Department	ECE
Course Code	HU 101
Title of Course	English Language and Technical Communication
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	2L + 0T
Total Contact Hours	25
Course Out Come	CO1: Ability to Communicate technical matters CO2: Ability to Communicate fluently and confidently on all spheres of everyday matters.

Department	ECE
Course Code	CH-101
Title of Course	Chemistry-1
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	L3 + T1
Total Contact Hours	42
Course Out Come	**CO1**: Ability to apply concept of Chemical Thermodynamic system with associated laws. **CO2**: Ability to understand Reaction Dynamics & Solid state Chemistry for detection ofdefects in metals and role of semiconductor. **CO3**: Ability to understand Electrochemistry, Structure and reactivity of Organic molecule **CO4**: Ability to understand the Industrial Chemistry and its applicability. CO5: List major chemical reactions that are used in the synthesis of molecules.

Department	ECE
Course Code	M-101
Title of Course	Mathematics-I
Nature of Course	Compulsory

Type of Course	Lecture
Contact Hours	3L + 1T
Total Contact Hours	40
Course Out Come	**CO1:** Ability to explain the Knowledge of Matrix, Eigen value problems. **CO2:** Ability to determine the solutions for differential equations which are useful in the Study of Circuit theory and oscillatory systems. **CO3:** Ability to understand Calculus of Functions of Several Variables Partial derivatives, Total differential equations for Electro-magnetic theory, Transmission lines and Vibrating membranes. **CO4:** Ability to use the convergence and Divergence of infinite series in the study ofcommunication systems. **CO5:** Ability to understand Vector Algebra and Vector Calculus.

Department	ECE
Course Code	ES101
Title of Course	Basic Electrical and Electronics Engineering-I
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	L + T 3 + 1
Total Contact Hours	41
Course Out Come	**CO1:** Ability to learn & analysis of Network theorems. **CO2**: Ability to learn Electromagnetism with associated theorem. **CO3**: Ability to learn AC fundamentals & study AC response in the various circuits. **CO4**: Ability to learn the basic knowledge of semiconductor materials and develop skill in the analysis and design of electronic circuits like diode, transistor and op amplifier. **CO5:** Ability to learn DC Network theorem, Electromagnetism and AC fundamental **CO6:** Ability to be familiar with basics of communication systems.

Department	ECE
Course Code	ME101
Title of Course	Engineering Mechanics
Nature of Course	Compulsory

Type of Course	Lecture
Contact Hours	L + T 3 + 1
Total Contact Hours	48
Course Out Come	**CO1:** Ability to work with basic engineering mechanics concepts. **CO2**: Ability to model the problem using good free-body diagrams and accurate equilibrium equations, identify and model various types of loading and support conditions that act on structural systems. **CO3**: Ability to apply pertinent mathematical, physical and engineering mechanical principles to the system to solve and analyze the problem, understand the meaning of centers of gravity (mass)/centroids and moments of Inertia using integration methods.
Department	**ECE**
Course Code	**CH-191**
Title of Course	**Chemistry-1 Lab**
Nature of Course	**Compulsory**
Type of Course	**Practical**
Contact Hours	**P 3**
Total Contact Hours	**21**
Course Out Come	**CO1: Ability to apply concept of Solvent Extraction Procedure** **CO2: Ability to understand Ph metric and conductometric method of determination for acidity and alkalinity of a solution** **CO3: Ability to understand various parameter for the water analysis** **CO4: Ability to understand the viscometric method for determination of solution.**

Department	ECE
Course Code	ES191
Title of Course	Basic Electrical & Electronics Engineering Laboratory– 1

Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	L + T+P 0 + 0+3
Total Contact Hours	39
Course Out Come	**CO1**. Ability to learn the basic knowledge of passive and active electronic components and electronic devices and also develop skill in the analysis and design of electronic circuits like diode, transistor. **CO2:** Ability to study and verification of Network Theorems **CO3**: Ability to be familiar circuit response of R-L-C circuits.
Department	**ECE**
Course Code	**ME191**
Title of Course	**Engineering Drawing & Computer Graphics Laboratory**
Nature of Course	**Compulsory**
Type of Course	**Practical**
Contact Hours	**L + T+P** **0 + 1+4**
Total Contact Hours	**42**
Course Out Come	**CO1: Ability to visualize science in the form of technical graphics.** **CO2: Ability to understand and draft the basic entities.** **CO3: Ability to represent data in a diagrammatical way and the students will be able to familiarize with design software.**
Department	**ECE**
Course Code	**HU 181**
Title of Course	**Language Laboratory**
Nature of Course	**Compulsory**
Type of Course	**Practical**
Contact Hours	**2P**

Total Contact Hours	**19**
Course Out Come	**CO1: Ability to develop skills of technical communication in English through Language Lab practice sessions.** **CO2: Ability to Communicate confidently and competently in English in all spheres.**

Department	ECE
Course Code	XC181
Title of Course	Extra Curricular Activities(NSS)
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	L + T+P 0 + 0+ 2
Total Contact Hours	12
Course Out Come	**CO1**: Ability to develop awareness in social issues. **CO2**: Ability to participate in mass education programmes. **CO3**: Ability to learn prepare proposal for local slum area development. **CO4**: Ability to develop environmental awareness & Waste disposal. **CO5**: Ability to accustom with relief & rehabilitation work during Natural calamities.

Department	ECE
Course Code	CS201
Title of Course	Basic Computation & Principles of Computer Programming
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	L + T 3 + 1
Total Contact Hours	42
Course Out Come	• **CO1:** Ability to learn basic computer programming concepts and apply them to computer-based problem-solving methods. • **CO2**: Ability to know computer programming using C, a powerful high-level programming language.

Department	ECE
Course Code	PH-201
Title of Course	Physics-I
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	3L + 1T
Total Contact Hours	42
Course Out Come	**CO1:** Ability to understand the general property of matters and the Oscillation property. **CO2:** Ability to know optics property. **CO3:** Ability to learn basics of Quantum Physics **CO4:** Ability to understand Crystallography and get the idea of crystal structure and understand the property and behaviour of X-Ray.

