Vision

Provide quality education to create engineering professionals of global standards by keeping pace with rapidly changing technologies to serve the society.

Mission

M1: To educate the students with the state-of-the-art technologies and value based education to meet the growing challenges of industry.

M2: To provide scholarly ambience & environment for creating competent professionals.

M3: To inculcate awareness towards societal needs.

Programme Educational Objectives

PEO1: Exhibit adaptability, teamwork, leadership and communication skill required for successful career.

PEO2: Pursue higher education or research, demonstrate entrepreneur quality.

PEO3: Solve problem in diverse fields using knowledge of electronics and communication engineering.

Program Outcomes (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSO):

PSO1: Analyze and design electronic systems for hybrid engineering application.

PSO2: Implement functional blocks of hardware, software or hardwaresoftware Co-design for signal processing and communication applications**.**

Department of Electronics & Telecommunication Engineering
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Course Outcomes (COs)
Program: BE (E&TC)
Syllabus: 2015 pattern

Class: SE (2016-17)				
SE Sem-I				
Sr. No.	**Course Code**	**Course Name**	**CO No.**	**CO Statement**
1	204181	Signals & Systems	CO204181.1	Analyze the basic concepts related to CT and DT signals and systems
			CO204181.2	Resolve the signals in frequency domain using , Fourier transform and analyze the system in frequency domain
			CO204181.3	Identify the limitation of Fourier transform and need for Laplace transform and develop the ability to analyze the system in S- domain
			CO204181.4	Apply basic concepts of probability , random variables and random signals
2	204182	Electronic Devices & Circuits	CO204182.1	Explain constructional details, characteristics, operation of JFET and MOSFET and also compare various configurations.
			CO204182.2	Analyze DC and AC circuits of JFET and MOSFET.
			CO204182.3	Explain concepts of both positive and negative feedbacks in electronic circuits. Also study various applications of MOSFET.
			CO204182.4	Classify different types of voltage regulators and design variable voltage regulator.
3	204183	Electrical Circuits & Machines	CO204183.1	Analyze basic AC & DC circuit for voltage, current and power by using KVL, KCL, and network theorems.
			CO204183.2	Explain the working principle of different electrical machines.
			CO204183.3	Select proper electrical motor for given application.
			CO204183.4	Design and analyze transformers.
4	204184	Data Structures & Algorithms	CO204184.1	Select appropriate data types with different control, decision and looping statements.
			CO204184.2	Implement modular programs for different applications such as handling database by using user defined functions.
			CO204184.3	Analyze the performance of algorithm after

				developing any application based on time complexity and space complexity.
			CO204184.4	Implement linear and non-linear data structures and their applications such as stacks, queues, trees, graphs. Compare the performance of all.
5	204185	Digital Electronics	CO204185.1	Analyze and synthesize combinational and sequential digital logic circuits and modular design techniques
			CO204185.2	Understand various digital logic families, their characteristics and able to select digital IC family for required application.
			CO204185.3	Explore various types of semiconductor memories and their architecture
			CO204185.4	Understand the architecture and use of microcontrollers for basic operations.
6	204186	Electronic Measuring Instruments & Tools	CO204186.1	Get acquainted with the fundamental of measurements of various electrical parameters.
			CO204186.2	Interpret and describe specifications, features, functions and capabilities of electronic instruments.
			CO204186.3	Select appropriate instrument & carry out required measurement.
SE Sem-II				
7	207005	Engineering Mathematics – III	CO207005.1	Do mathematical modelling of systems using differential equations and solve the differential equations using appropriate method.
			CO207005.2	Apply Fourier & Z transform to solve first and second order difference equation.
			CO207005.3	Classify the different numerical methods & solve the problems choosing the most suitable method.
			CO207005.4	Recognize nature of vector fields, use vector differential operators & evaluate vector integrals & its Applications.
			CO207005.5	Analyze functions of complex variables in terms of continuity, differentiability and analyticity.
8	204187	Integrated Circuits	CO204187.1	Analyze different stages of Op-amp, justify requirement of each stage and determine various performances based parameters.
			CO204187.2	Analyze and design linear and nonlinear applications of Op-Amp.
			CO204187.3	Analyze and design signal convertor

