



Department of Electronics and Telecommunication Engineering

Course Outcomes 2022-23

Class: SE Electronics and Telecommunication Engineering

Course	Electronic Circuits	Course Code: 204181	2019 Pattern	Sem-I
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C281.1	Assimilate the physics, characteristics and parameters of MOSFET towards its application as amplifier	2	Understand	
C281.2	Design MOSFET amplifiers, with and without feedback, & MOSFET oscillators, for given specifications.	3	Apply	
C281.3	Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies	4	Analyze	
C281.4	Explain internal schematic of Op-Amp and define its performance parameters.	2	Understand	
C281.5	Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.	3	Apply	
C281.6	Understand and compare the principles of various data conversion techniques and PLL with their applications.	2	Understand	

Course	Digital Circuits	Course Code: 204182	2019 Pattern	Sem-I
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C282.1	Discuss Classification and Characteristics of digital Logic Families	2	Comprehend	
C282.2	Describe the basic logic gates and apply various reduction techniques of digital logic circuit.	2	Comprehend	
C282.3	Analyze, design and implement combinational circuits	4	Analyze	
C282.4	Analyze, design and implement sequential logic circuits	4	Analyze	
C282.5	Discuss Classification and Characteristics of digital Logic Families	2	Comprehend	
C282.6	Explain Programmable Logic Devices (PLDs) & Semiconductor Memories	2	Comprehend	

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Course	Electrical Circuits	Course Code: 204183	2019 Pattern	Sem-I
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C283.1	Analyze the simple DC and AC circuit with circuit simplification techniques.	4	Analyse	
C283.2	Formulate and analyze driven and source free RL and RC circuits.	4	Analyse	
C283.3	Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function.	4	Analyse	
C283.4	Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors.	2	Understand	
C283.5	Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.	2	Understand	
C283.6	Analyze and select a suitable motor for different applications.	4	Analyse	

Course	Data structures	Course Code: 204184	2019 Pattern	Sem-I
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C284.1	Solve mathematical problems using C programming language.	3	Apply	
C284.2	Implement sorting and searching algorithms and calculate their complexity.	2	Understand	
C284.3	Develop applications of stack and queue using array.	3	Apply	
C284.4	Demonstrate applicability of Linked List.	3	Apply	
C284.5	Demonstrate applicability of nonlinear data structure – Binary Tree with respect to its time complexity.	3	Apply	
C284.6	Apply the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.	3	Apply	

Course	Engineering Mathematics III	Course Code: 207005	2019 Pattern	Sem-I
Class	SE E&TC	Theory Teaching Scheme:- 4Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C205.1	Solve higher order linear differential equations and its applications to engineering problems	3	Apply	
C205.2	Study Fourier and Z- Transform techniques to solve differential equations and their applications.	1	Remember	
C205.3	Understand and apply various numerical techniques to solve problems in engineering.	2	Understand	
C205.4	Understand the fundamental concept of vector differentiation and its application in Engineering.	2	Understand	
C205.5	Understand the fundamental concept vector integral calculus and its application in Engineering.	2	Understand	

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C205.6	Understand the function of complex variable and to evaluate complex integration.	2	Understand
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Course	Electronic Circuit Lab	Course Code: 204185	2019 Pattern	Sem-I
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C285.1	Design, build and test single stage CS Amplifier and calculate AC and DC parameters.		3	Apply
C285.2	Design and implement adjustable voltage regulator.		4	Analyse
C285.3	Measure the performance parameters of Op-amp and compare with specification given in datasheet.		3	Apply
C285.4	Design, build and test Op-amp based analog signal processing and conditioning circuits.		3	Apply

Course	Digital circuits Lab	Course Code:- 204186	2019 Pattern	Sem-I
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C286.1	Design and test combinational circuits		5	Synthesize
C286.2	Design and develop sequential circuits.		5	Synthesize
C286.3	Design and validate the counters and registers for synchronous and asynchronous circuits		5	Synthesize

Course	Electrical Circuit Lab	Course Code: 204187	2019 Pattern	Sem-I
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C287.1	Analysis of simple AC and DC circuit using network simplification circuit		4	Analyse
C287.2	Study the characteristic of DC shunt motor, 3 phase induction motor.		2	Understand
C287.3	Study the characteristic of BLDC motor and Stepper motor.		2	Understand
C287.4	Understand the case study on motors used in electrical vehicles.		2	Understand



