DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Regulation : R20 BATCH: 2020-2024

LIST OF COURSE OUTCOMES DEFINED FOR A BATCH - 2020-24

S.No	Regulation	Course Code	YEAR/ SEM	Name of the Course	No. of COs Defined
1	R20	C201	II-I	MATHEMATICS - III	5
2	R20	C202	II-I	ELECTRONIC DEVICES AND CIRCUITS	5
3	R20	C203	II-I	SWITCHING THEORY AND LOGIC DESIGN	5
4	R20	C204	II-I	SIGNALS & SYSTEMS	4
5	R20	C205	II-I	RANDOM VARIABLES AND STOCHASTIC PROCESS	6
6	R20	C206	II-I	ELECTRONIC DEVICES AND CIRCUITS LAB	6
7	R20	C207	II-I	SWITCHING THEORY AND LOGIC DESIGN LAB	4
8	R20	C208	II-I	OOPS THROUGH JAVA LAB	5
9	R20	C209	II-I	PYTHON PROGRAMMING	5
10	R20	C210	II-II	ELECTRONIC CIRCUIT ANALYSIS	5
11	R20	C211	II-II	DIGTIAL IC DESIGN	5
12	R20	C212	II-II	ANALOG COMMUNICATIONS	5
13	R20	C213	II-II	LINEAR CONTROL SYSTEMS	5
14	R20	C214	II-II	MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR	5
15	R20	C215	II-II	ELECTRONICS CIRCUIT ALALYSIS LAB	5
16	R20	C216	II-II	ANALOG COMMUNICATIONS LAB	4
17	R20	C217	II-II	DIGITAL IC DESIGN LAB	5
20	R20	C218	II-II	SOFTSKILLS	5
21	R20	C219	II-II	CONSTITUITION OF INDIA	5
22	R20	C301	III-I	ANALOG IC APPLICATIONS	5
23	R20	C302	III-I	ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES	5
24	R20	C303	III-I	DIGITAL COMMUNICATIONS	5
25	R20	C304	III-I	ELECTRONIC MEASUREMENT AND INSTRUMENTATION	5
26	R20	C305	III-I	CPMPUTER ORGANIZATION & ARCHITECTURE	4
27	R20	C306	III-I	ANALOG IC APPLICATIONS LAB	4
28	R20	C307	III-I	DIGITAL COMMUNICATIONS LAB	4
29	R20	C308	III-I	DATA STRUCTURES USING JAVA LAB	5
30	R20	C309	III-I	INDIAN TRADITION & KNOWLEDGE	5
31	R20	C311	III-II	MICROPROCESSORS AND MICROCONTROLLERS	5
32	R20	C312	III-II	VLSI DESIGN	5

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

33	R20	C313	III-II	DIGTIAL SIGNAL PROCESSING	6
34	R20	C314	III-II	MICROPROCESSORS AND MICROCONTROLLERS LAB	5
35	R20	C315	III-II	VLSI DESIGN LAB	4
36	R20	C316	III-II	DIGITAL SIGNAL PROCESSING LAB	4
37	R20	C317	III-II	ARM BASED/ ARDUINO BASE PROGRAMMING	6
38	R20	C318	III-II	RESEARCH METHODOLOGY	6
39	R20	C319	III-II	MICROWAVE ENGINEERING	6
40	R20	C320	III-II	COMPUTER NETWORKS	6
41	R20	C401	IV-I	OPTICAL COMMUNICATIONS	6
42	R20	C402	IV-I	SATELLITE COMMUNICATIONS	6
43	R20	C403	IV-I	RADAR ENGINEERING	5
44	R20	C404	IV-I	BLOCK CHAIN TECHNOLOGY	5
45	R20	C405	IV-I	CYBER SECURITY	5
46	R20	C406	IV-I	UNIVERSAL HUMAN VALUES	5
47	R20	C407	IV-I	DESIGNER TOOLS	4

HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
MIII	C201.1	Find the normal to the surface and evaluate divergence and curl of vector functions	Understand
	C201.2	Apply Laplace transform to solve ordinary differential equations.	Apply
	C201.3	Evaluate Fourier series and Fourier transform for functions	Apply
	C201.4	Determine the solution of linear ad non linear partial differential equations of first order.	Apply
	C201.5	Calculate the solution of higher order linear partial differential equations	Apply

CO-PO & CO-PSO Mapping Table:

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	2	2												
C201.2	3	2												
C201.3	2	2												
C201.4	2	2												
C201.5	2	2												
C201	2.2	2												

