antenna Test Bench
- 4 Power Supply
- 2 SWR Indicators
- Antenna Modeling System
- 6 1.7 GHz P4 256 MB RAM 60 GB HD
- 11 P4 2.6 GHz 512 RAM 120 GB HD
- Variable Attenuator
- Microwave Test Bench
- PCB making Machine

The laboratory serves the following courses

Course Code	Course Title	Semester
EC443	Electromagnetic Transmitting Media	8th Term
EC544	Antenna Engineering	9th Term
EC501	Project 1	9th Term
EC503	Project 2	10th Term

Solid State Electronics Lab

Laboratory Information

Lab name: Solid State Electronics Lab
Room no.: A-311
Capacity: 25 students

Major Equipments

- 3 Micro-voltmeters.
- 1 Wattmeter.
- XY-YI Recorder.
- 1Transformer
- 2 Halogen Lamp
- 5 Rheostats
- 3 Solar Cell Battery
- 2 He Ne Laser
- 12 Analog Multi-meter
- 5 Digital Multi-meter
- 2 Tesla Meter
- 2 ESR Control Unit
- 2 Oscilloscopes
- Low Testing Cell Transformer
- 4 Hall Effect Apparatus (Silver and Tungsten)
- 1 Stabilized PSU
- 3 Thermocouples
- 1 Wall Transformer
- High Current Power supply
- A.C- D.C Power supply
- 0-15 v Laboratory Power supply

The laboratory serves the following courses

Course Code	Course Title	Semester
EC210	Solid State Electronics	3rd Term
EC217	Measurements & Instrumentation	4th Term
EC134	Fundamentals of Electrical & Electronics (Computer Sc.)	2nd Term
EC339	Electronics 2 (Electrical Dept. & Computer Dept.)	5th Term

Analog & Digital Communication Lab

Laboratory Information

Lab name: Analog & Digital Communication Lab
Room no.: A-323
Capacity: 25 students

Major Equipments

- Power Supply
- Signal Analyzer
- Spectrum Analyzer
- 4 Function Generators
- 4 Analog Oscilloscopes
- 1 Digital Oscilloscope
- 2 Multi-meters
- Signal generator
- D.C Power Supply
- 2 PSG 1000 Synthesized Signal Generator
- Multi-meter Station
- 8111A Pulse/Function Generator
- 2 Function Arbitrary 33120A Wave Generator
- ISO-Tech IDM 205 RMS
- 4 Oscilloscopes Multiplexer
- DAE SHIN DOA-141 All in One
- Lab-Volt Digital Training Kit
- 6 Frequency Counter
- Oscilloscope 40 MHz SN9205
- Digital Oscilloscope 150 MHz

The laboratory serves the following courses

Course Code	Course Title	Semester
EC217	Measurements & Instrumentation	4th Term
EC237	Measurement Computer	4th Term
EC501	Project 1	9th Term
EC503	Project 2	10th Term

Physics Lab (1)

Laboratory Information

Lab name: Physics Lab I
Room no.: B-306
Capacity: 20 students

Major Equipments

- DC power supplies
- Analog multimeters
- Digital multimeters
- Stop watches used with the capacitor charging experiment
- Sonometers used with the meter-bridge experiment
- Breadboards used with all the experiments of Physics 1
- Set of capacitors
- Set of resistors
- Low voltage lamps used with the non-linear resistance experiment

The laboratory serves the following courses

Course Code	Course Title	Semester
BA113	Physics 1 (Electricity & Magnetism)	1st Term

Physics Lab (2)

Laboratory Information

Lab name: Physics Lab II
Room no.: B-307
Capacity: 20 students

Major Equipments

- DC power supplies
- Electric heaters: 1 KW
- Function generators used for the determination of the speed of sound by resonance tube
- Gas laser used with Young's double slit experiment
- Low voltage AC/DC power supply, used with the determination of the AC frequency experiment
- Analog multimeters
- Digital multimeters
- Digital balance
- Calorimeters
- Stop watches used with the determination of the electric equivalent of heat experiment
- Sonometers used with the determination of the AC frequency experiment
- Horseshoe magnet used with the AC frequency experiment
- Digital thermometers
- Loudspeaker used for the determination of the speed of sound by resonance tubes
- Thermocouples