Course	Data Structures Lab	Course Code:- 204188	2019 Pattern	Sem-I
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C288.1	Perform String operation using array and data base management using array of structure.		3	Apply
C288.2	Perform operation on stack and queue using array and array of structure.		3	Apply
C288.3	Implement different linked list and perform various operation on it.		3	Apply
C288.4	Solve problems using data structures such as binary trees, binary search trees, and graphs and writing programs for these solutions.		3	Apply

Course	Electronic Skill Development	Course Code:- 204189	2019 Pattern	Sem-I
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C289.1	Demonstrate and perform the functioning of common electronics components for basic application		3	Apply
C289.2	Develop PCB layout, perform fault finding using testing and Measuring equipment's.		3	Apply
C289.3	Assemble and design basic application using basic electronics components.		3	Apply
C289.4	Understand and use of various types of Batteries, and power budget calculation.		2	Understand

Course	Signals & Systems	Course Code: 204191	2019 Pattern	Sem-II
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C291.1	Identify, classify basic signals and perform operations on signals.		2	Understand
C291.2	Identify, Classify the systems based on their properties in terms of input output relation and in terms of impulse response and will be able to determine the convolution between two signals.		2	Understand
C291.3	Analyze and resolve the signals in frequency domain using Fourier series and Fourier Transform.		4	Analyze
C291.4	Resolve the signals in complex frequency domain using Laplace Transform, and will be able to apply and analyze the LTI systems using Laplace Transforms.		4	Analyze
C291.5	Define and Describe the probability, random variables and random signals. Compute Probability, CDF and PDF.		3	Apply

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Course	Control Systems	Course Code: 204192	2019 Pattern	Sem-II
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C292.1	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.	3	Apply	
C292.2	Perform time domain analysis of control systems required for stability analysis.	4	Analyse	
C292.3	Perform frequency domain analysis of control systems required for stability analysis.	4	Analyse	
C292.4	Apply root-locus, Frequency Plots technique to analyze control systems.	3	Apply	
C292.5	Express and solve system equations in state variable form.	3	Apply	
C292.6	Differentiate between various digital controllers and understand the role of the controllers in Industrial automation.	2	Understand	

Course	Principles of Communication Systems	Course Code: 204193	2019 Pattern	Sem-II
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C293.1	To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation schemes under study.	3	Apply	
C293.2	Describe and analyze the techniques of generation, transmission and reception of Amplitude Modulation Systems.	4	Analyze	
C293.3	Explain generation and detection of FM systems and compare with AM systems.	4	Analyze	
C293.4	Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM).	3	Apply	
C293.5	Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM).	3	Apply	
C293.6	Illustrate waveform coding, multiplexing and synchronization techniques and articulate their importance in baseband digital transmission.	3	Apply	

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Course	Object Oriented Programming	Course Code: 204194	2019 Pattern	Sem-II
Class	SE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C294.1	Describe the principles of object oriented programming	1	Remember	
C294.2	Apply the concepts of data encapsulation, inheritance in C++.	3	Apply	
C294.3	Understand Operator overloading and friend functions in C++.	2	Understand	
C294.4	Apply the concepts of classes, methods inheritance and polymorphism to write programs C++.	3	Apply	
C294.5	Apply Templates, Namespaces and Exception Handling concepts to write programs in C++.	3	Apply	
C294.6	Describe and use of File handling in C++.	2	Understand	

Course	Signals & Control System Lab	Course Code: 204195	2019 Pattern	Sem-II
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C295.1	Identify, classify and plot the elementary signal using MATLAB software.	2	Understand	
C295.2	Perform Real time speech signal analysis using MATLAB software.	4	Analyse	
C295.3	Determine the convolution Integral between two signals using MATLAB software.	3	Apply	
C295.4	Find Fourier series coefficients using exponential FS method	1	Remember	
C295.5	Evaluate the various parameters of steady state analysis and transient analysis of a control system	5	Synthesis	
C295.6	Examine the stability criteria for a control system using Bode and Nyquist plot.	4	Analyse	

Course	Principle of Communication Systems Lab	Course Code:- 204196	2019 Pattern	Sem-II
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C296.1	Demonstrate generation and detection of analog modulation techniques.	3	Apply	
C296.2	Demonstrate generation and detection of digital modulation techniques.	3	Apply	
C296.3	Explain sampling, types of sampling and aliasing effect.	3	Apply	
C296.4	Explain PCM, delta modulation, adaptive delta modulation	3	Apply	