			CO204187.4	Study PLL, its applications and design RC oscillators.
			CO204187.5	Analyze & design first and second order active filters.
			CO204187.6	Select, interpret, plan, analyze, design & build any one application based on integrated circuit
9	204188	Control Systems	CO204188.1	Do mathematical modelling by means of block diagrams and transfer function for control system.
			CO204188.2	Perform time domain and frequency domain analysis of a control system
			CO204188.3	Analyze stability of system using different methods.
			CO204188.4	Model and analyze the control systems using state space analysis and also get detailed knowledge of PLC
10	204189	Analog Communication	CO204189.1	Identify various components of analog communication systems.
			CO204189.2	Explain & calculate signal to noise ratio, noise figure and noise temperature for single and cascaded stages in a communication system.
			CO204189.3	Explore different analog pulse modulation techniques and digital modulation technique.
			CO204189.4	Compare and contrast the strengths and weaknesses of various communication systems.
11	204190	Object Oriented Programming	CO204190.1	Design, develop, test, and debug simple programs using Tokens, Expressions and Control Structures in an object-oriented programming language.
			CO204190.2	Implement class-object mechanism which supports encapsulation, inheritance and information hiding with the help of Constructors and Destructors in C++.
			CO204190.3	Understand and implement class-object mechanism which supports encapsulation and information hiding with the help of constructors & destructors in JAVA.
			CO204190.4	Implement classes and objects and inheritance, multiple inheritance using interfaces in the JAVA programming language.
			CO204190.5	Implement, design and develop user defined packages, exceptions and applets.
12	204191	Employability Skill	CO204191.1	Have skills and preparedness for aptitude tests.
			CO204191.2	Be equipped with essential communication skills

		Development		(writing, verbal and non-verbal).
			CO204191.3	Master the presentation skill and be ready for facing interviews.
			CO204191.4	Build team and lead it for problem solving.

Class: TE (2017-18)

TE Sem-I

Sr. No.	Course Code	Course Name	CO No.	CO Statement
1	304181	Digital Communication	CO304181.1	Improve the ability to understand the performance of a baseband transmitter and receiver.
			CO304181.2	Analyze the performance of a pass band digital communication system in terms of error probability and power spectra.
			CO304181.3	Interpret the behaviour of random process and error probability.
			CO304181.4	Analyze Performance of spread spectrum communication system.
2	304182	Digital Signal Processing	CO304182.1	Get acquainted with importance of digital signal processing systems, their applications , sampling of analog signal and verify concept of aliasing
			CO304182.2	Analyze discrete time signals and systems using different transforms.
			CO304182.3	Design, Implement and simulate different types of IIR and FIR digital filters
			CO304182.4	Describe real world applications of DSP processors and implement the same using DSP processors.
3	304183	Electromagnetics	CO304183.1	Evaluate electromagnetic field parameters and their distributions in different media
			CO304183.2	Apply boundary conditions to different media and determine electromagnetic fields at the interface of two different media.
			CO304183.3	Interpret the electromagnetic problem and solve using Maxwell’s equations.
			CO304183.4	Analyze problems related to transmission lines and uniform plane wave propagation using Maxwell's equations.
4	304184	Microcontrollers	CO304184.1	Analyze and compare different microcontrollers and learn their importance in designing embedded applications
			CO304184.2	Use hardware and software tools for development

				of embedded systems
			CO304184.3	Develop interfacing to real world devices.
			CO304184.4	Engage in self study to design and analyze an application of microcontroller through an open ended experiment
5	304185	Mechatronics	CO304185.1	Explain the key elements of mechatronics system.
			CO304185.2	Choose appropriate sensor for required application.
			CO304185.3	Analyze the working of hydraulic & pneumatic systems.
			CO304185.4	Demonstrate case studies of mechatronics system.
6	304191	Signal Processing & Communication Lab	CO304191.1	Get acquainted with importance of digital signal processing systems, their applications , sampling of analog signal and verify concept of aliasing
			CO304191.2	Analyze discrete time signals and systems using different transforms.
			CO304191.3	Design, Implement and simulate different types of IIR and FIR digital filters
			CO304191.4	Describe real world applications of DSP processors and implement the same using DSP processors.
			CO304191.5	Analyze a PCM, DM and ADM systems and interpret the modulated and demodulated waveforms.
			CO304191.6	Simulate the digital modulation techniques using MATLAB software.
			CO304191.7	Demonstrate generation and detection of DS-SS coherent BPSK.
7	304192	Microcontrollers & Mechatronics Lab	CO304192 .1	Learn use of hardware and software tools for development of embedded systems.
			CO304192.2	Develop interfacing to real world devices.
			CO304192.3	Explain the key elements of mechatronics system.
			CO304192.4	Choose appropriate sensor for required application.
			CO304192.5	Analyze the working of hydraulic & pneumatic systems.
			CO304192.6	Demonstrate case studies of mechatronics system.
8	304193	Electronics System Design	CO304193.1	Apply the fundamental concepts and working principles of electronics devices to design electronics systems.