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Electronic Devices & circuits	C202.1	Interpret the concepts of Semiconductor physics to understand various electronic devices.	Understand
	C202.2	Demonstrate the construction, working principle and V-I characteristics of various Nonlinear devices.	Apply
	C202.3	Compare different types of rectifiers with and without filters with relevant expressions.	Analyze
	C202.4	Understand different Biasing and Stabilization methods for BJT and FET.	Understand
	C202.5	Analyze amplifier circuits using small signal low frequency transistor model.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	2												3
C202.2	3	3												3
C202.3	3	3												3
C202.4	3	3												3
C202.5	3	3	3											3
C202	3	2.8	3											3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Switching Theory and Logic Design	**C203**.1	Illustrate the importance of various number systems and to perform different arithmetic operations on them.	Apply
	C203.2	Apply Boolean algebra postulates-map and tabulation methods to minimize Boolean functions	Apply
	C203.3	Illustrate various combinational and sequential circuits used in digital systems	Apply
	C203.4	Design various PLDs such as ROMs, PALs, PLAs and PROMs	Anlayze
	C203.5	Analyze different finite state machines using Meelay More machines	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	2	2	3											3
C203.2	2	2	3											3
C203.3	2	3	3											3
C203.4	3	3	3											3
C203.5	2	3	3											3
C203	2.2	2.6	3											3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Signals & Systems	C204.1	Classify various types of signals and systems to illustrate their responses	Analyze
	C204.2	Apply transformation methods to solve signals and differential equations.	Apply
	C204.3	Analyze the sampling theorem to calculate nyquist rate	Analyze
	C204.4	Analyze the linear systems in time and frequency domains.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	2	2										3	
C204.2	3	3	3										3	
C204.3	3	3	3										3	
C204.4	3	3	3										3	
C204	3	2.75	2.75										3	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Random variables & Stochastic Processes	C205.1	Interpret the concepts of random variables and stochastic processes in real time applications	Apply
	C205.2	Use the principle definitions, fundamental theorem and important relations in statistics	Apply
	C205.3	Analyze the dependence structure between random variables using the joint CDF to derive marginal distributions and conditional probabilities, enabling informed decision-making in multivariate statistical models.	Analyze
	C205.4	Apply the concepts of stationarity and wide-sense stationarity to analyze and model stochastic processes in real-world applications such as signal processing, communication systems, and time series forecasting.	Apply
	C205.5	Apply the concepts of power spectral density and cross power spectral density to analyze and interpret the frequency characteristics of random processes	Apply
	C205.6	Analyze linear systems with theory of stochastic processes	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	2	2									3	
C205.2	3	3	2	2									3	
C205.3	3	3	2	2									3	
C205.4	2	2	2	2									3	
C205.5	2	2	2	2									3	
C205.6	3	2	2	2									3	
C205	2.7	2.3	2.0	2.0									3.0	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Electronic Devices & circuits LAB	C206.1	Identify and test the behavior of electronic components and study the operation of Function generator ,RPS and CRO etc.	Understand
	C206.2	Analyze the V-I characteristics of different electronic devices such as diodes, transistors.	analyze
	C206.3	Implement the Rectifier circuits using diodes and capacitor.	Apply
	C206.4	Examine the amplification characteristics of a Transistor in CE, CC,CS configurations.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C2061								2	3					3
C2062	3	3	3					2	3					3
C2063	3	3	3					2	3					3
C2064	3	3	3					2	3					3
C206	3	3	3					2	3					3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Switching Theory and logic design Lab	C207.1	Test the operation of different logic gates using relevant IC's	Apply
	C207.2	Examine the operation of different combinational logic circuits.	Analyze
	C207.3	Apply the concept of Boolean algebra or k-maps to reduce and Construct logic circuit for given function.	Apply
	C207.4	Analyse the Truth tables of different Flip-Flops.	Analyze
	C207.5	Design of registers using sequential logic circuits and Design of Synchronous & Asynchronous counters using Flip-Flops.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	1	1	2						1					3
C207.2	3	2	2						1					3
C207.3	3	3	3						2					3
C207.4	3	3	2						1					3
C207.5	3	3	2						2					3
C207	2.6	2.4	2.2						1.4					3

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
OOPS Through JAVA LAB	C208.1	Identify classes, objects, members of a class and the relationship among them needed for a specific problem	Apply
	C208.2	Implement programs to distinguish different forms of inheritance	Analyze
	C208.3	Create packages and to reuse them	Create
	C208.4	Develop programs using Exception Handling mechanism	Analyze
	C208.5	Develop multi threaded application using synchronization concept	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	2	1											
C208.2	3	2	2											
C208.3	3	2	3											
C208.4	3	2	1											
C208.5	3	2	2											
C208.6	3	3	3											
C208	3.0	2.2	2.0											