Department	ECE
Course Code	M-201
Title of Course	Mathematics-II
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	3L + 1T
Total Contact Hours	40
Course Out Come	**CO1:** Ability to learn Ordinary differential equations with higher order and first degree. **CO2:** Ability to learn Basics of Graph Theory which are useful in the Study of Circuit theory. **CO3:** Ability to learn Laplace Transform which is useful in the study of communication systems.

Department	ECE
Course Code	ES201
Title of Course	Basic Electrical and Electronics Engineering-II
Nature of Course	Compulsory
Type of Course	Lecture

Contact Hours	L + T 3 + 1
Total Contact Hours	45
Course Out Come	**CO1:** Ability to learn the basic of electrostatics DC Machines and Single phase transformer. **CO2**: Ability to understand 3 phase induction motor & three phase system. **CO3:** Ability to know the basic concept of FET and feedback amplifier and oscillators. **CO4**: Ability to analyze the different OPAMP circuits and apply the knowledge of network theory. **CO5:** Ability to acquire the proficiency to express binary numbers.

Department	ECE
Course Code	ME201
Title of Course	Engineering Thermodynamics & Fluid Mechanics
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	L + T 3 + 1
Total Contact Hours	48
Course Out Come	**CO1:** Ability to learn Basic Concepts of Thermodynamics & the associated laws. **CO2:** Ability to know Air standard Cycles for IC engines. **CO3**: Ability to understand Properties & Classification of Fluids.

Department	ECE
Course Code	CS291
Title of Course	Basic Computation & Principles of Computer Programming Laboratory
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	L + T+P 0 + 0+ 3
Total Contact Hours	21
Course Out Come	**CO1**: Ability to learn basic computer programming concepts and apply them to computer-based problem-solving methods. **CO2**: Ability to know computer programming using C, a powerful high-level programming language.

Department	ECE
Course Code	PH-291
Title of Course	Physics Practical-I
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	3P
Total Contact Hours	30
Course Out Come	**CO1:** Ability to understand the general property of matters like viscosity, Young's Modulus and Modulus of Rigidity **CO2:** Ability to know optical property. **CO3:** Ability to learn electrical property. **CO4:** Ability to understand thermal conductivity

Department	ECE
Course Code	ES291
Title of Course	Basic Electrical & Electronic Engineering Laboratory– II
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	L + T+P 0 + 0+ 3
Total Contact Hours	48
Course Out Come	**CO1**: Ability to learn the basic of electrostatics DC Machines and Single phase transformer **CO2**: Ability to understand 3 phase induction motor & three phase system. **CO3**: Ability to study of I-V characteristics of FET. **CO4**: Ability to study of characteristic curves for CB, CE, CC mode of transistor. **CO5**: Ability to analyze the different OPAMP circuits and apply the knowledge of network theory. **CO6**: Ability to study of logic gates and realization of Boolean function using logic gates.

Department	Basic Science & Humanities
Course Code	ME 292
Title of Course	Workshop Practice
Nature of Course	Compulsory

Type of Course	Lecture
Contact Hours	3P+1L
Total Contact Hours	48
Course Out Come	CO1: **Concept** of Engineering materials and its physical, chemical and mechanical properties & applications. CO2: **Understand** different conventional manufacturing processes mainly covering basic principles, different methods and general applications. CO3: **Basic Concept** of forming/shaping and casting. CO4: **Understanding** various aspects of welding processes and its applications. CO5: **Practices** of elementary machining operations- Facing, Centering, Turning, Threading, Drilling, Boring, Shaping and Milling.

Department	ECE
Course Code	M(CS)-301
Title of Course	Numerical Methods
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	L + T 2 + 1
Total Contact Hours	28
Course Out Come	**CO1**: Ability to analyse error and to understand numerical computation & Interpolation. **CO2**: Ability to learn Numerical integration & solution of linear equations. **CO3**: Ability to solve Numerical solution of Algebraic,

	transcendental equations & ordinary differential equations.

Department	ECE
Course Code	M-302
Title of Course	Mathematics-III
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	L + T 3 + 1
Total Contact Hours	42
Course Out Come	**CO1**: Ability to understand Fourier Series & Fourier Transform. **CO2**: Ability to learn Calculus of Complex Variable. **CO3**: Ability to understand Probability. **CO4**: Ability to solve Partial Differential Equations and Ordinary Differential Equations.

Department	ECE
Course Code	EC 301
Title of Course	**Circuit Theory & Networks**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T+0P
Total Contact Hours	42 Hours
Course Outcomes	**CO1:** Ability to understand resonant circuit concept and able to analysis Network for mesh current, node voltage, with help of different network theorem. **CO2:** Ability to understand Graph of Network, get the concept of Coupled Circuits & to get transients of different circuits. **CO3:** Ability to learn Laplace transform and Inverse Laplace transform.

Department	ECE

Course Code	EC 302
Title of Course	**Solid State Device**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T+0P
Total Contact Hours	35 Hours
Course Outcomes	**CO1:** Ability to understand student, the fundamentals of Diode Theory & its- Analysis. & basic principles of BJT and MOSFET. **CO2:** Ability to apply these principles to design various practical applications Like BJT, Amplifiers, Power Amplifier, Feedback Amplifiers etc.

Department	ECE
Course Code	EC 303
Title of Course	**Signals & Systems**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T+0P
Total Contact Hours	32 Hours
Course Outcomes	**CO1:** Ability to explain different types of continuous and discrete time signals, systems their properties. **CO2:** Ability to analyze signals in order to calculate their frequency spectra, and estimate, classify, assess the effect of a system on signals in terms of frequency content and time domain effects. **CO3:** Ability to compute impulse response and transfer function of continuous time LTI systems **CO4:** Ability to generate discrete time signal from continuous time signal and also learn reconstruction technique **CO5:** Ability to compute impulse response and transfer function of discrete time LTI systems **CO6:** Ability to explain random signal and their properties.