			CO304193.2	Select appropriate transducer and signal conditioning circuit to design prototype of Data Acquisition system
			CO304193.3	Design an electronic system/sub-system and validate its performance by simulating the same. Also use an EDA tool for circuit schematic and simulation.
			CO304193.4	Create, manage the database and query handling using suitable tools.
TE Sem-II				
9	304186	Power Electronics	CO304186.1	Design & implement a triggering / gate drive circuit for a power device.
			CO304186.2	Understand, perform & analyze different controlled converters.
			CO304186.3	Evaluate battery backup time & design of UPS. Understand applications of various power converters.
			CO304186.4	Design & implement over voltage / over current protection circuit.
10	304187	Information Theory, Coding & Communication Networks	CO304187.1	Perform information theoretic analysis of communication system.
			CO304187.2	Design a data compression scheme using suitable source coding technique.
			CO304187.3	Design a channel coding scheme for a communication system.
			CO304187.4	Understand and apply fundamental principles of data communication and networking.
			CO304187.5	Apply flow and error control techniques in communication networks.
11	304188	Business Management	CO304188.1	Describe skills required to perform management functions
			CO304188.2	Analyze importance of quality and finance from customers and supplier point of view
			CO304188.3	Explain concept of human resource management, career development and talent acquisition.
			CO304188.4	Explain concepts and skills of entrepreneurship and marketing strategy
12	304189	Advanced Processors	CO304189.1	Compare the ARM microprocessor architectures and its feature
			CO304189.2	Interface advanced peripherals to ARM based microcontroller for real world applications
			CO304189.3	Design Embedded system with available

				resources for societal and environmental needs
			CO304189.4	Apply DSP processors programming for signal processing application.
13	304190	System Programming & Operating Systems	CO304190.1	Demonstrate the knowledge of System Programming and Operating Systems.
			CO304190.2	Formulate the problem and develop the solution for same.
			CO304190.3	Compare and analyze the different implementation approaches of system programming and operating system abstractions.
14	304194	Power & ITCT Lab	CO304194.1	Verify working, construction and characteristics of different power devices practically
			CO304194.2	Understand, perform & analyze different controlled converters.
			CO304194.3	Calculate regulation of SMPS.
			CO304194.4	Verify over voltage / over current protection circuit.
			CO304194.5	Perform information theoretic analysis of communication system.
			CO304194.6	Design a data compression scheme using suitable source coding technique.
			CO304194.7	Design a channel coding scheme for a communication system.
			CO304194.8	Apply flow and error control techniques in communication networks.
15	304195	Advanced Processors & System Programming Lab	CO304195.1	Interface advanced peripherals to ARM based microcontroller for real world applications
			CO304195.2	Apply DSP processors programming for signal processing application.
			CO304195.3	Use of modern software tools for implementing embedded system.
			CO304195.4	Formulate the problem and develop the solution for System Programming and Operating Systems.
			CO304195.5	Compare and analyze the different implementation approaches of system programming and operating system abstractions.
16	304196	Employability Skills & Mini Project	CO304196.1	Design and Implement electronic hardware by learning PCB artwork design, soldering techniques, troubleshooting etc.
			CO304196.2	Understand, plan, execute and validate Mini Project with team.

			CO304196.3	Prepare a technical report based on the Mini project.
			CO304196.4	Deliver technical seminar based on the Mini Project work carried out.
Class: BE (2018-19)				
BE Sem-I				
Sr. No.	**Course Code**	**Course Name**	**CO No.**	**CO Statement**
1	404181	VLSI Design & Technology	CO404181.1	Develop effective HDL coding for digital design.
			CO404181.2	Apply knowledge of real time issues in digital design.
			CO404181.3	Model digital circuit with HDL, simulate, synthesis and prototype in PLDs.
			CO404181.4	Design CMOS circuits for specified applications.
			CO404181.5	Analyze various issues and constraints in design of an ASIC
			CO404181.6	Apply knowledge of testability in design and build self test circuit
2	404182	Computer Networks & Security	CO404182.1	Describe and analyze the hardware, software, components of a network and their interrelations.
			CO404182.2	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.
			CO404182.3	Apply knowledge of cryptography and improve the network security.
			CO404182.4	Specify and identify deficiencies in existing protocols, and then go onto select new and better protocols.
3	404183	Radiation & Microwave Techniques	CO404183.1	Analyze and design various radiating elements and arrays to differentiate their performance parameters.
			CO404183.2	Evaluate and analyze transmission lines and waveguides at microwave frequencies.
			CO404183.3	Demonstrate the use of various passive and active microwave components in various applications.
			CO404183.4	Choose suitable microwave measurement instruments and carry out required measurements.
4	404184a	Elective I a) Internet of Things	CO404184a.1	Explain various concepts, terminologies, protocols and architecture of IoT systems.
			CO404184a.2	Use sensors and actuators for design of IoT.

