Sri Eshwar College of Engineering
An Autonomous Institution
Affiliated to Anna University, Chennai

Department of Computer 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 Z-Transform.
3	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

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
4	2nd Year 3rd Semester	U19CS201	Data Structures	1.(Understand) Comprehend the working of linear data structures and identify their applications.
				2.(Apply) Apply recursion on specific applications.
				3.(Understand) Understand the various tree data structures for efficient storage and retrieval of data.
				4.(Apply) Employ graph data structure for solving real world problems.
				5.(Apply) Apply suitable methods for efficient data access through hashing
5	2nd Year 3rd Semester	U19IT301	Computer Architecture	1. (Understand) Choose appropriate instruction set architecture and addressing modes used in a processor.
				2. (Apply) Apply the knowledge of arithmetic operations to perform calculations.
				3. (Understand) Identify the control units present in pipeline of a processor.
				4. (Analyze) Analyze the various performance enhancement techniques of Cache memories.
				5. .(Analyze) Distinguish the hazards of Pipelining technique and use in high performance processors.
6	2nd Year 3rd Semester	U19MC201	Environmental Sciences	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	U19CS211	Data Structures Laboratory	1. (Apply) Apply linear data structures to solve problems.
				2. (Apply) Implement the concept of trees and graphs using nonlinear data structures.
				3. (Apply) Select suitable tree algorithms for efficient data storage and retrieval with better time complexity.
				4.(Apply) Apply linear and non linear data structure and develop a real time software application
				5. (Apply) Apply the different hashing data structure for efficient data storage.

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	U19IC401	Industry Oriented Course I Introduction to Networking	1.(Understand) Learn the concepts of networking
				2.(Apply) Applying troubleshooting and understanding security threats
10	2nd Year 3rd Semester	U19IC405	Industry Oriented Course I 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.
11	2nd Year 3rd Semester	U19IC404	Industry Oriented Course I Electronics –A Simplified 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
12	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.

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
13	2nd Year 4th Semester	U19CS202	Database Management Systems	1.(Apply) Use fundamentals of data models and depict a database system
				2. (Apply) Implement relational databases for various business requirements.
				3. (Apply) Analyse and implement the properties of database.
				4. (Apply) Use the application technology for various evaluation techniques and recovery process in database storage.
				5. (Apply) Use non-structured database systems in application development.
14	2nd Year 4th Semester	U19CS203	Object Oriented Programming	1.(Apply)Understand and apply the features of object oriented programming paradigm and Java 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.
15	2nd Year 4th Semester	U19CS205	Design and Analysis of Algorithms	1. (Understand)Estimate the time and space complexities of algorithms.
				2. (Apply) Apply algorithm analysis techniques for a given algorithms.
				3. (Analyze) Analyze different algorithms for solving a given problem.
				4. (Apply) Apply various graph traversal techniques to find the shortest path.
				5. (Understand)Compare the time and space complexities of different types of algorithms.
16	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

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
17	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
18	2nd Year 4th Semester	U19CS212	Database Management Systems Laboratory	1. (Apply) Develop ER model for the given problem
				2. (Apply) Apply appropriate SQL constraints to a business case.
				3. (Apply) Utilize relational database using simple and complex queries in Structured Query Language (SQL).
				4. (Apply) Formulate procedural language queries (PL/SQL) to the given scenario
				5. (Apply) Apply database connectivity concepts in an application development scenario.
19	2nd Year 4th Semester	U19CS213	Object Oriented Programming Laboratory	1.(Apply) Use JRE , JDK and Java-IDE‘s
				2.(Apply) Select the required Object oriented mechanism
				3.(Apply) Use relevant exception-handling mechanisms exception
				4.(Apply) Model the real world problems for efficient outcomes using concurrency concepts
				5.(Apply) Apply concepts of java collections API for the given scenario
20	2nd Year 4th Semester	U19CC281	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.