Department	ECE
Course Code	EC 304
Title of Course	**Analog Electronic Circuits**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T+0P
Total Contact Hours	40 Hours
Course Outcomes	**CO1:** Ability to know the principle and design of Filters and Regulators. **CO2:** Ability to study transistor biasing and stability. **CO3:** Ability to learn Transistor Amplifier, Feedback Amplifier & Oscillator, Power Amplifier, Multivibrator and Operational amplifier. **CO4:** Ability to have knowledge about the special functional circuit VCO and PLL.

Department	ECE
Course Code	M(CS)-391
Title of Course	Numerical Methods Lab
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L + 0T+2P
Total Contact Hours	12
Course Out Come	**CO1**: Ability to understand numerical computation & Interpolation. **CO2**: Ability to learn Numerical integration & solution of linear equations. **CO3**: Ability to solve Numerical solution of Algebraic, transcendental equations & ordinary differential equations.

Department	ECE
Course Code	EC 391
Title of Course	**Circuit Theory & Network Lab**
Nature of Course	Compulsory
Type of Course	Practical

Contact Hours	0L+0T+3P
Total Contact Hours	27 Hours
Course Outcomes	**CO1:** Ability to understand resonant circuit concept and able to analysis Network for mesh current, node voltage with help of different network theorem. **CO2:** Ability to understand Graph of Network, get the concept of Coupled Circuits & to get transients of different circuits. **CO3:** Ability to Study Laplace transforms different time domain function and Inverse-Laplace transform using MATLAB.

Department	ECE
Course Code	EC 392
Title of Course	**Solid State Device Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	3L+0T+0P
Total Contact Hours	18 Hours
Course Outcomes	**CO1**: Ability to study i/o characteristics of BJT in common emitter configuration and determine hybrid parameters and performance parameter. **CO2**: Ability to study the characteristics of JFET and determine the parameters. **CO3**: Ability to study the C-V characteristics of varactor diode and MOS structure by appropriate software.

Department	ECE
Course Code	EC393
Title of Course	Signals and System
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	3L+0T+0P
Total Contact Hours	24 Hours

Course Outcomes	**CO1.** Ability to understand Z-transform of sinusoidal signal and step function. **CO2:** Ability to study convolution theorem, signal synthesis, LPF, HPF, band pass and reject filter using RC circuits. **CO3:** Ability to determine the components of square wave and clipped sine wave.

Department	ECE
Course Code	EC394
Title of Course	Analog Electronic Circuits Lab
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+3P
Total Contact Hours	45
Course Outcomes	**CO1:** Ability to design, test and examine simple circuits with transistor, op-amp, amplifiers, oscillators etc. **CO2:** Ability to test, repair, modify and take-up design exercise. **CO3:** Ability to have clear knowledge of basic circuit analysis and its functions and their limitations. **CO4:** Ability to recognize, understand, modify and repair majority of circuits used in professional equipment design.

4th SEMESTER OLD SYLLABUS

Department	ECE
Course Code	HU401
Title of Course	**Values & Ethics in Profession**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	32
Course Outcomes	**CO1**: Ability to understand effects of Technological Growth with its limitation. **CO2**: Ability to learn ethics of Profession in Engineering field. **CO3**: Ability to understand Profession and recognize Human Values

Department	ECE
Course Code	PH401
Title of	**Physics-II**

Course	
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	39
Course Outcomes	**CO1**: Ability to understand Vector Calculus. **CO2**: Ability to understand Electrostatic field, dielectric concept, Magnetostatics & Time Varying Field. **CO3**: Ability to learn Electromagnetic Theory, Quantum Mechanics & Statistical Mechanics.

Department	ECE
Course Code	CH 401
Title of Course	**Basic Environmental Engineering & Elementary Biology**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	38
Course Outcomes	**CO1**: Ability to understand Basic ideas of environment, Ecology. **CO2**: Ability to learn Air, Water, Land, & Noise pollution and control. **CO3**: Ability to gain knowledge about the Environmental Management which includes Environmental impact assessment, Environmental Audit, laws and protection act of India, Different international environmental treaty/agreement/ protocol.

Department	ECE
Course Code	EC 401
Title of Course	**EM Theory & Transmission Lines**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	38

Course Outcomes	**CO1**: Ability to understand the concepts of electricity, magnetism, Maxwell's equations and waves. This will be useful for understanding the courses like transmission lines and waveguides, antennas, microwave electronics and wireless communication. **CO2**: Ability to understand the property of transmission line & its property. **CO3**: Ability to understand the fundamentals of antenna and know their different parameters.

Department	ECE
Course Code	EC 402
Title of Course	**Digital Electronic &Integrated Circuits**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	40
Course Outcomes	**CO1:** Ability to understand the basic principles of Digital Electronics and digital design techniques. **CO2:** To understand and examine the structure of various number systems and its application in digital design. **CO3:** The ability to analyze various logic gates and truth table using Boolean algebra. **CO4.** The ability to understand, analyze and design various combinational and sequential circuits. **CO5:** The ability to know different types of A/D & D/A conversion technique and logic families such as TTL, ECL, MOS, CMOS.

Department	ECE
Course Code	HU481
Title of Course	**Technical Report Writing & Language Lab Practice**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	2L+0T+6P
Total Contact Hours	44

Course Outcomes	**CO1**: Ability to inculcate a sense of confidence in the students. **CO2**: Ability to help them become good communicators both socially and professionally. **CO3**: To assist them to enhance their power of Technical Communication.

