COURSE NAME	**ELECTRONIC FUNDAMENTAL LABORATORY 1**
COURSE CODE	**BENC 1711**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course covers topics in **BENE 1133 Principle of Electric** and **BENT 2133 Electric Circuit Analysis** with the following items: laboratory safety procedure, laboratory report writing, use of laboratory power supply, multi-meter, oscilloscope, function generator, power supply, applications of passive components and basic circuit laws, working of magnetic circuits, capacitor and inductor, fundamental of AC circuit, transient RLC circuit and filter circuit (frequency response).
LEARNING OUTCOMES	At the end of this course, students should be able to: 1 **explain** experimental results with theoretical expected outcome — PO1 C2 2 **measure** experimental performance using fundamental electronic equipment — PO2 P4 3 **manipulate** and analyze experimental data to solve problems — PO3 P4 4 **present** experimental findings in the form of standard engineering reports using various sources — PO7,PO10 A2 5 **work** effectively in groups to perform experiments — PO8 A3

COURSE NAME	**ELECTRONIC FUNDAMENTAL LABORATORY 2**
COURSE CODE	**BENC 1721**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course cover topics in **BENM 1143 Logic Circuit**, **BENE 1183 Electronic Instrumentation** and **BENE 1123 Electronic Engineering Fundamentals** with the following items: logic circuits, arithmetic circuits, counters, measurement error, loading effects and insertion effects, oscilloscope phase and frequency measurement, diode application, transistor - BJT biasing and Transistor – FET biasing.
LEARNING OUTCOMES	At the end of this course, students should be able to: 1 **explain** experimental results with theoretical expected outcome — PO1 C2 2 **measure** and calculate the component parameters — PO2 P4 3 **manipulate** and analyze experimental data to solve problems — PO3 P4 4 **present** experimental findings in the form of standard engineering reports using various sources — PO7,PO10 A2 5 **work** effectively in groups to perform experiments — PO8 A3

COURSE NAME	**ELECTRONIC ENGINEERING LABORATORY 1**
COURSE CODE	**BENC 2731**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course cover topics in **BENE 2323 Control Principles**, **BENM 2133 Digital System** and **BENE 2153 Analog Electronics** with the following items: modeling in frequency domain, transfer function and state space representation, asynchronous & synchronous counter, Finite State Machine (FSM), shift register, reduction of multiple subsystems, BJT small signal amplifier, FET Small signal amplifier and operational amplifiers.
LEARNING OUTCONE	At the end of this course, students should be able to:

1	**explain** experimental results with theoretical expected outcome	PO1	C2
2	**apply** component characteristics in simple electronic design	PO1	C3
3	**measure** experimental performance using fundamental electronic equipment	PO2	P4
4	**manipulate** and analyze experimental data to solve problems	PO3	P4
5	**present** experimental findings in the form of standard engineering reports using various sources	PO7, PO10	A2
6	**work** effectively in groups to perform experiments	PO8	A3

COURSE NAME	**ELECTRONIC ENGINEERING LABORATORY 2**
COURSE CODE	**BENC 2741**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course covers topics in **BENE 2413 Electrical Technology**, **BENM 2123 Microprocessor Technology** and **BENT 2243 Signal & Network** with the following items: DC motor, AC motor, power factor correction, introduction to training board, shift rotate and bit manipulation instruction, memory and peripheral interface operation, Fourier series representation, Fourier transform and Laplace transform & circuit applications.
LEARNING OUTCONE	At the end of this course, students should be able to:

1	**explain** experimental results with theoretical expected outcome	PO1	C2
2	**apply** component characteristics in simple electronic design	PO1	C3
3	**measure** experimental performance using fundamental electronic equipment	PO2	P4
4	**manipulate** and analyze experimental data to solve problem	PO3	P4
5	**present** experimental findings in the form of standard engineering reports using various sources	PO7,PO10	A2
6	**work** effectively in groups to perform experiments	PO8	A3

