



## ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAMME:EC E	DEGREE : UG	A.Y: 2020-21	Course Outcomes
S.No	Year/ Sem	Course Name	
1	II-I	<b>EC301PC- Electronic Devices &amp; Circuits</b>	<b>CO1:</b> Students will be able to Know the characteristics of various components.
			<b>CO2:</b> Students will be able to Understand the utilization of components.
			<b>CO3:</b> Students will be able to Understand the biasing techniques.
			<b>CO4:</b> Students will be able to Design and analyze small signal amplifier circuits.
			<b>CO5 :</b> Students will be able to classify between different Amplifiers and evaluate their efficiency
2	II-I	<b>EC302PC- Network Analysis &amp; Transmission Lines</b>	<b>CO1:</b> Students will be able to Gain the knowledge on basic RLC circuits behavior.
			<b>CO2:</b> Students will be able to Analyze the Steady state and transient analysis of RLC Circuits.
			<b>CO3:</b> Students will be able to Know the characteristics of two port network parameters.
			<b>CO4:</b> Students will be able to Analyze the transmission line parameters and configurations.
			<b>CO5:</b> Students will be able to Know the Functioning of smitch chart
3	II-I	<b>EC303PC- Digital System Design</b>	<b>CO1:</b> Students will be able to Understand the numerical information in different forms and Boolean Algebra theorems.
			<b>CO2:</b> Students will be able to Postulates of Boolean algebra and to minimize





			combinational functions
			<b>CO3:</b> Students will be able to Design and analyze combinational and sequential circuits
			<b>CO4:</b> Students will be able to Known about the logic families and realization of logic gates.
			<b>CO5:</b> Students will be able to know various Logic Families in Digital Electronics
4	II-I	<b>EC304PC- Signals &amp; Systems</b>	<b>CO1:</b> Students will be able to Differentiate various signal functions.
			<b>CO2:</b> Students will be able to Represent any arbitrary signal in time and frequency domain.
			<b>CO3:</b> Students will be able to Understand the characteristics of linear time invariant systems.
			<b>CO4:</b> Students will be able to Analyze the signals with different transform technique
			<b>CO5:</b> Students will be able to understand how to avoid Aliasing Effect by using Nyquist Criteria and also understand the relation between convolution and correlation
5	II-I	<b>EC305ES- Probability Theory &amp; Stochastic Process</b>	<b>CO1:</b> Students will be able to Understand the concepts of Random Process and its Characteristics.
			<b>CO2:</b> Students will be able to Understand the response of linear time Invariant system for a Random Processes.
			<b>CO3:</b> Students will be able to Determine the Spectral and temporal characteristics of Random Signals.
			<b>CO4:</b> Students will be able to Understand the concepts of Noise in Communication systems.
			<b>CO5:</b> Students will be able to analyze the concepts of auto correlation and cross correlation
6	III-I	<b>EC501PC- Microprocessors</b>	<b>CO1:</b> Students will be able to Understands the internal architecture,





		<b>&amp; Microcontrollers</b>	organization and assembly language programming of 8086 processors. <b>CO2:</b> Students will be able to Understands the internal architecture, organization and assembly language programming of 8051/controllers <b>CO3:</b> Students will be able to Understands the interfacing techniques to 8086 and 8051 based systems. <b>CO4:</b> Students will be able to Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors. <b>CO5:</b> Students will be able to Understands the internal architecture of CORTEX processors and basic concepts of advanced CORTEX processors.
7	III- I	<b>EC502PC-Data Communication s &amp; Networks</b>	<b>CO1:</b> Students will be able to Know the Categories and functions of various Data communication Networks <b>CO2:</b> Students will be able to Design and analyze various error detection techniques. <b>CO3:</b> Students will be able to Demonstrate the mechanism of routing the data in network layer <b>CO4:</b> Students will be able to Know the significance of various Flow control and Congestion control Mechanisms <b>CO5:</b> Students will be able to Know the Functioning of various Application layer Protocols.
8	III- I	<b>EC503PC- Control Systems</b>	<b>CO1:</b> Students will be able to Understand the modeling of linear-time-invariant systems using transfer function and statespace representations. <b>CO2:</b> Students will be able to Understand the concept of stability and its assessment for linear-time invariant systems <b>CO3:</b> Students will be able to Design simple feedback controllers. <b>CO4:</b> Design various Controllers and Compensators to improve Sytem Performance





