Department of Electronics and Communication Engineering
List of Course Outcomes for 2019 Regulation-Autonomous

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
1	2nd Year 3rd Semester	U19MA202	Linear Algebra and Partial Differential Equations	1. (Apply) Apply the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
				2. (Analyze) Determine matrix as a linear transformation in a finite dimensional space
				3. (Apply) Apply orthonormal bases and Gram-Schmidt orthogonalization process of inner product spaces for a given vector
				4. (Apply) Apply the mathematical principles to solve partial differential equations.
				5. (Apply) Solve engineering problems using Fourier series.
2	2nd Year 3rd Semester	U19EC201	Signals and Systems	1. (Understand) understand the fundamental characteristics of signals and systems
				2. (Analyze) Analyze the spectral characteristics of continuous time periodic and periodic signals using Fourier transform and Laplace transform.
				3. (Analyze) Analyze continuous time Linear Time Invariant system using Fourier transform and Laplace Transform.
				4. (Apply) Apply the Z- transform to analyze discrete-time signals
				5. (Analyze) Analyze discrete time Linear Time Invariant system using Discrete time Fourier transform and ZTransform.
3	2nd Year 3rd Semester	U19EC202	Analog Electronic Circuits	1. (Understand) Classify the different types of Power amplifiers and feedback Amplifiers.
				2. (Apply) Apply the biasing concepts in waveform generating circuits using active devices.
				3. (Apply) Apply the various types of tuned amplifiers in real time applications.
				4. (Analyze) Analyze the characteristics of operational amplifiers in application specific circuits.
				5. (Analyze) Analyze the various types of signal generating circuits using operational amplifiers based on their frequency of operation.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
4	2nd Year 3rd Semester	U19EC203	Digital Electronics	1. (Apply): Apply different minimization techniques for designing various combinational logic circuits
				2. (Analyze): Analyze and design the synchronous sequential digital circuits for real time applications
				3. (Analyze): Analyze and design the asynchronous sequential digital circuits
				4. (Apply): Implementation of the PLDs for combinational circuit design
				5. (Apply): Construct programs for combinational and sequential circuits using HDL
5	2nd Year 3rd Semester	U19EC204	Electromagnetic Fields	1. (Understand) Understanding of fundamental electromagnetic laws and concepts
				2. (Analyze) Analyze field potentials due to static charges and static Electric fields
				3. (Analyze) Analyze field potentials due to static charges and static magnetic fields.
				4. (Apply) Divide the fields under time varying situations
				5. (Understand) Understand emission immunity level from different systems to couple with the prescribed EMC standards
6	2nd Year 3rd Semester	U19MC201	Environmental Science	1. (Analyze) - Analyze human interaction for the sustainability of a social eco-system.
				2. (Analyze) - Examine the impact of pollution and hazardous chemical on environment and human health.
				3. (Analyze) – Inspect the effect of different wastes and chemical on the environment and its mitigation methods.
				4. (Apply) –Identify the application of natural resources for creating a good eco-system.
				5. (Apply) – Apply the basic concepts to understand various environmental issues
7	2nd Year 3rd Semester	U19EC211	Analog Electronic Circuits Laboratory	1. (Analyze) Classify various types of feedback amplifiers.
				2. (Apply) Construct and simulate waveform generating circuits
				3. (Analyze) Analyze wave shaping circuits using active devices
				4. (Apply) Apply operational amplifier concepts for various applications
				5. (Apply) Develop voltage regulators using special function ICs.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
8	2nd Year 3rd Semester	U19EC212	Digital Electronics Laboratory	1. (Apply) Implementation of various combinational circuits
				2. (Apply) Implementation of ripple counters.
				3. (Apply) Implementation of shift registers.
				4. (Apply) Implementation of various combinational and sequential circuits using HDL
				5. (Apply) Applying logical concepts in executing project ideas.
9	2nd Year 3rd Semester	U19ICXXX	Industry Oriented Course I	1. (Understand) Understand Industrial problems.
				2. (Apply) Examine the EDA software tools in industry practice and apply for practical designing
				3. (Analyze) Analyze the industrial standards of modeling complex systems.
10	2nd Year 4th Semester	U19MA206	Probability and Statistics	1. (Apply) Apply the basic probability concepts for random variables and random experiments.
				2. (Analyze) Analyze various standard distributions applicable to engineering which can describe real life phenomenon.
				3. (Analyze) Analyze the functions of two dimensional random variables through its probability values
				4. (Apply) Apply statistical tests in testing of hypothesis.
				5. (Analyze) Estimate the values of parameters based on measured empirical data that has a random component.
11	2nd Year 4th Semester	U19EC205	Communication Theory	1. (Understand) Understand the basic concepts of amplitude modulation to represent and generate signals.
				2. (Analyze) Analyze the performance of different types of angle modulation and demodulation techniques.
				3. (Apply) Apply the basic concepts of random process to estimate the performance of various CW systems.
				4. (Analyze) Analyze the mathematical background of various CW systems for noisy channel conditions.
				5. (Analyze) Analyze the characteristics of various pulse analog modulation schemes for reliable communication.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
12	2nd Year 4th Semester	U19EC206	Microprocessors and Microcontrollers	1. (Apply) Apply architecture knowledge to program the 8085 and 8086 processor
				2. (Understand) Understand the working of peripherals and its interface with microprocessors
				3. (Apply) Apply the architecture of 8051 Microcontroller and its special features to program 8051 in assembly language
				4. (Apply) Apply the architecture to program the 32-bit ARM processor
				5. (Apply) Apply the knowledge to develop real time applications based on Microprocessor/Microcontrollers
13	2nd Year 4th Semester	U19EC207	Digital Signal Processing	1. (Understand) Understand discrete Fourier transform, properties of DFT and its application to linear filtering, Fast Fourier transform (FFT) and its applications
				2. (Apply) Apply the design and characteristics of infinite impulse response (IIR) filters for filtering undesired signals
				3. (Apply) Apply the design and characteristics of infinite impulse response (IIR) filters for filtering undesired signals
				4. (Analyze) Analyze the effects of Finite precision representation on digital filters
				5. (Analyze) Analyze the concepts of DSP Applications
14	2nd Year 4th Semester	U19IT609	Open Elective I* Mobile Application Development	1.(Apply) Describe the challenges in mobile application design and development
				2.(Apply) Use Practical Knowledge of the design for mobile applications for specific requirements
				3.(Apply) Implement the design using Android SDK
				4.(Apply) Develop applications using components of android framework
				5.(Apply) Develop android applications including files and databases
15	2nd Year 4th Semester	U19MC202	Indian Constitution and Tradition	1. (Understand) Understand the characteristics of the Constitution of India
				2. (Understand) Understand the fundamental rights and duties
				3. (Understand) Understand the federal structure and distribution of legislative and financial powers
				4. (Understand) Understand the constitutional amendments and emergency provisions
				5. (Understand) Understand the fundamental right to equality, freedom, life and personal freedom

