Course Outcomes: Students should be able to

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Second Year Eelctronics Engineering (SE) (Curriculum 2015 Pattern)

Semester-I

Subject	**Signals & Systems**
Subject Code	204181
Course Outcome (COs)	
204181.1	Understand mathematical description and representation of continuous and discrete time signals and systems
204181.2	Develop input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system.
204181.3	Understand and resolve the signals in frequency domain using Fourier series and Fourier transforms
204181.4	Understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s-domain
204181.5	Understand the basic concept of probability, random variables & random signals and develop the ability to find correlation, CDF, PDF and probability of a given event.

Subject	**Electronic Devices and Circuits**
Subject Code	204182
Course Outcome (COs)	
204182.1	Comply and verify parameters after exciting devices by any stated method
204182.2	Implement circuit and test the performance

204182.3	Analyze small signal model of FET and MOSFET
204182.4	Explain behavior of FET at low frequency
204182.5	Design an adjustable voltage regulator circuits

Subject	**Electrical Circuits and Machines**
Subject Code	204183
Course Outcome (COs)	
204183.1	Analyze basic AC & DC circuit for voltage, current and power by using KVL, KCL, andnetwork theorems
204183.2	Explain the working principle of different electrical machines
204183.3	Select proper electrical motor for given application
204183.4	Design and analyze transformers

Subject	**Data Structures and Algorithms**
Subject Code	204184
Course Outcome (COs)	
204184.1	Discuss the computational efficiency of the principal algorithms such as sorting &searching.
204184.2	Write and understand the programs that use arrays & pointers in C
204184.3	Describe how arrays, records, linked structures are represented in memory and usethem in algorithms.
204184.4	Implement stacks & queues for various applications.
204184.5	Understand various terminologies and traversals of trees and use them for variousapplications.
204184.6	Understand various terminologies and traversals of graphs and use them for various applications.

Subject	**Digital Electronics**
Subject Code	204185
Course Outcome (COs)	
204185.1	Use the basic logic gates and various reduction techniques of digital logic circuit in detail.
204185.2	Design combinational and sequential circuits.
204185.3	Design and implement hardware circuit to test performance and application.
204185.4	Understand the architecture and use of microcontrollers for basic operations and Simulate using simulation software.

Subject	**Electronic Measuring Instruments and Tools**
Subject Code	204186
Course Outcome (COs)	
204186.1	Understand fundamental of various electrical measurements.
204186.2	Understand and describe specifications, features and capabilities of electronic instruments.
204186.3	Finalize the specifications of instrument and select an appropriate instrument for given measurement.
204186.4	Carry out required measurement using various instruments under different setups.
204186.5	Able to compare measuring instruments for performance parameters
204186.6	Select appropriate instrument for the measurement of electrical parameter professionally.

Subject	**Audit courseAudit course-I** **Road Safety Management**
Subject Code	204192
Course Outcome (COs)	
204192.1	Changes in awareness levels, knowledge and understanding
204192.2	A change in attitudes / behavior e.g. against drink-drive;
204192.3	Casualty Reduction;

204192.4	That remedial education for those who make mistakes and for low level offences where this is more effective than financial penalties and penalty points;
204192.5	Improving Road Safety Together

Semester-II

Subject	**Engineering Mathematics -III**
Subject Code	207005
Course Outcome (COs)	
207005.1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
207005.2	Solve problems related to Fourier transform, Z-transform and applications to Communication systems and Signal processing.
207005.3	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.
207005.4	Perform vector differentiation and integration, analyze the vector fields and apply to Electro-Magnetic fields
207005.5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing

Subject	**Integrated Circuits**
Subject Code	204187
Course Outcome (COs)	
204187.1	Understand the characteristics of IC and Op-Amp and identify the internal structure
204187.2	Understand and identify various manufacturing techniques
204187.3	Derive and determine various performances based parameters and their significance for Op-Amp.
204187.4	Comply and verify parameters after exciting IC by any stated method
204187.5	Analyze and identify the closed loop stability considerations and I/O limitations
204187.6	Analyze and identify linear and nonlinear applications of Op-Amp
204187.7	Understand and verify results (levels of V & I) with hardware implementation

204187.8	Understand and apply the functionalities of PLL to Frequency synthesizer, multiplier, FM, and AM demodulators
Subject	**Control Systems**
Subject Code	204188
Course Outcome (COs)	
204188.1	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems
204188.2	Determine the (absolute) stability of a closed-loop control system
204188.3	Perform time domain and frequency domain analysis of control systems required for stability analysis
204188.4	Perform time domain and frequency domain correlation analysis
204188.5	Apply root-locus, Frequency Plots technique to analyze control systems.
204188.6	Express and solve system equations in state variable form