Department	ECE
Course Code	PH 491
Title of Course	**Physics-II Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+3P
Total Contact Hours	26
Course Outcomes	**CO1**: Ability to understand Lande'g factor of electron, specific charge of electron and energy band gap of semiconductor. **CO2**: Ability to study Hall effect of semiconductors and characteristics of solar photovoltaic cell

Department	ECE
Course Code	EC 491
Title of Course	**EM Theory & Tx Lines Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+3P
Total Contact Hours	20
Course Outcomes	**CO1:** Ability to plot of standing wave pattern along a transmission line when the lines open circuited, short circuited and terminated by a resistive load at the load end. **CO2:** Ability to study of smith chart on Matlab platform.

	CO3: Ability to study the radiation pattern of different type of linear Antenna.

Department	ECE
Course Code	EC 492
Title of Course	**Digital Electronic & Integrated Circuits Lab**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	0L+0T+3P
Total Contact Hours	30
Course Outcomes	**CO1:** Ability to know the basic principles of Digital Electronics and digital design techniques. **CO2:** Ability to Develop Combinational and sequential circuits design using logic gates.

3rd year OLD SYLLABUS

Department	ECE
Course Code	**HU-501**
Title of Course	**Economics for Engineers**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	32

Course Outcomes	CO1: Ability to understand Economic Decisions Making and considering that students will learn to find out Engineering Costs & Estimation. CO2: Ability to learn Cash Flow and also able to calculate Rate of Return Analysis. CO3: Ability to know Inflation And Price Change, Present Worth Analysis. CO4: Ability to learn depreciation and able to analysis the requirement of replacement.

Department	ECE
Course Code	**EC 501**
Title of Course	**Analog Communication**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	36
Course Outcomes	CO1: Ability to learn concept of analog modulation and its classification. CO2: Ability to identify the type of modulation & know different types of associated the calculation. CO3: Ability to learn the importance of Multiplexing, find out their application areas. CO4: Ability to study random signals and noise in communication system.

Department	ECE
Course Code	**EC502**
Title of Course	**Microprocessor & Microcontroller**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	36
Course Outcomes	CO1: Ability to develop an in depth understanding on operation of microprocessors and microcontrollers. CO2: Ability to understand assembly language program for 8051. CO3: Ability to make comparative study of higher versions of microcontroller.

Department	ECE
Course Code	**EC503**
Title of Course	**CONTROL SYSTEMS**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	40
Course Outcomes	CO1: Ability to learn basic concept of control system. CO2: Ability to learn how to determine stability of system and to know time response analysis and frequency response analysis. CO3: Ability to know classical control design technique and state space analysis of continuous systems. CO4: Ability to learn application of control system.

Department	ECE
Course Code	**EC504A**
Title of Course	**Computer Architecture**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	38
Course Outcomes	CO1: Ability to know about basic of computer organization, architecture & basic of computer memory structure & different mapping technique. CO2: Ability to know about different CPU architecture & Processor-memory communication technique. CO3: Ability to know about pipelining architecture & parallelism. CO4: Ability to know about VHDL programming techniques.

Department	ECE
Course Code	**EC504B**
Title of Course	**Data Structure & C**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+1T
Total Contact Hours	38
Course Outcomes	CO1: Ability to understand the concept of searching, sorting, data structures, stacks, queues etc. CO2: Ability to implement above concepts in c, c++ using concepts of pointers, structures, arrays and dynamic allocation of memory.

Department	ECE
Course Code	**EC591**
Title of Course	**Analog Communication Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	33
Course Outcomes	CO1: Ability to learn concept of analog modulation and Demodulation technique. CO2: Ability to know different types of associated the calculation. CO3: Ability to learn different application areas of analog communication.

Department	ECE
Course Code	**EC-592**
Title of Course	**Microprocessors & Microcontrollers Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	30
Course Outcomes	CO1: Ability to develop an in depth understanding on operation of microprocessors and microcontrollers. CO2: Ability to understand assembly language program for 8051. CO3: Ability to comparative study of higher versions of microcontroller.

Department	ECE
Course Code	**EC583**
Title of Course	**Control System Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	33

Course Outcomes	CO1: Ability to learn basic concept of control system and familiarization with MATLAB. CO2: Ability to learn how to determine step response for first order and second order system and step and impulse response for type -I & type-II system using MATLAB. CO3: Ability to evaluate of steady- state-error, setting time, percentage peak overshoots, gain margin, phase margin using MATLAB & PSPICE. CO4: Ability to design and implement of a temperature controller using microprocessor & micro controller.

Department	ECE
Course Code	**EC594A**
Title of Course	**Computer Architecture Lab**
Nature of Course	Elective
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	27
Course Outcomes	CO1: Ability to know about basic digital logic based programming with HDL. CO2: Ability to have knowledge 8-bit addition, multiplication, division. CO3: Ability to develop the design of 8-bit register memory unit, 2-bit, 4-bit, 8-bit simple ALU and 8-bit simple CPU Design. CO4: Ability to have knowledge about interfacing of CPU and memory**.**

Department	ECE
Course Code	**EC594B**
Title of Course	**Data Structure & C Lab**
Nature of Course	Elective
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	27
Course Outcomes	CO1: Ability to implement the concept of searching, sorting, data structures, stacks, queues etc. CO2: Ability to implement above concepts in c, c++ using concepts of pointers, structures, arrays and dynamic allocation of memory.

Department	ECE
Course Code	**HU-601**
Title of Course	**Principles of Management**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	25
Course Outcomes	CO1: Ability to know the basic concepts of management, function of management including Planning, Society and People Management. CO2: Ability to know the Leadership quality; Decision making, Economic, Financial & Quantitative Analysis. CO3: Ability to understand Customer Management, Operations & Technology Management.

Department	ECE
Course Code	**EC-601**
Title of Course	**Digital Communication**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	36
Course Outcomes	CO1: Ability to develop fundamental understanding of Digital Communication system. CO2: Ability to develop concept of analog digitization using techniques as PCM, digital modulation and demodulation techniques in presence of noise. CO3: Ability to understand Digital communication system using error probability.