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
16	2nd Year 4th Semester	U19EC213	Digital Signal Processing Laboratory	1. (Apply) Apply the Computation of Convolutions and Frequency Analysis using DFT
				2. (Apply) Apply the Computation of Convolutions and Frequency Analysis using DFT
				3. (Understand) Understand the architecture of a DSP Processor
				4. (Apply) Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
				5. (Apply) Design a DSP system for various applications of DSP
17	2nd Year 4th Semester	U19EC214	Microprocessors and Microcontrollers Laboratory	1. (Apply) Apply the architecture of 8086 to write assembly programs for arithmetic and logical operations in 8086 Hardware Kit
				2. (Apply) Apply the knowledge of assemblers directives to write assembly programs using MASM
				3. (Apply) Apply the working principle of peripheral ICs to interface various peripherals with microprocessors
				4. (Apply) Apply the architecture of 8051 to write assembly language programs
				5. (Apply) Apply the knowledge to develop projects using 8051 or Arduino platforms
18	2nd Year 4th Semester	U19EC281	Mini Project	1. (Understand) Understand the basic concepts of electronics engineering.
				2. (Analyze) Analyze various problems in electronic perspective.
				3. (Apply) Identify the possible solutions for the problem analyzed
				4. (Apply) Construct solution using the acquired knowledge.
19	2nd Year 4th Semester	U19EM201	Verbal and Soft Skills	1.(Apply) Inculcate rhetorical skills to build confidence level.
				2.(Apply) Creative employability attribution for campus interview
				3.(Apply) Improve verbal skills through vocabularies.
				4.(Analyze) Develop comprehending ability in various contexts.
				5.(Analyze) Improve sentence formation by collaborative learning methods.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
20	2nd Year 4th Semester	U19EM201	Summer Internship	1. (Understand) Understand the organizational structure and practices
				2. (Apply) Integrate theoretical and practical knowledge
				3. (Apply) Learn to apply the modern tools used in designing electronic systems
				4. (Apply) Learn to work in a collaborative manner as a team.
				5. (Apply) Develop communication, interpersonal and other critical skills
21	3rd Year 5th Semester	U19EC301	Digital Communications	1. (Apply) Apply the concepts of various information coding techniques and its applications
				2. (Analyze) Analyze the performance of different types of based band communication techniques for spread spectrum.
				3. (Analyze) Analyze the performance of various digital modulation techniques for noisy channel conditions.
				4. (Apply) Apply the basic concepts of digital communication techniques to study of principles of error control coding
				5. (Apply) Apply the features of spread spectrum applications intended for digital communication.
22	3rd Year 5th Semester	U19EC302	Data Communication Networks	1. (Understand) Understand the concept of network functionalities into various layers.
				2. (Apply) Apply the concept of physical and data link layers.
				3.(Analyze) Analyze the various routing protocols and its functionalities
				4.(Analyze) Analyze the principle behind connection oriented and connectionless protocols.
				5.(Apply) Apply the various application layer protocols for data communication.
23	3rd Year 5th Semester	U19EC303	Control Systems	1. (Understand) Explain the structure and modelling of control system using various techniques
				2. (Analyze)Examine the performance of a system using time domain response
				3. (Analyze) Analyze the behaviour of a control system in frequency domain response
				4. (Analyze) Explore the stability of a system using various criterions
				5. (Analyze) Analyze the system using state variable representation to find the internal behaviour of a system