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
21	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.
22	3rd Year 5th 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
23	3rd Year 5th 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

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
24	3rd Year 5th Semester	U19CC301	Analog and Digital Communication	1.(Apply) Apply the basic concepts of modulation techniques in generation of amplitude modulation.
				2.(Apply) Apply the basic concepts of modulation techniques in generation and demodulation of angle modulation.
				3.(Analyze) Analyze the performance of various digital transmission techniques for noisy channel conditions.
				4.(Apply) Apply the basic concepts of modulation techniques in generation of various digital modulation schemes.
				5.(Apply) Apply the features of various error control coding schemes intended for a specific application.
25	3rd Year 5th Semester	U19IT201	Software Engineering	1.(Apply) Apply appropriate software engineering model for a given development scenario.
				2.(Apply) Apply appropriate requirement engineering techniques for real time projects
				3.(Evaluate) Compare and choose the suitable design models for the given application scenario.
				4.(Apply) Modeling the application based on the customer requirements.
				5.(Apply) Apply the testing principles to software project development.
26	3rd Year 5th Semester	U19CS512	Professional Elective I Advanced Java Programming	1. (Understand) Understand Java Language and Fundamentals
				2. (Understand) Understand object oriented concepts and functional style data processing
				3. (Understand) Understand the java libraries and know effective programming with streams
				4. (Understand) Understand the enhanced java features.
				5. (Apply) Create a system based application using AWT and Swing.
27	3rd Year 5th Semester	U19EC213	Digital Signal Processing Laboratory	1.(Apply) Apply the Computation of Convolutions and Frequency Analysis using DFT
				2.(Apply) Apply their abilities towards MATLAB based implementation of various DSP systems
				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

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
28	3rd Year 5th 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
29	3rd Year 5th Semester	U19IC301	Industry Oriented Course II Ethical Hacking	1.(Apply) Install, configure, use and manage hacking software on a closed network environment
				2.(Apply) Identify tools and techniques to carry out a penetration testing.
				3.(Apply) Assess an environment using foot printing.
30	3rd Year 5th Semester	U19IC303	Industry Oriented Course II Angular JS	1.(Apply) Understand and apply the concepts of object oriented Angular scripting languages.
				2.(Apply)Identify and apply Angular Components.
				3.(Apply) Apply concepts of Angular Derivatives.
31	3rd Year 5th Semester	U19EM301	Aptitude I	1.Students will be able to solve problems based on application of aptitude concepts in real life
				2.Will understand the importance and impact created by aptitude concepts in real life
				3.Will be able to create shortcut formulas by self.
				4.Will be able to analyze, evaluate and compare different scenarios given in a problem and find the strategically best solutions.
				5.Will be capable of creating their own questions based on parameters and constraints given. Will understand lot of learning methods and will be able to apply them in real life problems.
32	3rd Year 5th 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

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33	3rd Year 6th Semester	U19CS301	Internet Programming	1.(Understand) Explain the history of the internet and related internet concepts
				2.(Apply) Create basic website using HTML and CSS
				3.(Apply) Design and implement server-side programs using Servlets and JSP
				4.(Understand) Describe the representation of data using XML Technology
				5.(Understand) Demonstrate the working of MVC pattern using Spring, Hibernate and Maven Technologies
34	3rd Year 6th Semester	U19IT303	Computer Networks	1.(Apply) Identify the functionalities of various protocols operating at each layer of OSI reference model.
				2.(Understand) Describe the working of LAN, WAN, MAN technologies and different network topologies.
				3.(Understand) Explain the working of IP layer and its routing algorithms.
				4.(Analyze) Identify the components required to build different types of networks.
				5.(Apply) Demonstrate the working of principles security algorithms and application layer protocols for reliable data transmission.
35	3rd Year 6th Semester	U19EC401	Wireless Communication	1.(Understand)Understand the basics of wireless communication and radio propagation mechanisms
				2.(Apply) Design a cellular system and understand the multiple access techniques
				3.(Analyze) Analyze the performance of digital modulation schemes.
				4.(Understand) Know about the different equalization and diversity techniques.
				5.(Understand) Distinguish the concepts of various MIMO systems.
36	3rd Year 6th Semester	U19XXXXX	Professional Elective II	
37	3rd Year 6th Semester	U19XXXXX	Open Elective II*	