COURSE NAME	**COMPUTER ENGINEERING LABORATORY 1**
COURSE CODE	**BENC 3751**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course covers topics in **BENT 3113 Communication Principles**, **BENE 2163 Electronic Systems and BENC 3123 Data Structure** with the following items: AM modulator, AM demodulator, SSB modulation and demodulation, FM modulation and demodulation, voltage regulator, power amplifier, oscillator and filter, array, stack & queue and sorting & searching.
LEARNING OUTCOMES	At the end of this course, students should be able to: 1 **explain** experimental results with theoretical expected outcome — PO1 C2 2 **measure** experimental performance using communication & electronic equipment and also computer programming — PO2 P4 3 **manipulate** and analyze experimental data to solve given problem in laboratory session — PO3 P5 4 **classify** and design the suitable given designing situation and problem — PO4 C4 5 **present** experimental findings in the form of standard engineering reports using various sources — PO7,PO10 A2 6 **work** effectively in groups to perform experiments — PO8 A3

COURSE NAME	**COMPUTER ENGINEERING LABORATORY 2**
COURSE CODE	**BENC 3761**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course cover topics in **BENM 3223 Microcontroller Technology**, **BENC 3173 System & Computer Network** and **BENM 3133 IC Design Technology** with the following items: introduction to PIC microcontroller, keypad scanning & LCD display, DC motor control using PWM, modeling and simulation of packet switching network, simulation of wireless network, TCP/IP packet dump analysis by using Wireshark, CMOS Inverter Schematic, CMOS Inverter Layout and Design of CMOS Combinational Logic (Schematic & Layout).
LEARNING OUTCOMES	At the end of this course, students should be able to: 1 **explain** experimental results with theoretical expected outcome — PO1 C2 2 **measure** experimental performance using microcontroller, computer networking and IC devices — PO2 P4 3 **manipulate** and analyze experimental data to solve given problem in laboratory session — PO3 P5 4 **classify** and design the suitable given designing situation and problem — PO4 C4 5 **present** experimental findings in the form of standard engineering reports using various sources — PO7,PO10 A2 6 **work** effectively in groups to perform experiments — PO8 A3

COURSE NAME	**COMPUTER ENGINEERING LABORATORY 3**
COURSE CODE	**BENC 4771**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course covers topics in **BENC 4163 Embedded Software Design**, **BENC 4113 Computer Organization and Architecture and BENC 4133 Digital Signal Processin**g with these following topics: Embedded Software Design (Modeling with UML Diagram), Embedded Software Design (Efficient Embedded Software Methodology), Embedded Software Design (Testing and Debugging), simulation and assembly language programming of a simple hypothetical computer, learning and upgrading a simple hypothetical computer, stack pointer in call subroutine & reverse polish notation, Introduction to TMS320C6713 Input and Output, TMS320C6713 FAST FOURIER TRANSFORM (FFT) and Real – Time IIR Filtering Using TMS320C6713.
LEARNING OUTCOMES	At the end of this course, students should be able to:

1	**explain** experimental results with theoretical expected outcome	PO1	C2
2	**measure** experimental performance using , UML software tool & embedded software tools, computer system & programming and TMS320C6713 Digital Signal Processing board.	PO2	P4
3	**manipulate** and analyze experimental data to solve given problem in laboratory session	PO3	P5
4	**design** the suitable given designing situation and problem	PO4	C5
5	**present** experimental findings in the form of standard engineering reports using various sources	PO7,PO10	A2
6	**work** effectively in groups to perform experiments	PO8	A3

COURSE NAME	**COMPUTER ENGINEERING LABORATORY 4**
COURSE CODE	**BENC 4781**
CREDIT HOURS	1
PREREQUISITE	None
COURSE SYNOPSIS	This course covers topics in **BENC 4173 Multimedia Application & Technology**, **BENM 4123 Digital IC Design** and **BENC 4153 User Interface Design and Programming** with the following items Image Editing , Multimedia Audio and Video Editing, Creating a Website, combinational circuit design with Xilinx integrated software environment (ISE) & ModelSim simulatior,Xilinx Hardware verification, sequence detector design using Mealy and Moore ASM, introduction to basic user interface design environment, software interface design and interfacing software & hardware.
LEARNING OUTCOMES	At the end of this course, students should be able to: 1 **explain** experimental results with theoretical expected outcome — PO1 C2 2 **measure** experimental performance using several multimedia softwares, Xilinx ISE and ModelSim simulator and user interface programming. — PO2 P4 3 **manipulate** and analyze experimental data to solve given problem in laboratory session — PO3 P5 4 **d**esign the suitable given designing situation and problem — PO4 C5 5 **present** experimental findings in the form of standard engineering reports using various sources — PO7,PO10 A2 6 **work** effectively in groups to perform experiments — PO8 A3