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

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PYTHON PROGRAMMING	C209.1	Understand and write simple Python programs	Understand
	C209.2	Illustrate Python programs with conditionals and loops.	Apply
	C209.3	Apply python functions along with Python data structures –- lists, tuples, dictionaries	Apply
	C209.4	Apply input/output with files and Illustrate OOPs concepts in python	Analyze
	C209.5	Implement concepts of searching, sorting and merging using Python Programming.	Evaluate

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	3	2	2	1	3							2		
C209.2	3	2	2	2	3							2		
C209.3	3	3	2	2	3							2		
C209.4	3	2	2	2	3							2		
C209.5	3	2	2	3	3							2		
C209	3	2.2	2	2	3							2		

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Electronic Circuit Analysis	C210.1	Analyze amplifier circuits using small signal high frequency transistor models.	Analyze
	C210.2	Understand different types of multistage amplifiers and differential amplifier with its characteristics.	Understand
	C210.3	Analyze the effect of feedback on the performance of feedback amplifiers and oscillators.	Analyze
	C210.4	Compare various power amplifiers in terms of efficiency.	Analyze
	C210.5	Distinguish single, double and staggered tuned amplifiers in terms of bandwidth.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	2	2											3
C210.2														3
C210.3	3	2	2											3
C210.4	3	3	2											3
C210.5	3	2	2											3
C210	3	2.25	2											3

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Digital IC Design	C211.1	Apply the knowledge of hardware description language (VHDL & Verilog HDL) concept to model the any digital circuit.	Apply
	C211.2	Develop and synthesis the HDL code for combinational and sequential circuits.	Analyze
	C211.3	Test for the functionality of combinational and sequential circuits using EDA tools.	Analyze
	C211.4	Analyze and Design combinational circuits using MOS logic Circuits	Analyze
	C211.5	Illustrate and Design Sequential circuits using MOS logic Circuits	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	2	2	2	2	-							-		3
C211.2	2	2	2	2	-							-		3
C211.3	2	2	3	3	3							1		3
C211.4	2	2	2	2	-							-		3
C211.5	2	2	2	2	-							-		3
C211	2	2	2.2	2.2	3							1		3

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Analog Communi-cations	C212.1	Demonstrate the need for modulation and also the basic blocks and circuits present in a communication system, square law and switching modulator and demodulators	Apply
	C212.2	Distinguish various analog modulation techniques like DSB, SSB and VSB with their generation, detection methods and also system performance in presence of Noise	Analyze
	C212.3	Analyze Frequency modulators and Demodulators with their spectrum, average power, band width, and also with AM	Analyze
	C212.4	Sketch the AM, FM radio transmitter and receiver circuits with the role of AGC /AFC	Apply
	C212.5	Discriminate different types of pulse analog modulation Techniques such as PAM,PWM and PPM with their modulation and Demodulation methods	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	3	2	1	2							3	
C212.2	3	2	3	3	2	1							3	
C212.3	3	3	3	2	1	1							3	
C212.4	3	2	3	2	2	2							3	
C212.5	3	3	3	3	2	2							3	
C212	3	2.4	3	2.4	1.6	1.6							3	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
LINEAR CONTROL SYSTEMS	C213.1	Clarify various control systems and analyze the effects of feedback on physical systems	Apply
	C213.2	Aanalyse the Transfer function and state models of physical systems and electrical systems	Analyze
	C213.3	Aanalyse Time response of First and Second order, Steady state and error constants for different standard test signals	Analyze
	C213.4	Examine the Time Response and Frequency response Stability using R-H criterion, Root Locus, Polar plots, Bode Plots and Nyquist Stability Criterion	Apply
	C213.5	Design a Lag, Lead, Lead-Lag Compensators and PID controllers for given Specifications and Analyse and solve linear equations, controllability and observability	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	2	2											2	2
C213.2	2	3	3										2	2
C213.3	2	3	3										2	2
C213.4	2	3	2	2									2	2
C213.5	2	3	3	3									2	2
C213	2	2.8	2.75	2.5									2	2

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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MOB	C214.1	Acquire the knowledge on management functions, global leadership and organizational structure.	Understand
	C214.2	Familiarize with the concepts of functional management that is HRM and Marketing of new product developments.	Analyze
	C214.3	Think in strategically through contemporary management practices.	Apply
	C214.4	Develop positive attitude through personality development and can equip with motivational theories.	Analyze
	C214.5	Attain the group performance and grievance handling in managing the organizational culture.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	2	1							2		3	2		
C214.2	2	1							2		3	2		
C214.3	2	1							2		3	2		
C214.4	2	1							2		3	2		
C214.5	2	1							2	2	3	2		
C214	2	1							2	2	3	2		