Department	ECE
Course Code	**EC-602**
Title of Course	**Digital Signal Processing**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	37
Course Outcomes	CO1: Ability to understand the fundamental difference in properties of

	analog and digital signals and systems. CO2: Ability to analysis in signal processing using mathematical tools such as Z transform and Discrete Fourier transform. CO3: Ability to understand FIR and IIR filter. CO4: Ability to understand multi rate operations on signals in time and frequency domain. CO5: Ability to understand digital signal processor and EPGA and capable to write of small programs in assembly language**.**

Department	ECE
Course Code	**EC-603**
Title of Course	**Telecommunication System**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	35
Course Outcomes	CO1: Ability to study the telephone system & get the idea of Telecommunication Transmission Lines. CO2: Ability to study the Switching System with Subscriber Loop Systems & Stored Program Control. CO3: Ability to understand Traffic Engineering & Modems and Their Standards.

Department	ECE
Course Code	**EC-604A**
Title of Course	**Antenna Theory & Propagation**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	36
Course Outcomes	CO1: Ability to study radiation of E.M waves and also learn Antenna fundamentals and its different properties like Antenna Characteristics, Radiation fields etc. CO2: Ability to learn Antenna Arrays and their types with calculations of different parameters. CO3: Ability to learn characteristics and properties of different types of Antenna. CO4: Ability to understand methods of Propagation & Physical (Medium) effects on Radio wave Propagation.

Department	ECE

Course Code	**EC-604B**
Title of Course	**Information Theory & Coding**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	37
Course Outcomes	CO1: Ability to understand information theory and its demands in data communication. CO2: Ability to study coding theory such as data compression at source and channel, properties and theorems e.g. Shannon's theorem. CO3: Ability to study error control techniques at source and at channel. CO4: Ability to understand the impact of channel limitation and characteristics on data transmission using digital data. CO5: Ability to understand different codes such as cyclic code, BCH codes, convolution codes etc.

Department	ECE
Course Code	**EC-605A**
Title of Course	**Object Oriented Programming**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	36
Course Outcomes	CO1: Ability to understand concepts of object oriented programming language and make the difference between OOP and other conventional programming. CO2: Ability to learn basic concepts of object oriented programming. CO3: Ability to learn JAVA programming language with its Class & Object properties, Exception handling & Multithreading and Applet applications.

Department	ECE
Course Code	**EC-605B**
Title of Course	**Programming Languages**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact	40

Hours	
Course Outcomes	CO1: Ability to learn Programming paradigms, Language translator and Basics of OOP. CO2: Ability to learn data type declaration, writing expression and statements. CO3: Ability to learn Data abstraction, Operator, Class & Template and Exception Handling. CO4: Ability to learn Object oriented design and modeling.

Department	ECE
Course Code	**EC-605C**
Title of Course	**ELECTRONIC MEASUREMENT AND INSTRUMENTATION**
Nature of Course	Elective
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	34
Course Outcomes	CO1: Ability to get knowledge for basic concepts in ECE engineering, and to provide total solution in fields of electronics and telecomm, and pursue higher studies. CO2: Ability to have knowledge basic measurement concept. CO3: Ability to encourage graduates to analyze and design novel electronic circuit system/products used in application in real life. CO4: Ability to study the different measuring instruments and data acquisition system.

Department	ECE
Course Code	**EC691**
Title of Course	**Digital Communication Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	36
Course Outcomes	CO1: Ability to develop fundamental understanding of Digital Communication system. CO2: Ability to develop concept of analog digitization using techniques as PCM, digital modulation and demodulation. CO3: Ability to develop the design of digital modulation and de modulation technique such as ASK, PSK and FSK**.**

Department	ECE
Course Code	**EC692**
Title of Course	**Digital Signal Processing Lab**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	36
Course Outcomes	CO1: Ability to analysis in signal processing using mathematical tools such as Z transform and Discrete Fourier transform. CO2: Ability to design FIR filter. CO3: Ability to design Butterworth filter with different set of parameters CO4: Ability to know the verification of different algorithm associated with filtering. CO5: Ability to have knowledge hardware laboratory using either 5416 or 6713 processor and Xilinx FPGA.

Department	ECE
Course Code	**EC695A**
Title of Course	**Object Oriented Programming Laboratory**
Nature of Course	Elective
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	36
Course Outcomes	CO1: Ability to understand concepts of object oriented programming language and make the difference between OOP and other conventional programming. CO2: Ability to learn basic concepts of object oriented programming. CO3: Ability to learn JAVA programming language with its Class & Object properties. Exception handling & Multithreading and Applet applications.

Department	ECE
Course Code	**EC695B**
Title of Course	**Programming Language Laboratory**
Nature of Course	Elective
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	36

Course Outcomes	CO1: Ability to learn Programming paradigms, Language translator and Basics of OOP CO2: Ability to learn data type declaration, writing expression and statements. CO3: Ability to learn Data abstraction, Operator, Class & Template and Exception Handling CO4: Ability to learn Object oriented design and modeling.

Department	ECE
Course Code	**EC695C**
Title of Course	**ELECTRONIC MEASUREMENT AND INSTRUMENTATION**
Nature of Course	Elective
Type of Course	Practical
Contact Hours	0L+0T+P3
Total Contact Hours	24
Course Outcomes	CO1: Ability to provide knowledge for basic concepts in ECE engineering, and to provide total solution in fields of electronics and telecomm, and pursue higher studies. CO2: Ability to encourage graduates to analyze and design novel electronic circuit system/products used in application in real life. CO3: Ability to understand the mechanism of different measuring instruments.

Department	ECE
Course Code	**EC681**
Title of Course	Seminar
Nature of Course	Compulsory
Type of Course	Seasonal
Contact Hours	0L+0T+P3
Total Contact Hours	36
Course Outcomes	CO1: Ability to know the latest technological development in the field of Electronics & Communication Engineering. CO2: Ability to develop the report writing skill and to grow the presentation skill. CO3: Ability to gain the self-confidence and know the way how to face the queries of audience.