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
24	3rd Year 5th Semester	U19EC513	Professional Elective I Wireless Networks	1. (Understand) Understand the basic concepts of wireless LAN technologies and its standards.
				2. (Analyze) Analyze the network layer solutions for Adhoc wireless networks.
				3. (Analyze) Analyze the operation of transport layer protocols over 3G wireless networks.
				4. (Understand) Understand the architecture and protocols for wireless wide area networks.
				5. (Understand) Understand the concepts of 4G Wireless standards and its technologies.
25	3rd Year 5th Semester	U19EC504	Professional Elective I Digital Image Processing	1. (Understand) Describe familiar with digital image fundamentals
				2. (Remember) exposed to simple image enhancement techniques in Spatial and Frequency domain.
				3. (Understand) learn concepts of degradation function and restoration techniques.
				4. (Remember) study the image segmentation and representation techniques.
				5. (Remember) familiar with image compression and recognition methods
26	3rd Year 5th Semester	U19CS602	Open Elective II* Java Programming	1.(Apply) Understand and apply the features of Java Programming and semantics
				2.(Apply) Identify and apply appropriate object oriented concepts of java in problem solving by adhering to Java Coding standards
				3.(Apply) Apply concepts of java collections API for the given scenario
				4.(Apply) Apply multithreading concepts in concurrent application development
				5.(Apply) Use relevant exception-handling mechanisms to ensure uninterrupted flow of application.
27	3rd Year 5th Semester	U19CS604	Open Elective II* Advanced Data Structures	1. (Understand) Understand the various iterative and recursive algorithms.
				2.(Apply) Construct balanced tree structures for efficient operations on data
				3. (Apply) Deploy search data structures for efficient range searching and string matching.
				4. (Analyze) Identify the suitable algorithm design techniques for solving the program.
				5. (Understand)Describe the concepts of NP-completeness, approximation and randomized algorithms.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
28	3rd Year 5th Semester	U19EC311	Communication Systems Laboratory	1. (Apply) Apply the basic knowledge of analog and digital communication to represent information signals in various domains
				2. (Analyze) Analyze the performance of various information signals under different analog modulation and demodulation techniques.
				3. (Apply) Apply the simulation methods required to convert analog sources into digital signals which are intended for transmission and reception.
				4. (Analyze) Analyze the different types of error control coding and source coding techniques for correcting the channel errors
				5. (Apply) Apply the performance of various information theory coding techniques for modern digital communication systems
29	3rd Year 5th Semester	U19EC312	Communication Networks Laboratory	1. (Understand) Interpret the working of various networking topologies.
				2. (Apply) Apply the error detection techniques and working of HDLC protocol
				3. (Analyze) Analyze the network connectivity using ping, trace route and implement IP address configuration
				4. (Analyze) Examine the various routing algorithms using routing simulator
				5. (Apply) Implement the working of encryption and decryption algorithm
30	3rd Year 5th Semester	U19ICXXX	Industry Oriented Course II	1. (Apply) Build knowledge through practical assignments and learn the various design methods for solving problem.
				2. (Apply) Develop skill to build design techniques for various problems.
				3. (Apply) Solve industrial problems with practices and techniques adopted in industry.
31	3rd Year 5th Semester	U19EM301	Aptitude I	1. (Understand) Understand the basic concepts of quantitative ability
				2. (Understand) Understand the various approaches to solve a critical problem in different dimension
				3. (Apply) Experimenting the Strong foundation in critical thinking.
				4. (Understand) Understand the basic concepts of logical reasoning skills
				5. (Analyze) Analyze and acquire satisfactory competency in use of verbal reasoning