Subject	**Analog Communications**
Subject Code	204189
Course Outcome (COs)	
204189.1	Understand and identify the fundamental concepts and various components of analogcommunication systems
204189.2	Explain signal to noise ratio, noise figure and noise temperature for single and cascaded stages in a communication system
204189.3	Describe analog pulse modulation techniques and digital modulation technique
204189.4	Develop the ability to compare and contrast the strengths and weaknesses of variouscommunication systems

Subject	**Object Oriented Programming**
Subject Code	204190
Course Outcome (COs)	
204190.1	Describe the principles of object oriented programming
204190.2	Apply the concepts of data encapsulation, inheritance in C++.
204190.3	Understand basic program constructs in Java

204190.4	Apply the concepts of classes, methods and inheritance to write programs Java
204190.5	Use arrays, vectors and strings concepts and interfaces to write programs in Java
204190.6	Describe and use the concepts in Java to develop user friendly program

Subject	**EMPLOYABILITY SKILL DEVELOPMENT**
Subject Code	204191
Course Outcome (COs)	
204191.1	Have skills and preparedness for aptitude tests
204191.2	Be equipped with essential communication skills (writing, verbal and non-verbal)
204191.3	Master the presentation skill and be ready for facing interviews
204191.4	Build team and lead it for problem solving

Course Outcomes: Students should be able to

Third Year Electronics Engineering (TE) (Curriculum 2015 Pattern)
Semester-I

Subject	**Power Electronics & Applications**
Subject Code	304201
Course Outcome (COs)	
304201.1	Understand basic principle of power conversion.

304201.2	Design & implement a triggering / gate drive circuit for a power device
304201.3	Design & implement protection circuits for power devices.
304201.4	Understand, design & analyze different Power electronics converters.
304201.5	Utilize power converters in different industrial applications.

Subject	**Instrumentation Systems**
Subject Code	304202
Course Outcome (COs)	
304202.1	Applications and selection of sensors/transducers for particular application.
304202.2	Describe the various types of sensors including thermal, mechanical, electrical, electromechanical and optical sensors.
304202.3	Select appropriate transducers and instrumentation system components for a specific application.
304202.4	Design and development of temperature/pressure/flow etc measurement systems.
304202.5	Select appropriate Switches and final control elements for a specific application.

Subject	**Electromagnetics and Wave Propagation**
Subject Code	304203
Course Outcome (COs)	
304203.1	Apply the basics of Electrostatics and Magnetostatics in different applications.
304203.2	Interpret the given electromagnetic problem and solve it using Maxwell‟s Equations.
304203.3	Formulate the wave equation and solve it for uniform plane wave in different media.
304203.4	Explain the effect of different parameters on wave propagation.

Subject	**Microcontrollers and Applications**
Subject Code	304204
Course Outcome (COs)	
304204.1	Learn importance of microcontroller in designing embedded application
304204.2	Describe the 8051 & PIC18FXX microcontroller architectures and its feature.
304204.3	Develop interfacing to real world devices
304204.4	Learn use of hardware & software tools

Subject	**Data Communication**
Subject Code	304205
Course Outcome (COs)	
304205.1	Define and explain terminology of data communications
304205.2	Understand the impact and limitations of various modulation techniques.
304205.3	Get exposure to entropy and other coding techniques.
304205.4	Identify and explain error detection and correction using appropriate techniques.
304205.5	Design of data communication system.
304205.6	To acknowledge the need of spread spectrum schemes.

Subject	**Electronics System Design Practice**
Subject Code	304213
Course Outcome (COs)	

304213.1	Shall be able to understand and interpret the specifications
304213.2	Shall be able to select optimal design topologies
304213.3	Shall be able to interpret datasheets and thus select appropriate components and devices
304213.4	Shall be able to use an EDA tool for circuit schematic and simulation
304213.5	Shall be able to design an electronic system/sub-system and validate its performance by simulating the same

Semester-II

Subject	**DSP and Applications**
Subject Code	304206
Course Outcome (COs)	
304206.1	The student will be capable of calibrating and resolving different frequencies existing in any signal.
304206.2	The student will be in position to understand use of different transforms and analyze the discrete time signals and systems.
304206.3	The student will realize the use of LTI filters for filtering different real world signals.
304206.4	The student will be in a position to design and implement multistage sampling rate converter.

Subject	**Embedded Processors**
Subject Code	**304207**
Course Outcome (COs)	
304207.1	Describe the ARM microprocessor architectures and its feature.
304207.2	Interface the advanced peripherals to ARM based microcontroller
304207.3	Design embedded system with available resources.
304207.4	Design simple applications using MSP430

Subject	**Business Management and Organization**
Subject Code	304208
Course Outcome (COs)	
304208.1	Understand Basic principles of management – will acquaint himself with management process, functions and principles
304208.2	Get the idea about new developments in management.
304208.3	Understand the basic concepts in commerce, trade and industry. He will be exposed to modern business world.
304208.4	Understand modern business practices, forms, procedures and functioning of various business organizations.