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Course	Object Oriented Programming Lab	Course Code:- 204197	2019 Pattern	Sem-II
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C297.1	Apply object-oriented programming principles to sort the numbers, container class and operation on complex number using class in C++.		3	Apply
C297.2	Apply the concept of inheritance to implement multiple inheritances in C++.		3	Apply
C297.3	Apply the concept of polymorphism to implement function overriding, function overloading and operator overloading concept in C++.		3	Apply
C297.4	Apply Templates, Namespaces and Exception Handling concepts to write programs in C++.		3	Apply

Course	Data Analytics Lab	Course Code: 204198	2019 Pattern	Sem-II
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C298.1	Understand the Python Packages for Data Science and accessing Databases with Python.		2	Understand
C298.2	Describe the Data Visualization techniques in Python.		2	Understand
C298.3	Apply the concepts of Data Wrangling and Statistical Data Analysis in python.		3	Apply
C298.4	Apply the knowledge of Exploratory data analysis for descriptive statistics, correlation.		3	Apply

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Course	Employability Skill Development	Course Code:- 204199	2019 Pattern	Sem-II
Class	SE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C299.1	Define personal and career goals using introspective skills and SWOC assessment. Outline and evaluate short-term and long-term goals.		6	Evaluate
C299.2	Evaluate the validity and reliability of information shared by group members and assess the effectiveness of one's own performance in a mock interview.		6	Evaluate
C299.3	Develop effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.		5	Synthesis
C299.4	Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.		5	Synthesis

Course	Project Based Learning	Course Code:- 204200	2019 Pattern	Sem-II
Class	SE E&TC	Theory Teaching Scheme:- 2Hrs/Week & Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C200.1	Identify the problem through literature survey and set relevant aim and objectives.		1	Remember
C200.2	Propose a suitable solution based on the fundamentals of electronics and communication engineering.		4	Analyse
C200.3	Analyze the results and arrive at valid conclusion.		4	Analyse
C200.4	Use technology in proposed work and demonstrate learning in oral and written form.		3	Apply
C200.5	Develop ability to work as an individual and as a team member.		5	Develop

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Class: TE Electronics and Telecommunication Engineering

Course	Digital Communication	Course Code: 304181	2019 Pattern	Sem-I
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C381.1	Apply the statistical theory for describing various signals in a communication system.	3	Apply	
C381.2	Understand and explain various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise.	4	Analyze	
C381.3	Describe and analyze the digital communication system with spread spectrum modulation.	4	Analyze	
C381.4	Analyze a communication system using information theoretic approach.	4	Analyze	
C381.5	Use source coding techniques to improve performance of a digital communication system.	5	Synthesize	
C381.6	Use channel coding techniques to improve performance of a digital communication system.	5	Synthesize	

Course	Electromagnetic Field Theory	Course Code:- 304182	2019 Pattern	Sem-I
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C382.1	Apply the basic electromagnetic principles and determine the fields (E & H) due to the given source.	3	Apply	
C382.2	Apply boundary conditions to the boundaries between various media to interpret behavior of the fields on either sides.	3	Apply	
C382.3	State, Identify and Apply Maxwell's equations (integral and differential forms) in both the forms (Static, time-varying or Time-harmonic field) for various sources, Calculate the time average power density using Poynting Theorem, Retarded magnetic vector potential.	3	Apply	
C382.4	Formulate, Interpret and solve simple uniform plane wave (Helmholtz Equations) equations, and analyze the incident/reflected/transmitted waves at normal incidence.	4	Analyze	
C382.5	Interpret and Apply the transmission line equation to transmission line problems with load impedance to determine input and output voltage/current at any point on the Transmission line, Find input/load impedance, input/load admittance, reflection coefficient, SWR, Vmax/Vmin, length of transmission line using Smith Chart.	3	Apply	
C382.6	Carry out a detailed study, interpret the relevance and applications of Electromagnetics.	2	Understand	

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Course	Database Management	Course Code:- 304183	2019 Pattern	Sem-I
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C383.1	Understand the underlying concepts of a database system.		2	Understand
C383.2	Design a database schema for a given problem-domain using data model.		5	Synthesis
C383.3	Formulate, using SQL/DML/DDI commands, solutions to a wide range of query and update problems.		5	Synthesis
C383.4	Implement transactions, concurrency control, and be able to do Database recovery.		3	Apply
C383.5	Understand various Parallel Database Architectures and its applications.		2	Understand
C383.6	Understand various Distributed Database Architectures and its applications.		2	Understand

