UNDERGRADUATE PROGRAMME: COURSE OUTCOMES

Name of the Programme: B.Sc. Electronics

Name of the Class	Course Code	Course Title		Course Outcomes
SEMESTER I				
F.Y.B.Sc.	EL- 111	Basics of Applied Electronics	CO1	To identify different parameters/functions/specifications of components used in electronic circuits
			CO2	To solve problems based on network theorems.
			CO3	To perform simulations using simulator for analyzing network performance
F.Y.B.Sc.	EL- 112	Electronic Devices and Circuits	CO1	To analyze performance parameters based on study of characteristics of electronic devices like diode, transistors etc
			CO2	To choose proper electronic devices as per the need of application
			CO3	To perform simulations for designing and analyzing diode/transistor circuits
			CO4	To build and test the circuitslike street light controller using electronic devices
F.Y.B.Sc.	EL- 113	Electronics Lab IA	CO1	To identify different components and devices as well as their types
			CO2	To understand basic parameters associated with each device
			CO3	To know operation of different instruments used in the laboratory
			CO4	To connect circuit and do required performance analysis
			CO5	To compare simulated and actual results of given particular experiment
SEMESTER II				
F.Y.B.Sc.	EL-121	Fundamentals of Digital Electronics	CO1	To solve problems based on interconversion of number systems
			CO2	To reduce the expression using Boolean theorems
			CO3	To reduce expressions using K maps in SOP and POS forms

			CO4	To understand how to use flip flops to build modulus counter
			CO5	To familiarize with applications of counters like ring counter or event counter
F.Y.B.Sc.	EL- 122	Analog and Digital Device applications	CO1	To compare different opamps as per specifications or performance parameters
			CO2	To understand opamp circuits and its usefulness in different applications
			CO3	To know operating principle of IC 555 in different configurations
			CO4	To understand different types of DAC and their performance parameters
			CO5	To study different types of ADC and their performance parameters
F.Y.B.Sc.	EL- 123	Electronics Lab IB	CO1	To connect opamp circuits and analyze the output
			CO2	To build application circuits of opamp
			CO3	To design the output frequency of IC 555 as astable/monostable multivibrator
			CO4	To compare simulated and actual results of given circuit

SEMESTER III

			CO1	Understand different blocks in communication systems, types of noise in communication systems and its different parameters
S.Y.B.Sc	EL-231	Communication Electronics	CO2	Understand need of modulation, modulation process and amplitude modulation and demodulation methods
			CO3	Analyse generation of FM Modulation and demodulation methods and comparison between amplitude and frequency modulation
			CO4	Identify different radio receivers and their performance parameters.
			CO5	Solve problems based on AM and FM performance parameters
			CO6	Compare pulse modulation techniques such as PAM, PPM, PWM and compare TDM and FDM techniques used in communication
			CO7	Understand need of sampling and

				sampling theorem as well as know about performance parameters of digital communication	
			CO8	Analyze difference between ASK, FSK , PSK as well as PCM and its applications	
S.Y.B.Sc	EL-232	Digital Circuit Design	CO1	Distinguish between different logic families based on their performance parameters	
			CO2	Analyze basic combinational logic circuits for simple applications	
			CO3	Design combinational logic circuits using K maps for identified applications	
			CO4	Design Sequential logic circuits using state diagram, excitation table for identified applications	
			CO5	Understand and compare different types of ADC and their performance parameters using data sheets/manuals	
			CO6	Understand and compare different types of DAC and their performance parameters using data sheets/manuals	
S.Y.B.Sc	EL-233	Practical Course	CO1	Describe and explain the techniques of generation of AM/ FM and demodulation	
			CO2	Design FSK generation using standard IC XR 2206 refering data manuals	
			CO3	Describe and explain the TDM/ FDM generation technique	
			CO4	Demonstrate PPM/PWM/PAM and PCM techniques using standard circuits in data manuals	
			CO5	Design and build minimum complexity digital circuits using logic gates	
			CO6	Design and analyze different combinational and sequential logic circuits using standard ICs in data manuals	
			CO7	Design ADC/ DAC using data manuals and study its performance parameters	
SEMESTER IV					
S.Y.B.Sc.	EL-241	Analog Circuit Design	CO1	Understand and design push pull amplifier and need of heat sinks	
			CO2	Distinguish between Opamp Feedback circuits based on their configurations	