			<b>CO5:</b> Students will be able to Know the concepts of stability using State Space Analysis
9	III- I	<b>SM504MS- Business Economics &amp; Financial Analysis</b>	<b>CO1:</b> The students will understand the various Forms of Business and the impact of economic variables on the Business.
			<b>CO2:</b> The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
			<b>CO3:</b> The Students can study the firm's financial position by analysing the Financial Statements of a Company.
			<b>CO4:</b> Students will be able to rules for maintaining Books of Accounts
			<b>CO5:</b> Students will be able to understand how to make financial Analysis through ratio's
10	III-I	<b>EC513PE- Electronic Measurements &amp; Instrumentation</b>	<b>CO1:</b> Measure electrical parameters with different meters and understand the basic definition of measuring parameters.
			<b>CO2:</b> Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals.
			<b>CO3:</b> Operate an Oscilloscope to measure various signals.
			<b>CO4:</b> Measure various physical parameters by appropriately selecting the transducers.
			<b>CO5:</b> Student will understand various bridges
11	IV-I	<b>EC701PC- Microwave Engineering</b>	<b>CO1:</b> To analyze completely the rectangular waveguides, their mode characteristics, and design waveguides for solving practical microwave transmission line problems
			<b>CO2:</b> To distinguish between the different types of waveguide and ferrite components, explain their functioning and select proper components for engineering applications.
			<b>CO3:</b> To distinguish between the methods of power generation at microwave frequencies, derive the







			<p>performance characteristics of 2-Cavity and Reflex Klystrons, Magnetrons, TWTs and estimate their efficiency levels, and solve related numerical problems</p> <p><b>CO4:</b> To realize the need for solid state microwave sources, understand the concepts of TEDs, RWH Theory and explain the salient features of Gunn Diodes and ATT Devices.</p> <p><b>CO5:</b> To establish the properties of Scattering Matrix, formulate the S-Matrix for various microwave junctions, and understand the utility of S-parameters in microwave component design.</p>
12	IV-I	<b>EC502PC-Computer Networks</b>	<p><b>CO1:</b> Students should understand and explore the basics of Computer Networks and Various Protocols. He/She will be in a position to understand the World Wide Web concepts.</p> <p><b>CO2:</b> Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and ad hoc networks.</p> <p><b>CO3:</b> Student will know about Multicast Routing Protocols</p> <p><b>CO4:</b> Student will study about Bluetooth, Zigbee, IPv4, IPv6.</p> <p><b>CO5:</b> Student will be know about DNS in Internet</p>
13	IV-I	<b>EC732PE-Electronic Measurements and Instrumentation</b>	<p><b>CO1:</b> Student will Identify the various electronic instruments based on their specifications for carrying out a particular task of measurement</p> <p><b>CO2:</b> Measure various physical parameters by appropriately selecting the transducers.</p> <p><b>CO3:</b> Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals.</p> <p><b>CO4:</b> Student will Operate an</p>





			Oscilloscope to measure various signals.
			<b>CO5:</b> Student will know about Flow Measurement, Displacement Meters, Liquid level Measurements
14	IV-I	<b>EC811PE-Satellite Communications</b>	<b>CO1:</b> Students will understand the historical background, basic concepts and frequency allocations for satellite communication
			<b>CO2:</b> Students will demonstrate orbital mechanics, launch vehicles and launchers
			<b>CO3:</b> Students will demonstrate the design of satellite links for specified C/N with system design examples.
			<b>CO4:</b> Students will be able to visualize satellite sub systems like Telemetry, tracking, command and monitoring power systems etc
			<b>CO5:</b> Students will understand the various multiple access systems for satellite communication systems and satellite packet communications.
15	IV-I	<b>EC702PC-VLSI Design</b>	<b>CO1:</b> Students will be able to Acquire qualitative knowledge about the fabrication process of integrated circuit using MOS transistors.
			<b>CO2:</b> Students will be able to Choose an appropriate inverter depending on specifications required for a circuit
			<b>CO3:</b> Students will be able to Draw the layout of any logic circuit which helps to understand and estimate parasitic of any logic circuit
			<b>CO4:</b> Students will be able to Design different types of logic gates using CMOS inverter and analyze their transfer characteristics
			<b>CO5:</b> Students will be able to Provide design concepts required to design building blocks of data path using gates.
			<b>CO6:</b> Students will be able to Design simple memories using MOS transistors and can understand design of large memories.