ECE 7TH AND 8TH SEMESTER

Department	ECE
Course Code	**EC701**
Title of Course	WIRELESSCOMMUNICATION&N/W
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	36
Course Outcomes	CO1: Abilitytoestablishbaselineknowledgeofthebasicprinciplesneededtounderstand wirelesstechnology.
	CO2: Abilitytoknowthecharacteristicswireless channelandpropagationpathlossmodels.
	CO3:Abilitytohave knowledge modernmobilewireless communicationsystems andmultiple accesstechnologiesincellularcommunication.
	CO4:AbilitytoknowIEEE802.11standards andprotocols andmobile internetprotocol.

Department	ECE
Course Code	**EC702**
Title of Course	MICROELECTRONICS &VLSIDESIGNS
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	34
Course Outcomes	CO1: AbilitytounderstandtheconceptofVLSIdesign.
	CO2: Abilitytounderstandingthe microelectronic processforVLSIfabrication.
	CO3: AbilitytomakeanaloganddigitalVLSIcircuitusingCMOS.

Department	ECE
Course Code	**EC703A**
Title of Course	**RF&MICROWAVEENGG**
Nature of Course	Optional

Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	39
Course Outcomes	CO1: Ability to understand the fundamentals of Transmission lines and waveguides and waveguideresonator.
	CO2: Abilityto applytheknowledgetounderstandvariousMicrowavecomponents
	CO3: Abilityto applytheknowledgetounderstandvariousMicrowavecomponents.
	CO4: Abilitytounderstandmicrowaveamplifierdesignandmicrowave measurement.

Department	ECE
Course Code	**EC703B**
Title of Course	**OPTICALCOMMUNICATION&N/W**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	30
Course Outcomes	CO1: Ability to understand the structure, operating principles, underlying physical concepts of optical communication, particular fiber links.
	CO2: Ability to know opticalnetwork and different forms of access network.

Department	ECE
Course Code	**EC704C**
Title of Course	**COMPUTERNETWORKS**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	42
Course Outcomes	CO1: Abilityto understandthebasicsofNetworkinganddatacommunication.
	CO2: Abilitytounderstandthevariousprotocolsusedinthe currentnetworkingsystem.

	CO3: Abilitytounderstandthedifferentphysicaldevicesusedinthe networking.
	CO4: Abilityto studythedifferentheuristicsfornetworking.

Department	ECE
Course Code	**EC703D**
Title of Course	**FPGA&RECONFIGURABLE COMPUTING**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	32
Course Outcomes	CO1: AbilitytostudythebasicsofReconfigurableComputing.
	CO2: Ability to study Reconfigurable Logic Devices like FPGA and others also learn HardwareDescriptionLanguageforRC.
	CO3: AbilitytolearnRCConfiguration,Implementation&applications.

Department	ECE
Course Code	**EC704A**
Title of Course	**RADAR ENGG**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	32
Course Outcomes	CO1: Ability to familiar with different radar terminology, Radar block diagram &radar equation.
	CO2: AbilitytostudydifferentRadarTypes,Radarsignals&clutter.
	CO3: Abilitytolearnthe devicesusedinRadarSystemsincludingRadar transmitter&Radar receiverwiththeirproperties,types& applications.

Department	ECE

Course Code	**EC704B**
Title of Course	**EMBEDDEDSYSTEMS**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	38
Course Outcomes	CO1: Ability to understanding the concepts of Reconfigurable computing and embedded system.
	CO2: Abilitytohaveknowledgeaboutprogrammodellingconceptandrealtimeoperating system.
	CO3: Abilityto implementtheEmbeddedsystemconceptonarmenvironment.

Department	ECE
Course Code	**EC704C**
Title of Course	**BIOMEDICALINSTRUMENTATION**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	37
Course Outcomes	CO1: Ability to learn Physiological Systems, Biological Signals, &Fundamentals of Electrophysiology.
	CO2: Abilityto learndifferentMeasurementtechniques&theirAnalysisusingBiological Sensors,BiologicalAmplifiers,RecordingandDisplaysystems.Studentsalsoknow the requirementofhospital.
	CO3: Ability to learn different ways of Life-Support like CardiacSupport, Electro- physiotherapy,Lasersintreatment andsurgery&Treatment.
	CO4: AbilitytolearntheusesofX-Rays,ComputerTomography,Ultrasonography,Gamma cameralike different Imagingdevices.

Department	ECE

Course Code	**EC705A**
Title of Course	**ARTIFICIALINTELLIGENCE**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	45
Course Outcomes	CO1: Abilitytoidentifyproblemsthatare amenable tosolutionbyAImethods,andwhichAI methodsmaybesuitedtosolvingagivenproblem.
	CO2: Abilitytoformalize agivenprobleminthelanguage/frameworkofdifferentAImethods (e.g.,asasearchproblem,asa logicaltheory,asaplanningproblem).
	CO3: AbilitytoimplementbasicAIalgorithms (e.g.,standardsearchalgorithmsorresolution).
	CO4: Abilitytodesignand carryout an empiricalevaluationofdifferent algorithmson problemformalization,andstatetheconclusionsthatthe evaluationsupports.

Department	ECE
Course Code	**EC705B**
Title of Course	**ROBOTICS**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	39
Course Outcomes	CO1: Abilityto understandtheRobotAnatomyanditsArm Geometry.
	CO2: AbilitytolearntoControlof RobotwithRobotProgrammingLanguage.
	CO3: AbilitytolearnRobotsensing-Range&ProximitywithHigher-Levelvision.

Department	ECE
Course Code	**EC705C**
Title of Course	**DATA BASEMANAGEMENTSYSTEM**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact	40

Hours	
Course Outcomes	CO1: AbilitytolearnConcept&OverviewofDBMS,DataModels,DatabaseLanguages.
	CO2: AbilitytolearndifferentrelationshipmodellikeEntity-RelationshipModel,Relational Model.
	CO3: AbilitytolearnSQLand IntegrityConstraintsforRelational DatabaseDesign&File Organization&Index Structures.