			CO3	Analyze the effect of negative and positive feedback on characteristics of Opamp
			CO4	Understand and analyze the need of positive feedback in oscillator circuits
			CO5	Design , develop and build circuits for identified applications
S.Y.B.Sc.	EL-242	Microcontroller and Python Programming	CO1	Identify the features and architectural details of microcontroller(arduiono)
			CO2	Write code/program using open source programming language(ardiuno) for basic identified applications
			CO3	Understand programming basics of python programming language
			CO4	Understand special features of python programming language such as importing modules, directory, tupules
			CO5	Design , build and implement applications using ardiuno and python
S.Y.B.Sc.	EL-243	Practical Course	CO1	Describe and explain the design procedure of different types of active filters and analyze its frequency response
			CO2	Demonstrate positive feedback for oscillator circuits using standard ICs
			CO3	Describe and explain design procedure for two stage amplifiers and application circuits
			CO4	Design practical circuits for identified applications
			CO5	Develop working setup and write programs using programming techniques of arduino
			CO6	Demonstrate and explain interfacing hardware to arduino microcontroller
			CO7	Solve problems using programming techniques of python

SEMESTER V

T.Y.B.Sc	EL 351	Digital Design using VERILOG	CO1	Know and understand structure of HDL and Verilog.
			CO2	Understand different modeling styles in Verilog.
			CO3	Use Verilog effectively for simulation, verification and synthesis of digital system.
			CO4	Understand basics of programmable

				logic devices.
T.Y.B.Sc	EL 352	Microcontroller Architecture and Programming	CO1	Understand the basics of microcontroller.
			CO2	Acquire basic programming skills in C language.
			CO3	Understand and acquire basic programming skills for AVR microcontroller.
T.Y.B.Sc	EL 353	Analog circuit Design and Applications	CO1	Understand basics of analog circuit design.
			CO2	Analyze waveform generators required for testing different circuits.
			CO3	Build application circuits using specialized ICs.
			CO4	Design analog systems using available ICs.
T.Y.B.Sc	EL 354	Nanoelectronics	CO1	Understand basic concepts of nano electronic devices and nano technology.
			CO2	Understand the electron transport mechanism in nanostructures.
			CO3	Understand techniques of characterization of nanostructures.
			CO4	Understand different devices constructed using nanotechnology
T.Y.B.Sc	EL 355	Signals and Systems	CO1	Know basics of electronic signals.
			CO2	Know different types of systems.
			CO3	Analyze systems using Laplace and Fourier analysis.
			CO4	Understand digital signal processing system.
T.Y.B.Sc	EL 356(A)	Optics and Fiber Optic Communication	CO1	To acquire Knowledge of optical fiber communication system.
			CO2	To understand different parameters of optical fibers.
			CO3	To learn essential optical components of Fiber Optic Communication.
			CO4	To analyze and integrate fiber optical network components in variety of networking schemes.
T.Y.B.Sc	EL 357	Practical Course I	CO1	Analyze different design and test procedures for analog circuits and systems.
			CO2	Measure different parameters of optical fiber communication systems
			CO3	Understand importance of product design and entrepreneurship.