Course	Microcontrollers	Course Code:- 304184	2019 Pattern	Sem-I
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C384.1	Understand the fundamentals of microcontroller and programming.		2	Understand
C384.2	Interface various electronic components with microcontrollers.		3	Apply
C384.3	Analyze the features of PIC 18F XXXX.		4	Analyse
C384.4	Describe the programming details in peripheral support.		2	Understand
C384.5	Develop interfacing models according to applications.		3	Apply
C384.6	Evaluate the serial communication details and interfaces.		4	Analyse

Course	Fundamentals of JAVA Programming	Course Code:- 304185	2019 Pattern	Sem-I
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C385.1	Understand the basic principles of Java programming language		2	Understand
C385.2	Apply the concepts of classes and objects to write programs in Java		3	Apply
C385.3	Demonstrate the concepts of methods & Inheritance		3	Apply
C385.4	Use the concepts of interfaces & packages for program implementation		3	Apply
C385.5	Understand multithreading and Exception handling in Java to develop robust programs		2	Understand
C385.6	Use Graphics class, AWT packages and manage input and output files in Java		3	Apply

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Course	Digital Communication Lab	Course Code:- 304186	2019 Pattern	Sem-I
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C386.1	Understand and perform experimentation using hardware for digital communication techniques.		3	Apply
C386.2	Understand and perform experimentation using software for digital communication techniques.		3	Apply
C386.3	Design and perform experimentation using software for source coding techniques.		5	Synthesize
C386.4	Design and perform experimentation using software for channel coding techniques.		5	Synthesize

Course	Database Management Lab	Course Code:- 304187	2019 Pattern	Sem-I
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C387.1	Design and Implement database Schema.		3	Apply
C387.2	Devise queries using SQL DDL and DML commands.		3	Apply
C387.3	Develop application programs using PL/SQL		3	Apply
C387.4	Understand various queries execution such as relational constraints, trigger		2	Understand

Course	Microcontroller Lab	Course Code:- 304188	2019 Pattern	Sem-I
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C388.1	Apply the programming knowledge to write C language programs for memory transfer using 8051 Microcontroller		3	Apply
C388.2	Develop C language programs and implement real world interfacing using 8051 Microcontroller.		4	Develop
C388.3	Develop C language programs for interfacing with external hardware using PIC 18 Microcontroller.		4	Develop

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Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C389.1	Apply the basic programming concepts of Java to develop simple programs		3	Apply
C389.2	Apply the concepts of classes and objects to write programs in Java		3	Apply
C389.3	Demonstrate the concepts of methods & Inheritance		3	Apply
C389.4	Use the concepts of interface for program implementation in Java		3	Apply
C389.5	Understand Exception handling to develop programs in Java		2	Understand
C389.6	Use the concepts of Graphics class for program implementation in Java		3	Apply

Course	Skill Development	Course Code:- 304190	2019 Pattern	Sem-I
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C390.1	Elaborate the Troubleshooting and maintenance of power supply.		2	Understand
C390.2	Design and Simulate dc-dc boost converter, PID controller.		3	Apply
C390.3	Design a webpage with help of HTML tags.		3	Apply
C390.4	Elaborate the Testing of batteries and study of biomedical instrumentation with the help of case study.		2	Understand

Course	Cellular Networks	Course Code:- 304192	2019 Pattern	Sem-II
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C392.1	Understand the fundamentals of wireless communications.		2	Understand
C392.2	Discuss and study OFDM and MIMO concepts.		2	Understand
C392.3	Apply fundamentals of mobile communication for Cellular systems.		3	Apply
C392.4	Analyze aspects of wireless system planning.		4	Analysis
C392.5	Understand the modern and futuristic wireless networks architecture.		2	Understand
C392.6]: Summarize different issues for the performance analysis of Wireless Communication technology.		4	Analysis

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Course	Project Management	Course Code:- 304193	2019 Pattern	Sem-II
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C393.1	Apply the fundamental knowledge of project management for effectively handling the projects.		3	Apply
C393.2	Identify and select the appropriate project based on feasibility study and undertake its effective planning.		1	Identify
C393.3	Assimilate effectively within the organizational structure of project and handle project management related issues in an efficient manner.		5	Evaluate
C393.4	Apply the project scheduling techniques to create a Project Schedule Plan and accordingly utilize the resources to meet the project deadline.		3	Apply
C393.5	Interpret and assess the project risks and manage finances in line with Project Financial Management.		2	Understand
C393.6	Develop new products assessing their commercial viability and develop skillsets for becoming successful entrepreneurs while being fully aware of the legal issues related to Product development and Entrepreneurship.		6	Creating