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
32	3rd Year 6th Semester	U19EC304	VLSI Design	1. (Understand) Understand the basics of MOS transistors
				2. (Understand) Understand the different MOS circuits and power strategies
				3. (Understand) Understand the different types of testing in VLSI circuits
				4. (Apply) Apply HDL such as System Verilog for different digital VLSI systems
				5. (Analyze) Analyze the different types of ASICs design
33	3rd Year 6th Semester	U19EC305	Embedded Systems and IoT	1. (Understand) Understand the basics of embedded systems
				2. (Understand) Understand the various peripheral devices of ARM processor
				3. (Apply) Apply the concepts of communication protocols in various embedded system's applications
				4. (Understand) Understand the role of networking in IoT implementation
				5. (Analyze) Analyze the various case studies by linking appropriate IoT components
34	3rd Year 6th Semester	U19EC306	RF System Design	1. (Understand)Interpret the knowledge of high frequency and low frequency parameters
				2. (Apply)Apply the concept of matching networks at radio frequency range.
				3. (Analyze)Analyze the design of various RF amplifier circuits.
				4. (Analyze)Examine the design and operations of oscillator and power amplifier
				5. (Analyze)Analyze the design of Noise Analysis
35	3rd Year 6th Semester	U19ECXXX	Professional Elective II	
36	3rd Year 6th Semester	U19XXXXX	Open Elective III*	
37	3rd Year 6th Semester	U19EC313	Embedded System and IoT Laboratory	1. (Apply) Apply the concept of interfacing various I/O devices with processing device
				2. (Apply) Apply the concept of interfacing various peripherals with processing device
				3. (Apply) Apply the concept of interfacing analog / digital sensors with processing device
				4. (Analyze) Analyze the working of cloud platform and visualize the data
				5.(Analyze) Integrate mobile application and embedded hardware

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
38	3rd Year 6th Semester	U19EC314	VLSI Design Laboratory	1.(Analyze) Analyze the different Combinational and Sequential logic Circuits using hardware description language like Verilog
				2. (Apply) Implementation the logic circuit designs in FPGA board
				3.(Apply) Develop the Layout for basic CMOS circuits
				4. (Analyze) Construct the Layout for CMOS adders
				5. (Analyze) Analyze the characteristics of MOS devices
39	3rd Year 6th Semester	U19EC381	Innovative / Multi-Disciplinary Project	1. (Understand) Comprehend the various types of thinking skills
				2. (Understand) Explore the innovative and creative ideas in Multi-Disciplinary domains.
				3. (Analyze) Analyze a suitable solution for socially relevant issues
				4. (Apply) Develop confident enough to handle issues in various field
				5. (Analyze) Analyze and train them to be innovative in all technological developments.
40	3rd Year 6th Semester	U19EM302	Aptitude II	1. (Understand) Understand and enhance capability in employability skills to meet out the corporate expectations
				2. (Apply) Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
				3. (Understand) Demonstrate various principles involved in solving mathematical problems
				4. (Analyze) Critically analyze various real-life situations by resorting to an analysis of key issues and factors
				5. (Apply) Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc
41	3rd Year 6th Semester	U19EM303	Design Thinking Laboratory	1. (Analyze) Examine Design Thinking concepts and principles
				2. (Understand) Practice the methods, processes and tools of Design Thinking
				3. (Apply) Apply the Design Thinking approach and model to real world situations
				4. (Analyze) Analyze the role of primary and secondary research in the discovery stage of Design Thinking
				5. (Apply) Develop an advance innovation and growth mindset form of problem identification