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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Electronic Circuit Analysis Lab	C215.1	Analyze the frequency response of single, multistage amplifiers and feedback amplifiers	Analzye
	C215.2	Design and simulate RC and LC Oscillators for the given specifications	Apply
	C215.3	Compare the Efficiency of Class A and Class B Amplifiers and calculate the resonant frequency of Tuned amplifiers.	Analyze
	C215.4	Design multistage amplifiers, feedback amplifiers, power amplifiers, tuned amplifiers using MULTISIM Simulation tool.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	3	3	3	3	3			3						3
C215.2	3	3	3	3	3			2						3
C215.3	3	3	3	3	3			3						3
C215.4	3	3	2	2	3									3
C215	3.0	3.0	2.8	2.8	3.0			2.7						3.0

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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Analog Communi-cations Lab	C216.1	Compare different amplitude modulated (DSB-FC, DSB-SC, SSB) signals and observe the operation of peak detector in demodulation process	Analyze
	C216.2	Perform frequency modulation & demodulation and recognize need for pre-emphasis and de-emphasis	Apply
	C216.3	Perform signal sampling and observe the PAM, PWM and PPM signals and their demodulation	Apply
	C216.4	Identify the importance AGC circuits and PLL in communication systems	Understand
	C216.5	Simulate various analog and pulse modulation & demodulation schemes using Simulink-	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	3	3	2	2									3	
C216.2	2	-	2	-	-								3	
C216.3	3	2	-	-	-								3	
C216.4	3	3	3	3	-								3	
C216.5	3	2	2	2	2								3	
C216	2.80	2.50	2.25	2.33	2.00								3.00	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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DIGITAL IC DESIGN LAB	C217.1	Demonstrate the use of Xilinx ISE software and realize basic digital circuits using VHDL.	Analyze
	C217.2	Analyze the functionality of Combinational circuits and Sequential Circuits using digital ICs.	Analyze
	C217.3	Develop a program and synthesize a given application / problem statement using EDA tools.	Apply
	C217.4	Design and model complex digital system independently or in a team.	Understand

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	2	3		3	3									3
C217.2	2	3	3											3
C217.3	1	2	3	3	3									3
C217.4	2	2	3	3	3									3
C217	1.75	2.5	3	3	3									3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
SOFT SKILLS	C218.1	communicate appropriately ad effectively during group discussions and debates.	Apply
	C218.2	Use the skills of listening comprehension to communicate effectively	Apply
	C218.3	Use different jargons of vocabulary for appropriate communication	Apply
	C218.4	develop the skill of writing resumes, project reports and reviews.	Analyze
	C218.5	effective through goal setting, self motivation, and creative thinking	Apply
	C218.6	exhibit interview skills and develop soft skills	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C218.1										3		2		
C218.2										3		2		
C218.3										3		2		
C218.4										3		2		
C218.5										3		2		
C218.6										3		2		
C218										3		2		

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : II **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Constitution of India	C219.1	Understand historical background of the constitution making and its importance for building a democratic India	Understand
	C219.2	Understand the functioning of three wings of the government I e.,executive, legislative and judiciary	Understand
	C219.3	Understand the value of the fundamental rights and duties for becoming good citizen of India.	Understand
	C219.4	Analyze the decentralization of power between central, state and local self-government.	Analayze
	C219.5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C219.1						2	2		3			1		
C219.2						2	2		3			1		
C219.3						2	2		3			1		
C219.4						2	2		3			1		
C219.5						2	2		3			1		
C219						2	2		3			1		