Subject	**Fundamentals of HDL**
Subject Code	304209
Course Outcome (COs)	
304209.1	Learn the role of HDL in digital system design using latest tools like VHDL and Verilog.
304209.2	Describe and test digital logic circuits in data flow description, structural description, behavioral description and advanced constructs (procedures, tasks, functions) using both VHDL and Verilog.
304209.3	Develop VHDL code to model and simulate basic combinational networks and sequential machines

Subject	**PLC & Applications**
Subject Code	304210
Course Outcome (COs)	
304210.1	Understand concepts of PLC, its uses & applications.
304210.2	Develop PLC ladder programs for simple industrial applications.
304210.3	Use knowledge of Installation, troubleshooting & maintenance of PLC to provide solution for industrial automation problems.

Subject	**Mini Project**
Subject Code	304216
Course Outcome (COs)	
304216.1	Planning and implementation of hardware/ software project
304216.2	Prepare the budget for hardware requirement
304216.3	Demonstrate the project Work as a team member.

Course Outcomes: Students should be able to

Final Year Electronics Engineering (BE) (Curriculum 2012 Pattern)

Semester-I

Subject	**VLSI Design**
Subject Code	404201
Course Outcome (COs)	
404201.1	Understand VLSI Design Flow
404201.2	Design any digital circuit using VHDL
404201.3	Understand the importance of testability in chip design

Subject	**Electronic System Design**
Subject Code	404202

Course Outcome (COs)	
404202.1	Understand various stages of hardware, software and PCB design.
404202.2	Importance of product test & test specifications.
404202.3	Special design considerations and importance of documentation.

Subject	**Advanced Power Electronics**
Subject Code	404203
Course Outcome (COs)	
404203.1	Understand the operation of modern power converters and multilevel inverters.
404203.2	Understand the basic principles of power electronics in drives and its control, types ofdrives and basic requirements placed by mechanical systems on electric drives.
404203.3	Understand the operation of 1ϕ & 3ϕ converter drives for separately excited & series DCmotors.
404203.4	Learn speed control of induction motor drives in an energy efficient manner using power electronics.
404203.5	Learn and understand working of cylindrical rotor motor, salient pole motor, reluctance motor and permanent magnet brushless DC motor drives.

Subject	**Embedded Systems & RTOS**
Subject Code	**404204**
Course Outcome (COs)	
404204.1	Consider the different constraints of embedded system
404204.2	Understand Real time systems concepts
404204.3	Do the analysis Linux operating system as real time operating system.
404204.4	To use RTOS for different embedded systems

Subject	**Mobile Communication (Elective – II)**
Subject Code	**404205**
Course Outcome (COs)	
404205.1	Understand the fundamentals of cellular system & radio propagation
404205.2	Design mobile communication system by appropriately selecting necessary techniques
404205.3	Analyse different wireless networking & communication systems & standards

Semester-II

Subject	**Computer Network**
Subject Code	404209
Course Outcome (COs)	
404209.1	Design, implement, and analyze simple computer networks
404209.2	Identify, formulate, and solve network engineering problems
404209.3	Use techniques, skills, and modern networking tools necessary for engineering practice.
404209.4	Have a basic knowledge of the use of cryptography and network security

Subject	**PROCESS AUTOMATION**
Subject Code	404210
Course Outcome (COs)	
404210.1	Describe process control principles.
404210.2	Solve issues related to efficient controller design
404210.3	Understand Advance Process Automation Techniques.

404210.4	Utilize knowledge of PLC programming for Process Automation.
404210.5	Design GUI for process industry using LABVIEW Software

Subject	**Audio Video Engineering(Elective- III)**
Subject Code	404211
Course Outcome (COs)	
404211.1	Understand the concept of basic television signal processing
404211.2	Identify globally accepted colour TV standards
404211.3	Demonstrate the need of audio and video compression techniques in real life
404211.4	Acquire knowledge of latest digital TV systems and applications
404211.5	Describe the attributes of acoustics, sound engineering and storage media

Subject	**Mechatronics(Elective- IV)**
Subject Code	404212
Course Outcome (COs)	
404212.1	Work in interdisciplinary field
404212.2	Describe how to optimize Mechatronics system.
404212.3	Implement software for control of Mechatronics systems.
404212.4	Interpret and apply current or emerging knowledge from inside and outside Mechatronics Engineering
404212.5	Use relevant mathematics and computer science concepts as tools