			<p><b>CO7:</b> Students will be able to Design simple logic circuit using PLA, PAL, FPGA and CPLD.</p> <p><b>CO8:</b> Students will be able to Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system</p>
<b>SEMESTER II</b>			
<b>16</b>	<b>II-II</b>	<b>MA401BS- Laplace Transform, Numerical Methods &amp; Complex Variables</b>	<b>CO1:</b> Students will be able to Use the Laplace transforms techniques for solving ODE's
			<b>CO2:</b> Students will be able to Find the root of a given equation.
			<b>CO3:</b> Students will be able to Estimate the value for the given data using interpolation
			<b>CO4:</b> Students will be able to Find the numerical solutions for a given ODE's
			<b>CO5:</b> Students will be able to Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems.
			<b>CO6:</b> Students will be able to Taylor's and Laurent's series expansions of complex Function
<b>17</b>	<b>II-II</b>	<b>EC402PC- Electromagnetic Fields &amp; Waves</b>	<b>CO1:</b> Students will be able to Get the knowledge of Basic Laws, Concepts and proofs related to Electrostatic Fields and Magnetostatic Fields.
			<b>CO2:</b> Students will be able to Distinguish between the static and time-varying fields, establish the corresponding sets of Maxwell's Equations and Boundary Conditions.
			<b>CO3:</b> Students will be able to Analyze the Wave Equations for good conductors, good dielectrics and





			<p>evaluate the UPW Characteristics for several practical media of interest</p> <p><b>CO4:</b> Students will be able to analyze completely the rectangular waveguides, their mode characteristics, and design waveguides for solving practical problems.</p> <p><b>CO5:</b> Students will be able to analyze the wave for good conductors and good dielectrics</p>
18	II-II	<b>EC403PC- Analog &amp; Digital Communications</b>	<p><b>CO1:</b> Students will be able to analyze and design of various continuous wave and angle modulation and demodulation techniques</p> <p><b>CO2:</b> Students will be able to Understand the effect of noise present in continuous wave and angle modulation techniques.</p> <p><b>CO3:</b> Students will be able to Attain the knowledge about AM , FM Transmitters and Receivers.</p> <p><b>CO4:</b> Students will be able to analyze and design the various Pulse Modulation Techniques.</p> <p><b>CO5:</b> Students will be able to Understand the concepts of Digital Modulation Techniques and Baseband transmission.</p>
19	II-II	<b>EC405PC- Electronic Circuit Analysis</b>	<p><b>CO1:</b> Students will be able to Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors.</p> <p><b>CO2:</b> Students will be able to Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations.</p> <p><b>CO3:</b> Students will be able to Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.</p> <p><b>CO4:</b> Students will be able to Design Multivibrators and sweep circuits for various applications.</p>







			<b>CO5:</b> Students will be able to know the features of a Time base Signals .
20	II-II	<b>EC404PC- Linear IC Applications</b>	<b>CO1:</b> Students will be able to A thorough understanding of operational amplifiers with linear integrated circuits.
			<b>CO2:</b> Students will be able to Attain the knowledge of functional diagrams and applications of IC 555 and IC 565
			<b>CO3:</b> Students will be able to Acquire the knowledge about the Data converters.
			<b>CO4:</b> Students will be able to understand different type of active filters and  Oscillators circuit
			<b>CO5:</b> Students will be able to understand the A/D and D/A converter Application
21	III- II	<b>EC601PC- Antennas and Propagation</b>	<b>CO1:</b> Students will be able to Characterize the antennas based on frequency, configure the geometry and establish the radiation patterns of VHF, UHF and Microwave antennas and also antenna arrays
			<b>CO2:</b> Students will be able to Specify the requirements for microwave measurements and arrange a setup to carry out the antenna far zone pattern and gain measurements in the laboratory.
			<b>CO3:</b> Students will be able to Classify the different wave propagation mechanisms, determine the characteristic features of different wave propagations, and estimate the parameters involved.
			<b>CO4:</b> Students will be able to Students Can Able design the Micro strip Patch antenna
			<b>CO5:</b> Students will be able to Students Can Able to measure the antenna parameters
22	III- II	<b>EC602PC - Digital Signal Processing</b>	<b>CO1:</b> Students will be able to Understand the LTI system characteristics and Multirate signal processing.
			<b>CO2:</b> Students will be able to Understand the inter-relationship