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Analog IC Applications	C301.1	Analyze the IC 741 operational amplifier. Compare performance metrics for different configurations	Analyze
	C301.2	Illustrate and design the linear, non-linear applications of Op-Amp and active filters	Apply
	C301.3	Design and analyze the working of multivibrators using IC 555	Apply
	C301.4	Illustrate the functional characteristics of VCO, PLL and its applications in communication.	Apply
	C301.5	Demonstrate and Compare working principle of various data converters using Op-Amp	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	2	3	2	2										3
C301.2	3	3	3	3	3									3
C301.3	3	2	2	2	2									3
C301.4	3		2	2	2									3
C301.5	2	2	3	3	2							2		3
C301	2.6	2.5	2.4	2.4	2.25							2		3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Electro Magnetic Waves and transmission Lines	C302.1	Explain basic mathematical concepts related to electromagnetic vector fields and apply basic laws to determine E & H fields.	Analyze
	C302.2	Apply Maxwell's equations to solve problems in Electromagnetic field theory.	Apply
	C302.3	Analyze the propagation characteristics of EM waves in different media and types of polarization.	Analyze
	C302.4	Evaluate reflection and refraction of EM waves propagated in normal & oblique incidences.	Evaluate
	C302.5	Demonstrate the transmission line equivalent circuit, characteristics with various lengths. Measurement of length, distance and design of stubs using Smith Charts	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	2	3	2	2									3	
C302.2	3	3	2	2									3	
C302.3	3	3	2	3									2	
C302.4	2	3	3	3									3	
C302.5	3	2	2	2									3	
C302	2.6	2.8	2.2	2.4									2.8	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Digital Communi-cations	C303.1	Analyze the wave form coding techniques in PCM, DPCM, DM, ADM and effect of noise	Analyze
	C303.2	Analyze ASK, FSK, PSK, DPSK, QPSK, M-ary PSK, ASK, FSK and coherent and non-coherent matched filters	Analyze
	C303.3	Apply knowledge of information, entropy, information rate mutual information to evaluate channel capacity.	Apply
	C303.4	Analyze Shannon- Fano , Huffman source encoder with efficiency and also linear block codes	Analzye
	C303.5	Apply Time, transform domain, graphical approach to code convolution codes & decode using viterbi algorithm.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	3	3	2	2	1						1	2	
C303.2	2	3	3	3	2								3	
C303.3	3	3	3	3	3							3	2	
C303.4	2	3	3	3	2								3	
C303.5	2	3	3	3	3								3	
C303	2.4	3	3	2.8	2.4	1						2	2.6	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Electronic Measurements & Instrumentation	C304.1	Apply the acquired knowledge of measuring instrumentations to measure in a complex design	Apply
	C304.2	Illustrate the principles of signal generators and signal analyzers	Apply
	C304.3	Analyze the available oscilloscopes to measure of various signals	Analyze
	C304.4	Analyze various bridge circuits for the measurement of physical quantities to minimize errors in measurements	Analyze
	C304.5	Identify the appropriate transducers among available transducer to design project	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	2	3	3	-									3	3
C304.2	2	2	3	-									3	3
C304.3	3	3	3	3									3	3
C304.4	3	3	3	3									3	3
C304.5	3	2	3										3	3
C304	2.6	2.6	3	3									3	3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Computer Organization & Architecture	C305.1	demonstrate different number systems, codes, and relate postulates of boolean algebra and minimize combinational functions.	Apply
	C305.2	Evaluate and learn different combinational circuits and sequential circuits and able to design them.	Evaluate
	C305.3	organize and learn basic structure components Register transfor language, micro operations and able to write micro programs	Apply
	C305.4	analyze Microprogram control and design of Central Processing Unit.	Analyze
	C305.5	Demonstrate memory management and executing process of various operations of modern computer and Illustrate various bus structures and interfacing technique for I/O organization	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	3	3	3											2
C305.2	3	3	2											2
C305.3	3	3	3											2
C305.4	3	3	2											3
C305.5	3	3												3
C305	3	3	2.5											2.4

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Analog IC Applications LAB	C306.1	Evaluate and design performance of linear and non-linear applications of Operational amplifier using IC741	Evaluate
	C306.2	Design and analyze the performance of active filters	Analyze
	C306.3	Design and analyze the performance of different Multivibrators using IC 555	Analyze
	C306.4	Analyze the response of IC 566 & 565	Analyze
	C306.5	Test different voltage regulations (Ex:5V,9V & 12V)	Evaluate

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C306.1	2	2	2	3	2								3	3
C306.2	2	2	2	3	2								3	3
C306.3	2	2	2	3	2								3	3
C306.4	2	2	2	3	2								3	3
C306.5	2	2	2	3	2								3	3
C306	2	2	2	3	2								3	3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Digital Communications LAB	C307.1	Verify the pulse digital communication techniques using EDA tools.	Apply
	C307.2	Analysis of Frequency Shift Keying ,Phase Shift Keying, Differential Phase Shift Keying techniques and Companding technique.	Apply
	C307.3	Verification of Binary Cyclic Code – Encoder and Decoder.	Apply
	C307.4	Demonstrate the use of Matlab software and implement the basic applications.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	2	3	2	2	2								3	
C307.2	3	2	2	2									3	
C307.3	1	2	3	3	3								3	
C307.4	2	3		3	3								3	
C307	2.0	2.5	2.3	2.5	2.7								3.0	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Data Structures Using Java Lab	C308.1	Implement Fundamental Searching Techniques	Analyze
	C308.2	Design and Implement Applications Using Stacks, Queues, and Linked Lists	Analyze
	C308.3	Implement recursive and non-recursive methods for tree traversal.	Analyze
	C308.4	Apply BSTs to solve real-world problems such as searching, sorting, and dynamic set management	Apply
	C308.5	Apply sorting algorithms to real-world problems.	Apply
	C308.6	Apply BFS and DFS to real-world problems in graph theory.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	3	2	1		3		1					2		
C308.2	3		2	2	3	1						2		
C308.3	3	3	2	2	3					2		2		
C308.4	2		2	2	3		2					2		
C308.5	3	2	2	3	3		2					2		
C308.6	3	2	2	2	3							2		
C308	2.8	2.3	1.8	2.2	3.0	1.0	1.7			2		2		