The laboratory serves the following courses

Course Code	Course Title	Semester
BA114	Physics 2 (Heat & Sound)	2nd Term

Chemistry Lab

Laboratory Information

Lab name: Chemistry Lab
Room no.: A-219
Capacity: 20 students

Major Equipments

- Glassware
- Digital balance
- Spectrophotometers
- PH meter
- Oil test kits
- Distillation unit
- Oven
- Electric heaters

The laboratory serves the following courses

Course Code	Course Title	Semester
BA118	Chemistry	1st Term

Manufacturing Technology Workshop

Laboratory Information

Lab name: Manufacturing Technology Workshop
Room no.: B-001
Capacity: 25 students

Major Equipments

- Centre Lathe
- Universal Milling Machine
- Shaper
- Drilling Machine
- Bench Drilling Machines
- Bending machine
- Manual shear
- Manual tool for riveting
- Grinder with two wheels and a floor stand
- Arc Welding
- Gas Welding
- Sand Casting training kit
- Centrifugal Casting kit
- Die casting kit
- Forging station
- Locksmith shop
- A complete set of power tools
- Measuring instruments comprising:
    - Verniers (standard & digital)
    - Micrometers (standard & digital)
    - Dial gauges
    - Internal & Height gauges
    - Protractors
    - Steel blocks (for calibration)
    -

The laboratory serves the following courses

Course Code	Course Title	Semester
IM112	Manufacturing Technology	2nd Term
IM212	Manufacturing Process	4th Term
ME501	Graduation Project I	9th Term
ME503	Graduation Project II	10th Term

Microprocessors Lab

Laboratory Information

The laboratory gives the students the opportunity to use the microprocessors kit for running several programs written in assembly language and it provides various tests and runs numerous experiments, also, it help the students to establish interfacing between computer and different input/output devices, Finally, it supports the students with all materials required to create different micro-controller chips.

Lab name: Microprocessor Lab
Room no.: to be allocated
Capacity: 25 students

Major Equipments

- Lab-Volt Microprocessor Training Kit
- Lab-Volt Microprocessor Applications Training Kit

The laboratory serves the following courses

Course Code	Course Title	Semester
CC411	Introduction to Microprocessor	7th Term
CC415	Data Acquisition Systems	8th Term
CC421	Introduction to Microprocessor	7th Term
CC525	Intelligent Robotics	10th Term
CC521	Microcomputer Based Design	9th Term
CC527	Computer Aided Design	9th Term

Analog Automatic Control Lab

Laboratory Information

Lab name: Analog Automatic Control Lab
Room no.: A-223
Capacity: 25 students

Major Equipments

- Speed & Position Control Process
- Induction Motor 3-pH Speed Control Trainer
- Process Control Simulator
- Light Control process Simulator
- Temperature Process Trainer T-3
- Pressure & Flow Process Trainer PF-2
- Level & Flow Trainer LF-1
- Computers PIII 500
- Computers PII 166
- Computer Control Process Trainer
- Valve Calibration Trainer
- Analog training System
- F.B. Modular Servo System
- 8 Oscilloscopes
- 3 Function Generators
- Frequency Sweeper
- Dead Weight Tester
- Programmable logic Controller
- 3 Digital Multi-meters
- 4 Air Compressors
- Mini Workshop

The laboratory serves the following courses

Course Code	Course Title	Semester
EE218	Measurements Instrumentation 1	6th Term
EE312	Measurements Instrumentation 2	6th Term
EE411	Control System 1	7th Term
EE419	Modern Control Engineering	8th Term
EE501	Project 1	9th Term
EE518	Automated Industrial System 2	10th Terms