Professional Elective I

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
1	3rd Year 5Th Semester	U19EC501	Antenna and Wave Propagation	1.(Understand) Explain the fundamentals of radiation and antenna parameter.
				2.(Understand) Explain the construction, operation, radiation characteristics of aperture antenna and slot antenna
				3.(Understand) Explain the construction, operation, and radiation characteristics of array antennas and special antennas
				4.(Apply) Clarify the various measurement techniques to measure antenna parameters
				5. (Apply) select the terminologies involved in radio wave propagation in atmosphere
2	3rd Year 5Th Semester	U19EC502	DSP Architecture and Programming	1.(Understand) Understand the various signal transformation techniques and their influence in parallel programming.
				2. (Analyze) Analyze the structures and various instruction types of basic DSP hardware.
				3. (Analyze) Examine the additional features and the role of special control instructions in the upgraded processors.
				4. (Understand) Illustrate the current architectures and the features of the on-chip peripheral devices.
				5. (Apply) Apply the algorithms related to basic applications in IDE.
3	3rd Year 5Th Semester	U19EC504	Digital Image Processing	1. (Understand) Describe familiar with digital image fundamentals
				2. (Remember) exposed to simple image enhancement techniques in Spatial and Frequency domain.
				3. (Understand) learn concepts of degradation function and restoration techniques.
				4. (Remember) study the image segmentation and representation techniques.
				5. (Remember) familiar with image compression and recognition methods

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
4	3rd Year 5Th Semester	U19EC512	Cryptography and Network Security	1. (Apply) Apply concepts of modular arithmetic theory in cryptography.
				2. (Analyze) Analyze the need for authentication & explain the various authentication algorithms for secure information interchange.
				3. (Analyze) Analyze the various network security threats and propose measures to overcome them.
				4. (Analyze) Recognize an apt security structure to provide system level security.
				5. (Apply) Understand the various cyber security vulnerabilities and apply the concepts of the safeguard techniques.
5	3rd Year 5Th Semester	U19EC513	Wireless Networks	1. (Understand) Understand the basic concepts of wireless LAN technologies and its standards.
				2. (Analyze) Analyze the network layer solutions for Adhoc wireless networks.
				3. (Analyze) Analyze the operation of transport layer protocols over 3G wireless networks.
				4. (Understand) Understand the architecture and protocols for wireless wide area networks.
				5. (Understand) Understand the concepts of 4G Wireless standards and its technologies.
6	3rd Year 5Th Semester	U19EC519	Real Time Operating Systems	1. (Understand) Classify & exemplify scheduling algorithms
				2. (Understand) Understand the basic concepts of general purpose Embedded Operating system and Fault Tolerance in real time systems
				3. (Understand) Understand services and Resource Management in RTOS
				4. (Apply) Apply mCOS-II task scheduling programs in the real time operating systems
				5. (Analyze) Ability to use commercial tools to develop RTOS based applications
7	3rd Year 5Th Semester	U19EC520	Advanced Microprocessors and Microcontrollers	1. (Understand) Describe the architecture and functional block of Pentium Microprocessors.
				2. (Understand) Identify a detailed hardware & software structure of ARM processor.
				3. (Apply) Apply the pipelining knowledge on organization of ARM processor.
				4. (Understand) Understanding the interfacing circuits and prototyping tools for various applications of ARM processor.
				5. (Apply) Apply the concepts of memory organisation in ARM core processors.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
8	3rd Year 5Th Semester	U19EC530	Nano Electronics	1. (Understand) Understand the electronic properties of materials at the nano scale quantum devices and principles.
				2. (Understand) Understand the various properties of Nano CMOS
				3. (Understand) Understand the properties of nano structures and nanoscale based circuits.
				4. (Understand) Understand the properties of sensors.
				5. (Apply) Apply the various methods of soft computing and types of nanoscale memory devices.