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
38	3rd Year 6th Semester	U19CS311	Internet Programming Laboratory	1.(Apply) Use Cascading style sheets to implement a variety of presentation effects in HTML including explicit positioning of elements
				2.(Apply) Create dynamic web pages by incorporating java script in HTML
				3.(Apply) Develop interactive web pages using server-side programming languages
				4.(Apply) Construct web pages using XML
				5.(Apply) Design web pages using web services
39	3rd Year 6th Semester	U19IT311	Computer Networks Laboratory	1.(Apply) Develop skills to use simulation tools.
				2.(Apply) Develop client server applications using socket programming.
				3.(Apply) Implement of data link layer protocols.
				4.(Apply) Implement of network layer protocols.
				5.(Analyze) Analyze the performance of network protocols.
40	3rd Year 6th Semester	U19CC381	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.
41	3rd Year 6th Semester	U19EM302	Aptitude II	1.Students will be able to solve problems based on application of aptitude concepts in real life
				2.Will understand the importance and impact created by aptitude concepts in real life
				3.Will be able to create shortcut formulas by self.
				4.Will be able to analyze, evaluate and compare different scenarios given in a problem and find the strategically best solutions.
				5.Will be capable of creating their own questions based on parameters and constraints given. Will understand lot of learning methods and will be able to apply them in real life problems.

Professional Elective I

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
1	3rd Year 5Th Semester	U19CS509	Virtual and Augmented Reality	1. (Understand)Understand the working principles of AR/VR input and output devices.
				2. (Understand)Understand the software used for interacting with the devices.
				3. (Apply)Implement the animation algorithms used for virtual reality
				4. (Apply)Implement the applications of AR/VR and factors involved in the usage
				5. (Apply)Develop interface and sounds to create VR environment.
2	3rd Year 5Th Semester	U19CS503	Data Analytics	1. (Understand) Understand the concepts of Data science and Analytics
				2. (Apply) Apply the Preprocessing and Visualization in applications
				3. (Apply) Implement the learning concepts and Machine Models
				4. (Apply) Apply the classification and clustering ideas in applications
				5. (Apply) Apply the system architecture in case studies
3	3rd Year 5Th Semester	U19CS512	Advanced Java Programming	1. (Understand) Understand Java Language and Fundamentals
				2. (Understand) Understand object oriented concepts and functional style data processing
				3. (Understand) Understand the java libraries and know effective programming with streams
				4. (Understand) Understand the enhanced java features.
				5. (Apply) Create a system based application using AWT and Swing.
4	3rd Year 5Th Semester	U19CS515	Open-Source Software	1. (Understand) Understand the various open source Licenses and understand the Linux build systems.
				2. (Apply) Use the concept of NoSQL Database and to Choose the Appropriate No-SQL Data Base Types
				3.(Understand) How to create and manipulate non
				4. (Apply) Develop web application using PHP with SQL connectivity
				5. (Understand) Understand the various Open Source Desktop Applications

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
5	3rd Year 5Th Semester	U19EC521	Real Time Operating Systems	1. (Understand) Classify and 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
6	3rd Year 5Th Semester	U19EC519	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.
7	3rd Year 5Th Semester	U19IT510	Ad Hoc Sensor Network	1.(Understand) Understand the fundamentals of w
				2. (Understand) Learn the different types of MAC protocols.
				3. (Understand) Be exposing to the TCP issues in ad hoc networks.
				4. (Understand) Be familiar with different types of ad hoc routing protocols.
				5.(Apply) Apply the Quality and Energy Manageme