			<p>between DFT and various transforms.</p> <p><b>CO3:</b> Students will be able to Design a digital filter for a given specification.</p> <p><b>CO4:</b> Students will be able to Understand the significance of various filter structures and effects of round off errors.</p> <p><b>CO5:</b> Students will be able to Understand the MULTI RATE SIGNAL PROCESSING</p>
23	III- II	EC603PC-VLSI Design	<p><b>CO1:</b> Students will be able to Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors.</p> <p><b>CO2:</b> Students will be able to Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit</p> <p><b>CO3:</b> Students will be able to Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.</p> <p><b>CO4:</b> Students will be able to Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system.</p> <p><b>CO5:</b> Students will be able to know various CMOS Testing Techniques</p>
25	III-II	EC613PE - Embedded System Design	<p><b>CO1:</b> Students will be able to To understand the selection procedure of Processors in the embedded domain.</p> <p><b>CO2:</b> Students will be able to Design Procedure for Embedded Firmware.</p> <p><b>CO3:</b> Students will be able to To visualize the role of Real time Operating Systems in Embedded Systems.</p> <p><b>CO4:</b> Students will be able to To evaluate the Correlation between task synchronization and latency issues</p> <p><b>CO5:</b> Students will be able to know and understand message passing and remote procedure calling in TASK</p>






			Communication of ES OS
26	III-II	<b>PE512OE- Renewable Energy Sources</b>	<b>CO1:</b> Students will be able to Understand the principles of wind power and solar photovoltaic power generation, fuel cells.
			<b>CO2:</b> Students will be able to Assess the cost of generation for conventional and renewable energy plants
			<b>CO3:</b> Students will be able to Design suitable power controller for wind and solar applications
			<b>CO4:</b> Students will be able to Analyze the issues involved in the integration of renewable energy sources to the grid
			<b>CO5:</b> Students will be able to know Renewable Energy Sources-Islanding and Interconnection
27	IV-II	<b>EC851PE- Optical Communication s</b>	<b>CO1:</b> Students will be able to Understand and analyze the constructional parameters of optical fibres
			<b>CO2:</b> Students will be able to Be able to design an optical system.
			<b>CO3:</b> Students will be able to Estimate the losses due to attenuation, absorption, scattering and bending.
			<b>CO4:</b> Students will be able to Compare various optical detectors and choose suitable one for different applications.
			<b>CO5:</b> Students will be able to understand the optical fibre transmission media
28	IV-II	<b>EC864PE- Global Positioning System</b>	<b>CO1:</b>
			<b>CO1:</b> Students will be able to Identify GPS components and their functions
			<b>CO2:</b> Students will be able to Select GPS survey method
			<b>CO3:</b> Students will be able to Interpret the navigational message and signals received by the GPS satellite
			<b>CO4:</b> Students will be able to Identify error sources in GPS observations, and apply the corrections for accurate positioning
			<b>CO5:</b> Student will be understand various





			applications of GPS
29	IV-II	<b>CN621OE- Environmental Impact Assessment</b>	<b>CO1:</b> Students will be able to Identify the environmental attributes to be considered for the EIA study.
			<b>CO2:</b> Students will be able to Formulate objectives of the EIA studies.
			<b>CO3:</b> Students will be able to Identify the suitable methodology and prepare Rapid EIA.
			<b>CO4:</b> Students will be able to Identify and incorporate mitigation measures.
			<b>CO5:</b> Students will be able to learn Assessment statement for various industries.
30	IV-II	<b>EC801PC- Project work</b>	<b>CO1:</b> Students will be able to analyze a problem, identify and define the computing requirements appropriate to its solutions.
			<b>CO2:</b> Students will be able to function effectively on teams to accomplish a common goal.
			<b>CO3:</b> Students will be able to use current techniques, skill and tools necessary for computing practices.
			<b>CO4:</b> Students will be able to design and development principles in the construction of software systems of varying complexity.
			<b>CO5:</b> Students will be able to get an eye opener to bridge gap between Academia and real time industry issues on technological front
			<b>CO6:</b> Students will be able to meet industrial requirement and to improve technical interview skills of a student.

  
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