Professional Elective II

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
1	3rd Year 6Th Semester	U19EC503	Advanced Digital Signal Processing	1. (Understand) Understand the concepts of stationary and non-stationary random signals and analysis & characterization of discrete-time random processes
				2. (Analyze) Examine the estimation of power spectral density for random processes
				3. (Analyze) Analyze the principles of optimum filters such as Wiener and Kalman filters
				4. (Analyze) Infer the principles of adaptive filters and their applications to communication engineering
				5. (Apply) Apply the mathematical concepts on signal modeling.
2	3rd Year 6Th Semester	U19EC514	High Speed Networks	1. (Understand)Interpret the basics of high speed networking technologies.
				2. (Understand) Know the basic concepts of frame relay and ATM networks
				3. (Analyze) Identify different extents of quality of service to different applications.
				4. (Understand) Learn the planning and operation of wireless networks
				5. (Understand) Learn the planning and operation of optical networks

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
3	3rd Year 6Th Semester	U19EC515	Ad hoc and Wireless Sensor Networks	1. (Apply)Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
				2. (Understand) Classify the issues in designing MAC protocol and transport layer protocol
				3. (Understand) Explain the wireless sensor networks architectures
				4. (Apply) Clarify the localization, time synchronization and topology control
				5. (Apply) Be familiar with the OS used in Wireless Sensor Networks and build basic modules
4	3rd Year 6Th Semester	U19EC521	Sensors and Instrumentation	1. (Understand) To understand the working of commonly used sensors for measurement of displacement, force and pressure.
				2. (Understand) To familiarize the signal conditioning and data acquisition methods.
				3. (Apply) To apply the commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.
				4. (Apply) To implement the application of machine vision
				5. (Understand) To understand the application of intelligent instrumentation in industrial automation.
5	3rd Year 6Th Semester	U19EC522	Automotive Electronics	(Understand) Understand auto electronics construction, characteristics and maintenance of battery, lighting system and different accessories in a typical automobile
				(Understand) Understand the construction, characteristics and maintenance of starting and ignition system of any vehicle.
				(Understand) Understand the various sensors and actuators used in automobile
				(Understand) Understand the principles and architecture of electronic system and its components present in an automobile related to instrumentation, control, security and warning systems
				(Understand) Understand the principles of electric vehicle and its energy management.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
6	3rd Year 6Th Semester	U19EC531	Low power VLSI Design	(Understand) Identify the sources of power dissipation in SoC. Understand the impact of power on system performance and reliability
				(Understand) Understand various power optimization algorithms in low power VLSI design system
				(Apply) Apply optimization techniques and design low power SoC circuits
				(Apply) Apply probabilistic analysis to characterize dynamic power estimation
				(Understand)Understand the concepts of software design to achieve low power.
7	3rd Year 6Th Semester	U19EC532	Mixed Signal IC Design	(Understand) Understand the concepts for Sampling and Aliasing
				(Understand) Understand the characteristics of Analog filters
				(Analyze) Analyze the concepts of Digital Filters
				(Understand) Understand the various data converter architecture circuits
				(Analyze) Analyze the concepts of High speed Data Converter

Industry Oriented Courses

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
1	3rd Year 5th & 6Th Semester	U19IC201	Introduction to Mobile App Development	1.(Understand) Describe the challenges in mobile application design and development
				2.(Apply) Implement the design using Android SDK.
2	3rd Year 5th & 6Th Semester	U19IC202	Practical Image processing using MATLAB	1.(Apply): Summarize image fundamentals and mathematical transforms necessary for image Processing using MATLAB
				2.(Analyze): Analyze the functions of image enhancement, mage reconstruction, image segmentation & image compression.
3	3rd Year 5th & 6Th Semester	U19IC401	Introduction to Networking	1.(Understand) Learn the concepts of networking
				2.(Apply) Applying troubleshooting and understanding security threats

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
4	3rd Year 5th & 6Th Semester	U19IC402	LabVIEW CLAD Certification	1.(Understand) Understandthe LabVIEW environment, dataflow programming, and common LabVIEW development techniques in a hands-on format.
				2.(Apply) Learn and develop data acquisition, instrument control, data-logging, and measurement analysis applications.
				3.(Apply)Applications using the state machine design pattern to acquire, process, display, and store real-world data.
5	3rd Year 5th & 6Th Semester	U19IC403	Automotive Electronics Applications	1.(Understand) Understand autotronics construction, characteristics and maintenance of battery, starting and ignition system and different accessories in a typical automobile.
				2.(Understand) Understand the various sensors, instrumentation and control systems in automobile
				3.(Understand) Understand the principles of electric vehicle and its energy management.
6	3rd Year 5th & 6Th Semester	U19IC404	Electronics simplified – A Practical Approach	1.(Apply): Summarize different types of circuit components and devices with Specifications, Properties and Applications
				2.(Analyze): Analyze the circuit by designing using discrete components and compare their performances
7	3rd Year 5th & 6Th Semester	U19IC405	Java for Beginners	1(Understand)Learn the structure, model and use the Java programming language for various programming technologies
				2.(Apply) Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.