Department	ECE
Course Code	**EC705D**
Title of Course	**POWERELECTRONICS**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	34
Course Outcomes	CO1: Abilityto learnPowerSemiconductorSwitcheslikeRectifierdiodes,fastrecovery diodes,Schottky barrierdiode,PowerBJT, PowerMOSFET,SCR,TRIAC,IGBTand GTO.
	CO2: Abilityto learndifferenttypesofRectifiers,StepupandStepdownchoppers,Single phaseandthreephase inverters,ACVoltageControllers&DCandACDriveswiththeir speedcontrol.

Department	ECE
Course Code	**HU781**
Title of Course	**GROUPDISCUSSION**
Nature of	Compulsory

Course	
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilitytoknowthecurrent affairs.
	CO2: Ability to grow the presentation skill and communication technique using English language.
	CO3: Abilityto familiarwithteamworkandacquiretheleadershipquality.

Department	ECE
Course Code	**EC792**
Title of Course	**VLSIDESIGNLAB**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilitytounderstandtheconceptof CMOSfabricationandvarioustypes'delays.
	CO2: AbilitytounderstandingtheICfabrication.
	CO3: AbletouseVHDLforsimulationandsynthesisofthedigitaldesignsusingXilinx softwareandSpartan-3FPGAkits.

Department	ECE
Course Code	**EC793A**
Title of Course	**RF&MICROWAVEENGG. LAB**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilitytoanalyzedifferentlinearbeamandcross beamdevicesandtheirpotential applications.
	CO2: AbilitytobefamiliarwiththemicrowavesolidstatedevicesandtheirroleinMICs, MMICsandRF-MEMS.

Department	ECE
Course Code	**EC793B**
Title of Course	**OPTICALCOMMUNICATION&N/WLAB**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilityto understandthestructure,operatingprinciples,underlyingphysicalconceptsof opticalcommunication,particularfiberlinks.
	CO2: Show thecapabilitiesand restrictionsofthe systemsin currenttechnologicalsenseandintermsoffundamentalprinciples.

Department	ECE
Course Code	**EC793C**
Title of Course	**COMPUTERNETWORKS LAB**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilityto understandthebasicsofNetworking.
	CO2: Abilitytounderstandthevariousprotocolsusedinthe currentnetworkingsystem.
	CO3: Abilitytounderstandthedifferentphysicaldevicesusedinthe networking.
	CO4: Abilitytostudythe differentheuristicsfornetworking.

Department	ECE

Course Code	**EC793D**
Title of Course	**FPGA&RECONFIGURABLE COMPUTINGLAB**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilitytoimplementofbasic logic gate multiplexers,encoder,decoder,counters and16- bitALUwithVHDLandFPGAusingdifferentdesignstyle.
	CO2: AbilitytohaveknowledgesimulinkFDAtoolforgenerationoffilterco-efficient.
	CO3: AbletouseVHDLforsimulationandsynthesisofthedigitaldesignsusingXilinx softwareandSpartan-3FPGAkits.

Department	ECE
Course Code	**F.E-EC795A**
Title of Course	**ARTIFICIALINTELLIGENCELAB**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilitytohaveknowledge inprogramminglanguagessuchasPROLOGandLISP.

Department	ECE
Course Code	**F.E-EC795B**
Title of Course	**ROBOTICSLAB**
Nature of Course	Optional

Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	21
Course Outcomes	CO1: Abilityto understandtheRobotAnatomyanditsArm Geometry.
	CO2: AbilitytolearntoControlof RobotwithRobotProgrammingLanguage.
	CO3:AbilitytolearnRobotsensing-Range&ProximitywithHigher-Levelvision.

Department	ECE
Course Code	**F.E-EC795C**
Title of Course	**DATA BASEMANAGEMENTSYSTEM LAB**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	6
Course Outcomes	CO1: Abilityto createdatabaseandhave knowledgetohandlerecordandtable.
	CO2: Abilitytohaveknowledgeretrievingdatafromadatabase.
	CO3:Abilitytounderstanddatabasemanagement.

Department	ECE
Course Code	**F.E-EC795D**
Title of Course	**POWER ELECTRONICSLAB**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	45
Course	CO1: Abilityto learnPowerSemiconductorSwitcheslikeRectifierdiodes,fastrecovery diodes,Schottky

Outcomes	barrierdiode,PowerBJT, PowerMOSFET,SCR,TRIAC,IGBTand GTO.
	CO2: Abilityto learndifferenttypesofRectifiers, StepupandStepdownchoppers, Single phaseandthreephaseinverters,ACVoltageControllers& DCandACDriveswiththeir speedcontrol.

Department	ECE
Course Code	**EC781**
Title of Course	**INDUSTRIALTRAINING**
Nature of Course	Compulsory
Type of Course	
Contact Hours	0L+0T
Total Contact Hours	
Course Outcomes	CO1: Abilitythe meetthe gapbetweentheIndustryrequirements andthelearningatInstitute.
	CO2: Abilityto familiartheworking cultureandenvironmentof theindustry.

Department	ECE
Course Code	**EC782**
Title of Course	**PROJECTPART1**
Nature of Course	Compulsory
Type of Course	Practical
Contact Hours	3P+0T
Total Contact Hours	
Course Outcomes	CO1: Abilitytoenablestudentstogeneratethespecificationofthesubsystemsandforming theblockdiagramofthecompletesystem.
	CO2: Abilitytoimprovetheexperimentalskillsofthestudentsinimplementing,testingand interfacingdifferentcircuits.
	CO3:Toprovidethe studentwithanintegratedapplication,toutilize scatteredmaterialsFrom severalundergraduatecoursesoftelecommunication,electronics andpropagation.

	CO4: Abilitytoimprovisetheir all-round knowledge, particularly ofrecent developments whichhavenotyetbeenincludedinthecurriculum
	CO5: Abilityto builddifferentcircuits assubpartsof theprojectthatcanserve indeveloping laboratorywork.