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Indian Tradition & Knowledge	C309.1	Explain basics of Indian Knowledge Systems.	Apply
	C309.2	Outline the Indian perspective of modern scientific world-view.	Analyze
	C309.3	Explain the principles and practice of Yoga and holistic health care system practiced in India	Apply
	C309.4	Explain the different philosophical traditions existed/exists in India.	Apply
	C309.5	Infer the linguistic and artistic traditions of India.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1						2	2				3	2		
C309.2						2	2				3	2		
C309.3						2	2				3	2		
C309.4						2	2				3	2		
C309.5						2	2				3	2		
C309						2	2				3	2		

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Micro Processors & Micro Controllers	C311.1	Apply the concepts of buses to discriminate the architectural view of Microprocessors and Microcontrollers	Apply
	C311.2	Illustrate various addressing modes and instruction sets of Microprocessors and Microcontrollers to develop Assembly language programs	Apply
	C311.3	Analyze different programmable interfacing modules to interface with microprocessors and controllers for real time applications.	Analyze
	C311.4	Analyze and Compare the features and functional concepts of advanced Microprocessors and Microcontrollers.	Analyze
	C311.5	Develop a report to generate a code for applications using microprocessors and microcontrollers to meet the societal requirements.	Evaluate

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	3												3
C311.2	2	2	3											3
C311.3	2	2	3											3
C311.4	2	2	3											3
C311.5	3	3	3											3
C311	2.4	2.4	3.0											3

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
VLSI Design	C312.1	Analyze the electrical properties of transistors and make use of fabrication to build CMOS circuits.	Analyze
	C312.2	Analyze the characteristics of CMOS circuits to examine electrical behavior of digital circuits.	Analyze
	C312.3	Construct the layout of any logic circuit by apply the concept of stick diagram and design rules.	Analyze
	C312.4	Distinguish between the concept of SRAM and EPROM programming technologies based FPGA architectures.	Analyze
	C312.5	Analyze the power dissipation using various approaches in low power circuit design by considering the EDA tools Mentor Graphics/Cadence/Microwind.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	2	3	2											3
C312.2	2	3	2	2										3
C312.3	2	2	3	3										3
C312.4	3	3	3											3
C312.5	2	2	3	3	3							2		3
C312	2.2	2.6	2.6	2.7	3.0							2.0		3.0

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Digital Signal Processing	C313.1	Analyze the Discrete time systems to solve differential equations	Analyze
	C313.2	Use FFT algorithms to calculate the DFT	Apply
	C313.3	Design a Digital filter (FIR&IIR) from the given specifications	Apply
	C313.4	Analyze the Multirate Processing concepts in various applications	Analyze
	C313.5	Apply the signal processing concepts on DSP Processor	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	2	3	3										3	
C313.2	2	3	3										3	
C313.3	3	3	3										3	
C313.4	2	3	2										3	
C313.5	2	3											3	
C313	2.2	3	2.75										3	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Micro Processors & Micro Controllers Lab	C314.1	Discriminate the fundamental of assembly level programming of microprocessors and microcontrollers.	Analyze
	C314.2	Develop and execute different assembly language programs by applying the 8086 microprocessor and 8051 microcontroller instruction sets.	Apply
	C314.3	To interface different I/O devices to processor & controller, and will explore several techniques of interfacing	Analyze
	C314.4	Compare different implementations and Design simple microcontroller based system for real time applications.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	3	3												3
C314.2	3	2	3	2	2									3
C314.3	3	2	3	3	3									3
C314.4	3	2	2	3	3							3		3
C314	3.0	2.3	2.7	2.7	2.7							3.0		3.0

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
VLSI DESIGN Lab	C315.1	Able to gain a knowledge of the designing the circuit, generating the symbol, layout of the circuits for real-time applications using the Mentor Graphics tool.	Apply
	C315.2	Analyze the characteristics of CMOS based Analog and digital circuits.	Analyze
	C315.3	Construct the layouts for complex CMOS logic circuits by following the design rules.	Create
	C315.4	Evaluate the performance of analog/digital circuits in terms of power, speed and area.	Evaluate

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	2	2	2	2	2									3
C315.2	2	2	2											3
C315.3	2	2	2	2	2									3
C315.4	2	3	2	2	2									3
C315	2	2.25	2	2	2									3