			CO4	Develop electronic systems for given application
T.Y.B.Sc	EL 358	Practical Course II	CO1	Develop and simulate design digital systems using Verilog.
			CO2	Design and develop AVR microcontroller based systems.
			CO3	Understand different nanoelectronic devices.
			CO4	inculcate basic skills required for design and development of embedded
T.Y.B.Sc	EL 359	Practical Course III (Project)	CO1	Understand basic methodology of selection of topic for project.
			CO2	Understand how to do literature review for selected topic for project.
			CO3	Apply the knowledge for design and development of the selected project.
			CO4	Use different software and hardware for testing, validation and verification of circuits for successful outcome of project
			CO5	Understand documentation process in the form of presentation and project report
T.Y.B.Sc	ELSEC 351	Electronic Design Automation Tools	CO1	Design the electronics circuits using EDA software tools
			CO2	Simulate various analog and digital circuits using EDA software tools
			CO3	Plot various waveforms.
			CO4	Simulate basic electronic system blocks
T.Y.B.Sc	ELSEC 352	Internet of Things and Applications	CO1	Know the basic building blocks of IoT
			CO2	Know IoT protocols
			CO3	Understand how to Design and Develop IoT based system through case studies.
SEMESTER VI				
T.Y.B.Sc.	EL 361	Modern Communication Systems	CO1	Understand the digital modulation techniques.
			CO2	Understand different types of pulse modulation techniques.
			CO3	Describe the evolution and importance of Mobile communication and cellular communication
			CO4	Know the basics of satellite communication systems.
T.Y.B.Sc.	EL 362	Embedded System Design using	CO1	Understand features and architecture of PIC microcontroller.
			CO2	Demonstrate how to interface PIC

		Microcontrollers		microcontroller with different pheripherals
			CO3	Understand features and architecture of ARM microcontroller.
			CO4	Demonstrate embedded system using given microcontroller
T.Y.B.Sc.	EL 363	Industrial Electronics	CO1	Understand basics of semiconductor power devices.
			CO2	Analyze basic power electronics circuits and demonstrate applications.
			CO3	Understand basics of motor control.
			CO4	Understand basics of Electric Vehicle systems
				Understand basics of Passive Electronic Component Manufacturing Processes
T.Y.B.Sc.	EL 364	Manufacturing Processes for Electronics	CO1	Understand process involved in PCB manufacture and Modern Circuit Assembly
			CO2	Know about the Semiconductor Device and IC Fabrication Process
T.Y.B.Sc.	EL 365	Process Control Systems	CO1	Familiar with different types of sensors and related systems
			CO2	Know different types of measurement systems.
			CO3	Understand control parameters in process automation.
			CO4	Understand different types of process control systems and their characteristics.
T.Y.B.Sc.	EL 366(B)	Sensors and Systems	CO1	Understand basic principles and types of different sensors.
			CO2	Understand basic principles and types of actuators.
			CO3	Know about signal conditioning systems for sensors.
T.Y.B.Sc.	EL 367	Practical Course I	CO1	Demonstrate power electronic circuits.
			CO2	Demonstrate different types of digital communication systems,
			CO3	Understand working principles of different power devices and their characteristics
			CO4	Demonstrate power electronic circuits.
T.Y.B.Sc.	EL 368	Practical Course II	CO1	Design embedded systems using PIC microcontroller.
			CO2	Design embedded systems using ARM microcontroller.

			CO3	Demonstrate PLC SCADA using ladder programming.
			CO4	Design and develop sensor systems for different applications.
T.Y.B.Sc.	EL 369: Paper IX	Practical Course III(Project)	CO1	Understand basic methodology of selection of topic for project.
			CO2	Understand how to do literature review for selected topic for project,
			CO3	Apply the knowledge for design and development of the selected project.
			CO4	Use different software and hardware for testing, validation and verification of
			CO5	circuits for successful outcome of project
			CO6	Understand documentation process in the form of presentation and project report
			CO7	Understand process of systematic development of electronic system and
			CO8	Development of skills for successful outcome
T.Y.B.Sc.	ELSEC 361	Design of Printed Circuit Boards	CO1	Understand basics of PCB.
			CO2	Know about the PCB design technology.
			CO3	Know about different soldering techniques.
T.Y.B.Sc.	ELSEC 362	Mobile Application Development	CO1	Understand basics of Mobile application development.
			CO2	Develop ability to work in android development environment.
			CO3	CO3: Design and develop mobile applications.