Professional Elective II

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
1	3rd Year 6Th Semester	U19CS504	Computer Vision	1. (Understand)Understand the concepts of Recognition Methodology
				2. (Apply)Implement the concepts of segmentation for binary Image
				3. (Apply)Implement the concepts of Area extraction and region Analysis for binary Image
				4. (Understand)Understand the various object Model
				5. (Apply)Known about the general frameworks and knowledge based vision
2	3rd Year 6Th Semester	U19CS501	Information Retrieval	1. (Understand)Understand the basic concepts of Information Retrieval
				2.(Understand)Understand data modelling and Retrieval Evaluation.
				3.(Understand)Develop the fundamental understanding of Classification and Clustering in Information Retrieval
				4. (Apply)Apply the concepts of web retrieval and crawling for a search engine
				5. (Apply) Implement the Recommendation techniques for recommender system.
3	3rd Year 6Th Semester	U19EC501	Antenna andwave 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
4	3rd Year 6Th Semester	U19EC507	Microwave Engineering	1. (Understand) Interpret the knowledge of low and high frequency parameters.
				2. (Apply) Identify the working of active and passive microwave components.
				3. (Understand) Explain the working and design of various microwave tubes.
				4. (Analyze) Analyze the filter design of microwave and MMIC.
				5.(Analyze) Examine the measurements of various parameters of microwave.

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
5	3rd Year 6Th Semester	U19EC525	Internet of Things	1. (Understand) Explain the concept of IoT.
				2. (Analyze) Analyze various protocols for IoT.
				3. (Apply) Design a PoC of an IoT system using Rasperry Pi/Arduino
				4. (Apply) Apply data analytics and use cloud offerings related to IoT
				5. (Analyze) Analyze applications of IoT in real time scenario
6	3rd Year 6Th Semester	U19IT502	Software Testing	1. (Understand) Understand all the activities, process and techniques carried out in testing process.
				2. (Understand) Understand how to prepare test planning based on the test document.
				3. (Apply) Identify all the testing levels carried out during the testing phase of a software
				4. (Understand) Understand the testing policies and the activities of specialized testing for object-oriented systems.
				5. (Apply) Apply the process of automation testing approach and different test suites for software.
7	3rd Year 6Th Semester	U19IT511	Information Security	1. (Understand) Discuss the basics of information security
				2. (Understand) Illustrate the legal, ethical and professional issues in information security
				3. (Apply) Demonstrate the various aspects in data security
				4. (Understand) Explain various standards in the Information Security System
				5. (Apply) Design and implementation of security techniques

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

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
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, image reconstruction, image segmentation & image compression.
3	3rd Year 5th & 6Th Semester	U19IC301	Ethical Hacking	1.(Apply) Install, configure, use and manage hacking software on a closed network environment
				2.(Apply) Identify tools and techniques to carry out a penetration testing.
				3.(Apply) Assess an environment using foot printing.
4	3rd Year 5th & 6Th Semester	U19IC303	Angular JS	1.(Apply) Understand and apply the concepts of object oriented Angular scripting languages.
				2.(Apply)Identify and apply Angular Components.
				3.(Apply) Apply concepts of Angular Derivatives.
5	3rd Year 5th & 6Th Semester	U19IC401	Introduction to Networking	1.(Understand) Learn the concepts of networking
				2.(Apply) Applying troubleshooting and understanding security threats
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 Elective of ECE Department

Sl No.	*Year & Semester*	*Course Code*	*Course Name*	*Course Outcome*
1	3rd Year 4th & 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	3rd Year 4th & 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	3rd Year 4th & 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	3rd Year 4th & 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	3rd Year 4th & 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	3rd Year 4th & 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	3rd Year 4th & 6Th Semester	U19CC607	Introduction to Industrial Networking	1. Understand the basic concepts of data networks
				2. Familiarise 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	3rd Year 4th & 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	3rd Year 4th & 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