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Digital Signal Processing Lab	C316.1	Write code to different operations on signals and verify them using MATLAB software.	Apply
	C316.2	Design Digital filters (IIR & FIR) to detect frequency response using MATLAB software.	Apply
	C316.3	Simulate the programs and execute them on the DSP Starter Kit using Code Composer Studio Software tool.	Analyze
	C316.4	Apply enhancement algorithms, restoration and transformation techniques to improve the quality of an image using MATLAB software.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	3	3	3	3								3	
C316.2	3	3	3	3	3								3	
C316.3	3	3	3	3	3								3	
C316.4	3	3	3	3	3								3	
C316	3	3	3	3	3								3	

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

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NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
ARM Based / Arduino Based Programming	C317.1	Understand and apply basic concepts of microcontroller architecture and programming (ARM/Arduino)	Understand
	C317.2	Establish Serial Communication link with Arduino	Apply
	C317.3	Analyze basics of SPI interface.	Analyze
	C317.4	Interface Stepper Motor with Arduino	Analyze
	C317.5	Analyze Accelerometer interface techniques	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	3	2	2		3							2		3
C317.2	3	2	2		3							2		3
C317.3	3	3	2		3							2		3
C317.4	3	2	2		3							2		3
C317.5	3	2	2		3							2		3
C317	3	2.2	2		3							2		3

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Research Methodology	C318.1	Identify and formulate research problems.	Understand
	C318.2	Design and execute research methodologies.	Apply
	C318.3	Analyze and interpret research data.	Analyze
	C318.4	Prepare and present research findings effectively.	Analyze
	C318.5	Adopt and utilize the concepts of Intellectual Property Rights in engineering for patents, trademarks, and copyrights	Apply

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	2	2				2	2		3			2		
C318.2	2	2				2	2		3	1		2		
C318.3	2	2				2	2		3	2		2		
C318.4	2					2	2		3	2		2		
C318.5	2					2	2		3	3		2		
C318	2	2				2	2		3	2		2		

Faculty In-charge HOD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Micro Wave Engineering	C319.1	Discuss different modes in waveguide structures	Understand
	C319.2	Illustrate Rectangular and Circular Waveguides	Apply
	C319.3	Illustrate Rectangular and Circular Resonators	Apply
	C319.4	Calculate S-matrix for various waveguide components and Develop the splitting of the microwave energy in a desired direction	Evaluate
	C319.5	Distinguish between Microwave tubes and Solid State Devices	Understand
	C319.6	Calculate various microwave parameters	Evaluate

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C319.1	3	3	3										3	
C319.2	3	3	3										3	
C319.3	3	3	3									2	3	
C319.4	3	3	3									2	3	
C319.5	3	3	3									2	3	
C319.6	3	3	3									2	3	
C319	3	3	3									2	3	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : III **SEM:** II **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Computer Networks	C320.1	Compare OSI and TCP/IP models effectively.	Analyze
	C320.2	Describe physical, datalink layers and compare different multiplexing techniques.	Understand
	C320.3	Analyze Datalink layer services and protocol types efficiently.	Analyze
	C320.4	Illustrate MAC sublayer, multiple access protocol and analyze Ethernet and WLAN architectures.	Apply
	C320.5	Analyzing Network layer design issues, routing using congestion control algorithms.	Analyze
	C320.6	Make use of Internet Transport protocol and describe operation of DNS and Electronic mail.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C320.1		2					2						3	
C320.2		2					2						2	
C320.3		3					2						3	
C320.4		2	2										2	
C320.5		2			2								2	
C320.6		2			2								3	
C320		2.2	2.0		2.0		2.0						2.5	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Optical Communi-cations	C401.1	Analyze optical fiber waveguides, signal distortion, dispersion in optical fibers and also Solve problems using Ray theory, electromagnetic mode theory, scattering mechanisms in optical fibers	Analyze
	C401.2	Analyze connectors, splices in optical waveguides and also Calculate fiber alignment joint loss in fiber joints3	Analyze
	C401.3	Compare line coding techniques, digital-, analog- receivers used in optical communication systems and also calculate the amount of light lost and dispersion in an optical system	Analyze
	C401.4	Analyze optical fiber systems using different types of photo detectors and optical test equipment	Analyze
	C401.5	Analyze point-to-point links using link power-, rise time-budgets, and also Compare optical sources, and detectors used in optical communication systems	Analyze
	C401.6	Compare measurement of attenuation, dispersion using different methods and also Analyze eye pattern technique in a digital transmission system	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	3	3										3	
C401.2	3	3	3										2	
C401.3	3	3	3									2	3	
C401.4	3	3	3									2	2	
C401.5	3	3	3									2	3	
C401.6	3	3	3									2	3	
C401	3.0	3.0	3.0									2.0	2.7	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Satellite Communi-cations	C402.1	Apply Kepler's laws of planetary motion to analyze orbital mechanics and launching methods of satellites.	Apply
	C402.2	Categorize various types of Satellite subsystems and evaluate reliability and space qualification.	Analyze
	C402.3	Deduce the expression for G/T ratio to assess the satellite link budget.	Analyze
	C402.4	Apply the knowledge of various multiple access techniques for satellite communication design.	Apply
	C402.5	Analyze the principles of low earth orbits and geo-stationary satellite systems.	Analyze
	C402.6	Develop an understanding of satellite navigation systems using GPS for tracking and launching.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	3	3	2	2									3	
C402.2	3	3	3	3									3	
C402.3	3	3	3	3									3	
C402.4	3	3	3	3									3	
C402.5	2	3	3	3									3	
C402.6	2	3	3	3									3	
C402	2.7	3.0	2.8	2.8									3	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Radar Engineering	C403.1	Demonstrate the RADAR principle using basic block daigram and solve the radar range equation to predict range perfomance, receiver noise,SNR,probability of detection probability of false alarm ,transmitter power.	Apply
	C403.2	Analyze different types of radars:CW , FM-CW,MTI and pulse doppler radars with their principle	Analyze
	C403.3	Examine the various tracking mechanisms in amplitude comparison monopulse and phase comparison mono pulse tracking radars.	Analyze
	C403.4	Calculate the efficiency of Non-matched filters,matched filters with Non- white noise, noise figure and noise tempareture	Evaluate
	C403.5	Compare types of displays duplexrs and phased array antennas,radomes with their basic concepts, applications,advantages,limitations.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	2	3	2	2									3	
C403.2	3	3	3	3	3								3	
C403.3	2	3	2	2	2							2	3	
C403.4	2	3	3	3	2							2	3	
C403.5	2	3	3	3	2	2	2					2	2	
C403	2.2	3	2.6	2.6	2.25	2	2					2	2.8	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Block Chain Technology	C404.1	Demonstrate the foundation of the Block chain technology and understand the processes in payment and funding.	Apply
	C404.2	design and analyze the applications based on Blockchain Technology	Analyze
	C404.3	Design, build, and deploy smart contracts and distributed applications	Analyze
	C404.4	Identify the functional/operational aspects of crypto currency ecosystem	Apply
	C404.5	Examine how to profit from trading cryptocurrencies.	Analyze
	C404.6	Demonstrate the foundation of the Block chain technology and understand the processes in payment and funding.	Apply