Department	ECE
Course Code	**HU801A**
Title of Course	**ORGANISATIONALBEHAVIOUR**
Nature of Course	Compulsory
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	24
Course Outcomes	CO1: Abilitytoknowthefundamentalandstructureofanorganization.
	CO2: Abilitytounderstandorganizationalbehaviour.
	CO3:Abilitytounderstandthekeyelementsofasuccessfulorganizationandalsohavethe knowledgeofmanpowerrequirement andjudgethe qualification forproperutilization ofmanpower.

Department	ECE
Course Code	**EC801A**
Title of Course	**SMARTANTENNA**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact	36

Hours	
Course Outcomes	CO1: Abilitytoknowthefundamental&keybenefitsofsmartantennatechnology.
	CO2: Abilitytounderstanduseofsmartantennasforwirelesscommunication.
	CO3:Abilitytounderstandadaptiveprocessing,directionofarrivalestimation (DOA) methods&implementationofsmartantennasystem.

Department	ECE
Course Code	**EC801B**
Title of Course	**DIGITALIMAGEPROCESSING**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	36
Course Outcomes	CO1: Abilitytounderstandhowtheimportantfeaturesinanimage mayberelatedto significant abstractionsfromtherawimage.
	CO2: Theabilitytodevelopanyimageprocessingapplication.
	CO3:AbilitytounderstandtherapidadvancesinMachine Vision.

Department	ECE
Course Code	**EC801C**
Title of Course	**SATELLITE COMMUNICATION&REMOTESENSING**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	39
Course Outcomes	CO1: Ability to understand how analogand digital technologies are used for satellite communicationnetworks.
	CO2: Abilitytounderstandtheradiopropagationchannelfor Earthstationtosatellite.
	CO3:Abilitytohaveknowledgeaboutthe remotesensingandits application.

Department	ECE
Course Code	**EC802A**
Title of Course	**NEURALN/W&APPLICATIONS**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	36
Course Outcomes	CO1: Abilitytounderstandtheconceptof NeuralNetwork&understanddifferenttypesof learningprocesses.
	CO2: Abilitytounderstandperceptronconcept&different associatedalgorithms.
	CO3: Abilitytounderstand RadialBasisfunctionnetworks&itsproperties.
	CO4: AbilitytounderstandAssociativeMemoryNetworksandself-organizingmap.
	CO5: Abilitytounderstandtheapplicationfields likeDigitalimageProcessing&Image Restoration.

Department	ECE
Course Code	**EC802B**

Title of Course	**MATERIALSC. &ENGG**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	30
Course Outcomes	CO1: Abilitytolearn Structure ofSolids,Dielectricproperties,optical&MagneticProperties, andbasic conceptofSuperconductors.
	CO2: Abilityto learnMaterialsforOpticalCommunication,Data Storage,DisplayDevices &getthe knowledgeofAdvancedMaterials.

Department	ECE
Course Code	**EC802C**
Title of Course	**RENEWABLEENERGY**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T
Total Contact Hours	42
Course Outcomes	CO1: Abilityto k n o w theclassificationofEnergySources,understandAdvantagesofNon-ConventionalEnergySources,Economics&ImpactonEnvironment.
	CO2: Abilitytolearnaboutdifferenttypesofnon-conventionalsourceslike solar,wind,hydel, bio energy,tidal,wave energyandgeothermalenergy.
	CO3:Abilitytoknowtheprincipleoffuelcellsandconversionofmagnetohydrodynamics energy.

Department	ECE
Course Code	**EC802D**
Title of Course	**AUDIO&SPEECHPROCESSING**
Nature of Course	Optional
Type of Course	Lectures
Contact Hours	3L+0T

Total Contact Hours	37
Course Outcomes	CO1: Abilitytoknowproductionandtransmissionofacoustic signals.
	CO2: Abilitytounderstandthetime domainmethodsforSpeechprocessing.
	CO3:Abilitytohavethe knowledge ofSpeechCodec standards andapplications.

Department	ECE
Course Code	**EC881**
Title of Course	**DESIGNLAB/INDUSTRIALPROBLEMRELATEDPRACTICALTRAINING**
Nature of Course	Optional
Type of Course	Practical
Contact Hours	6P+0T
Total Contact Hours	56
Course Outcomes	CO1: Abilitytoprovide knowledge forbasicconceptsinECEengineering, andtoprovidetotal solutionin fieldsofelectronics andcommunicationengineering.
	CO2: Ability to encourage the graduates to analyzeand design novel electronics circuit system/productsforapplicationinreallife.

Department	ECE
Course Code	**EC882**
Title of Course	**PROJECT PART-2**
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	12P+0T
Total Contact Hours	36
Course Outcomes	CO1: Abilitytogenerate the specificationofthe subsystemsandformingthe blockdiagramof thecompletesystem.
	CO2: Abilitytoimprovingtheexperimentalskillsof the studentsinimplementing,testingand interfacingdifferentcircuits.
	CO3:Ability to utilize scattered materials from several under graduate courses of telecommunication,electronics andpropagation.
	CO4:Abilitytoimprovisetheir all-round knowledge, particularly ofrecent developmentswhichhavenotyetbeenincludedinthecurriculum.

	CO5: Abilityto builddifferentcircuitsassubpartsofthe projectthatcanserveindeveloping laboratorywork.

Department	ECE
Course Code	**EC893**
Title of Course	**GRANDVIVA**
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	0P+0T
Total Contact Hours	
Course Outcomes	CO1: Abilitytogetthescopeofrevisethecoreengineeringsubjectslearnsduringthe4yearof graduatecourse.
	CO2: Abilitytoknowtherequirementsofthesubjectswhicharenecessarytosolvethereallife problems.
	CO3:Abilitytogainthe knowledge howto facetheinterviewforarecruitmentdrive.