			CO404184a.3	Apply various protocols for design of IoT systems
			CO404184a.4	Use various techniques of data storage and analytics in IoT
			CO404184a.5	Explain and build various applications of IoT
5	404184b	Elective I b) Digital Image & Video Processing	CO404184b.1	Develop and implement algorithms for digital image processing.
			CO404184b.2	Apply image processing algorithm for object segmentation and recognition applications.
			CO404184b.3	Explore video signal representation and algorithm for video processing.
6	404185	Elective II) Electronics Product Design	CO404185.1	Apply various stages of hardware, software and PCB design processes to a real design problem.
			CO404185.2	Explain steps of product debugging and techniques for troubleshooting
			CO404185.3	Describe special design considerations and importance of documentation.
7	404186	Lab Practice I (CNS & RMT)	CO404186.1	Describe and analyze the hardware, software, components of a network and their interrelations.
			CO404186.2	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.
			CO404186.3	Apply knowledge of cryptography and improve the network security.
			CO404186.4	Specify and identify deficiencies in existing protocols, and then go onto select new and better protocols.
			CO404186.5	Analyze and design various radiating elements and arrays to differentiate their performance parameters.
			CO404186.6	Demonstrate the use of various passive and active microwave components in various applications.
			CO404186.7	Choose suitable microwave measurement instruments and carry out required measurements.
8	404187	Lab Practice II (VLSI & Elective I)	CO404187.1	Install Xilinx software & handle the hardware proficiently by writing & simulate VHDL codes for combinational & sequential circuits in various modelling styles and troubleshooting common errors while design & implementation of programs.
			CO404187.2	To prepare layouts in multi metal layers and simulate it for combinational circuits like CMOS

				logic gates, Transmission gate, multiplexers.
			CO404187.3	Apply image processing algorithm for object segmentation and recognition applications.
			CO404187.4	Explore algorithm for video processing.
			CO404187.5	Use sensors, actuators, various development boards and IOT platforms to build small projects/experiments
			CO404187.6	Design IOT systems for different applications like home automation, smart city etc.
BE Sem-II				
9	404189	Mobile Communication	CO404189.1	Apply the concepts of switching technique and traffic engineering to design multistage networks.
			CO404189.2	Explore the architecture of GSM.
			CO404189.3	Differentiate thoroughly the generations of mobile technologies.
10	404190	Broadband Communication Systems	CO404190.1	Evaluate Link power and Rise Time and check fiber optic system viability.
			CO404190.2	Carry out Satellite Link design for Up Link and Down Link.
11	404191	Elective III) PLCs & Automation	CO404191.1	Define principles of process control and concept of automation in detail.
			CO404191.2	Identify need of transmitters, design of signal conditioning circuits for various sensors.
			CO404191.3	Select controller, final control elements, actuators, PLC & develop ladder logic for industrial process automation.
			CO404191.4	Describe advance topics such as SCADA, DCS & CNC machines.
12	404192	Elective IV) Wireless Sensor Networks	CO404192.1	Explain various concepts and terminologies used in WSN
			CO404192.2	Describe importance and use of radio communication and link management in WSN
			CO404192.3	Explain various wireless standards and protocols associated with WSN
			CO404192.4	Recognize importance of localization and routing techniques used in WSN
			CO404192.5	Understand techniques of data aggregation and importance of security in WSN
			CO404192.6	Examine the issues involved in design and deployment of WSN

13	404193	Lab Practice III (MC + BCS)	CO404193.1	Evaluate Link power and Rise Time and check fiber optic system viability.
			CO404193.2	Carry out Satellite Link design for Up Link and Down Link.
			CO404193.3	Apply the concepts of switching technique and traffic engineering to design multistage networks.
			CO404193.4	Explore the architecture of GSM.
			CO404193.5	Differentiate thoroughly the generations of mobile technologies.
14	404194	Lab Practice IV (Elective III)	CO404194.1	Select sensors , actuators and PLC for industrial automation.
			CO404194.2	Design and Simulate ladder Logic for simple industrial applications
			CO404194.3	Interface SCADA , HMI and RFID using communication protocol
15	404188 & 404195	Project Phase I & Project Phase II	CO404195.1	Define, analyze and solve complex real life problem.
			CO404195.2	Work in collaborative team as a member or leader.
			CO404195.3	Apply project management techniques.
			CO404195.4	Identify and apply appropriate tools.
			CO404195.5	Communicate effectively in verbal and written form.
			CO404195.6	Imbibe ethical practices.