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	2	1	1							2			2	
C404.2	2	1	1							2			2	
C404.3	3	2	1							2			2	
C404.4	3	2	1							2			3	
C404.5	3	2	2							2			3	
C404	2.6	1.6	1.2							2			2.4	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Cyber Security	C405.1	Apply basic principles to demonstrate cyber security architecture.	Apply
	C405.2	Identifying system and application security threats and vulnerabilities	Apply
	C405.3	identifying different classes of attacks	Apply
	C405.4	Cyber security incidents to apply appropriate response	Apply
	C405.5	describing risk management processes and practices and evaluation of decision making outcomes of cyber security scenarios.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	2	1	1											
C405.2	2	1	1											
C405.3	3	2	1											
C405.4	3	2	1											
C405.5	3	2	2											
C405	2.6	1.6	1.2											

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

After completion of the course the students will be able to

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
Universal Human Values	C406.1	Analyze the essentials of human values and skills, self exploration, happiness and prosperity	Analyze
	C406.2	Evaluate coexistence of the "I" with the body	Evaluate
	C406.3	Identify and evaluate the role of harmoby in family society and universal order	Apply
	C406.4	Examine the holistic perception of harmony at all levels of existence.	Analyze
	C406.5	Develop appropriate technologies and management patterns to create harmony in professional and personal lives.	Analyze

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1								3				1		
C406.2							1							
C406.3						2	1							
C406.4						2	2					1		
C406.5						2	2	3				1		
C406						2	1.5	3				1		

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : IV **SEM:** I **REGULATION :** R20 **BATCH:** 2020-24

NAME OF THE COURSE	CO#	COURSE OUTCOME STATEMENTS	BLOOMS TAXANOMY LEVEL
DESIGNER TOOLS	C407.1	Develop knowledge in designing circuits, generating symbols, and circuit layoutsfor real time applications using the Mentor Graphics tool.	Analyze
	C407.2	Analyze static and dynamic logic styles based on their characteristics	Analyze
	C407.3	Perform parametric analysis on analog and digital circuits to evaluate their performance	Apply
	C407.4	Evaluate the performance of analog and digital circuits in terms of power, speed, and area using EDA tools.	Evaluate

CO-PO & CO-PSO Mapping Table:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	2	2	2	2	3							2		3
C407.2	2	2	2	2	3							2		3
C407.3	2	2	2	2	3							2		3
C407.4	2	2	2	2	3							2		3
C407	2	2	2	2	3							2		3

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