OPEN ELECTIVES OF ECE DEPARTMENT

Sl N o.	Year & Semester	Course Code	Course Name	Course Outcome
1	2nd & 3rd Year 4th to 6th Semester	U19CC601	Multi-Core Architecture and Programming	1. Visualize Multi-core Processors and its different architectures
				2. Express knowledge about the synchronization primitives in challenges in parallel program
				3. Observe to develop shared memory programming with OpenMP
				4. Apply distributed memory programming with MPI
				5. Illustrate parallel architecture for real time scenarios
2	2nd & 3rd Year 4th to 6th Semester	U19CC602	Service Oriented Architecture	1. Recall XML fundamentals and build applications based on XML
				2. Summarize the the key principles and services of SOA to perform the service composition
				3. Compare the different web services and WS standards
				4. Choose web services extensions to develop solutions for real time application
				5. Model and design a service-oriented system using architectural principles, development methods with SOA and service-related technologies systematically and effectively
3	2nd & 3rd Year 4th to 6th Semester	U19CC603	Network Protocols	1. Understand the Basics of Protocols, Addressing and its Functions in Computer Networks.
				2. Identify the Different Types of IP Addressing and its Functions in the Networks.
				3. Summarize Functionalities of Internet Protocol and its Elements.
				4. Describe and Analysis the Basics of TCP Protocol Design and Operations.
				5. Identify the Different Types TCP/IP Family of Network Protocols within the Network.
4	2nd & 3rd Year 4th to 6th Semester	U19CC604	Software Defined Networks	1. Understand the fundamentals of software defined networks.
				2. Implement the operation of SDN control plane with different controllers.
				3. Apply the use of SDN in the current networking scenario.
				4. Utilize the Interfaces and tools for SDN Programming.
				5. Design and develop various applications of SDN.

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
5	2nd & 3rd Year 4th to 6th Semester	U19CC605	GPU Architecture and Programming	1. Identify GPU Architecture.
				2. Make use of programs using CUDA, identify issues and debug them.
				3. Experiment with efficient algorithms in GPUs for common application kernels, such as matrix multiplication
				4. Build simple programs using OpenCL
				5. Interpret efficient parallel programming patterns to solve problems
6	2nd & 3rd Year 4th to 6th Semester	U19CC606	High Speed Networks	1. Understand the Basics of Architecture of ATM and High Speed LANs.
				2. Able to Understand and Analyse the Congestion Control in Various Scenarios within the Packet Switching Networks.
				3. Describe and Analysis the a Range of Traffic Managements In ATM.
				4. Explain the Basic Taxonomy in High Speed Wireless LANs and Architecture Implementation.
				5. Compare and Select Appropriate Modes in Wireless ATM Networks.
7	2nd & 3rd Year 4th to 6th Semester	U19CC607	Introduction to Industrial Networking	1. Understand the basic concepts of data networks
				2. Familiarize the basics of inter networking and serial communications
				3. Understand the details on HART and Field buses
				4. Understand on MODBUS, PROFIBUS and other communication protocol
				5. Understand the industrial Ethernet and wireless communication
8	2nd & 3rd Year 4th to 6th Semester	U19CC608	Basics of Mobile Communication	1. (Understand) Understand the wireless communication and medium used for cellular systems.
				2. (Understand) Understand the basics of mobile telecommunication system and the architecture
				3. (Understand) Understand the architecture of Wireless LAN technologies
				4. (Understand) Determine the functionality of network layer and transport layer and illustrate the generations of wireless networks
				5. (Understand) Know the functionalities of application layer and associated languages and operating system in mobile communications

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
9	2nd & 3rd Year 4th to 6th Semester	U19CC609	Introduction to Wireless Communication Networks	1. (Understand) Interpret the functions of the building blocks of wireless network architecture
				2. (Apply) Select appropriate method to improve the performance of wireless communication.
				3. (Understand) Demonstrate the implications of multipath parameters.
				4. (Analyze) Perform practical link budget analysis for next generation networks.
				5. (Apply) Apply the concepts and techniques in real time applications