Course	Power Devices & Circuits	Course Code:- 304194	2019 Pattern	Sem-II
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C394.1	Differentiate based on the characteristic parameters among SCR, GTO, MOSFET & IGBT and identify suitability of the power device for certain applications and understand the significance of device ratings		2	Understand
C394.2	Design triggering / driver circuits for various power devices.		6	Create
C394.3	Evaluate and analyze various performance parameters of the different converters and its topologies		5	Evaluate
C394.4	Understand significance and design of various protections circuits for power devices.		2	Understand
C394.5	Evaluate the performance of uninterruptible power supplies, switch mode power supplies and battery.		6	Create
C394.6	Understand case studies of power electronics in applications like electric vehicles, solar systems		2	Understand

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Course	Embedded Processor	Course Code:- 304195	2019 Pattern	Sem-II
Class	TE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C395.1	Understand basics of Embedded C Programming and usage of Embedded C and study different software tools for programming microcontrollers.		2	Understand
C395.2	Categorize various Embedded Processor architectures related to industrial application		2	Understand
C395.3	Implement the interfacing of ARM 7 based microcontroller with on chip peripherals and external peripherals		3	Apply
C395.4	Understand the architectures of ARM Cortex M4 Microcontrollers and its advantages over ARM 7 Microcontrollers		2	Understand
C395.5	Implement the real world programming of ARM Cortex M4 based microcontroller with on chip peripherals and external peripherals		3	Apply
C395.6	Recognize the interfacing of real world sensors and standard buses and develop embedded application using different case studies		3	Apply

Course	Cellular Networks Lab	Course Code:- 304196	2019 Pattern	Sem-II
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C396.1	Able to develop software program and simulate it for Path loss and BER calculation for wireless communication.		3	Apply
C396.2	Able to develop software program and simulate it for performance parameters of Wireless Channel.		3	Apply
C396.3	Able to develop software program and simulate it for Link budget analysis for wireless communication.		3	Apply
C396.4	Able to develop software program and simulate it for cellular system.		3	Apply

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Course	Power Devices & Circuits Lab	Course Code:- 304197	2019 Pattern	Sem-II
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C397.1	Study the characteristics of different semiconductor devices like SCR, GTO, MOSFET & IGBT etc. experimentally		2	Understand
C397.2	Analysis of power converter circuit for R/RL load		4	Analyse
C397.3	study battery testing, safety and maintenance of batteries		2	Understand
C397.4	Performance Evaluation for Case Studies Like SMPS, Controllers.		6	Evaluate

Course	Embedded Processor Lab	Course Code:- 304198	2019 Pattern	Sem-II
Class	TE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C398.1	Implement the real world programming of ARM 7 based microcontroller with on chip peripherals ADC, LCD etc.		3	Apply
C398.2	Implement the real world programming of ARM 7 based microcontroller with off chip peripheral device GPS.		3	Apply
C398.3	Implement the STM32FXX Microcontroller interfacing with On chip ADC and Seven Segment LED.		3	Apply
C398.4	Implement the STM32FXX Microcontroller interfacing with DHT 11, accelerometer cum Gyroscope MPU 6050 and LDR.		3	Apply

Course	Internship	Course Code:- 304199	2019 Pattern	Sem-II
Class	TE E&TC			
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C399.1	Develop professional competence through internship.		5	Synthesis
C399.2	Apply academic knowledge in a personal and professional environment		3	Apply
C399.3	Build the professional network and expose students to future employees		5	Synthesis
C399.4	Apply professional and societal ethics in their day to day life.		3	Apply
C399.5	Become a responsible professional having social, economic and administrative considerations		2	Understand
C399.6	Make own career goals and personal aspirations.		5	Synthesis

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Course	Mini Project	Course Code:- 304200	2019 Pattern	Sem-II
Class	TE E&TC	Practical Teaching Scheme:- 4Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C300.1	Identify the problem statement based on interested domain in recent trends.	1	Remember	
C300.2	Apply engineering knowledge for the selection of appropriate software, hardware and development of circuit diagram and software to solve the identified problem.	3	Apply	
C300.3	Develop problem-solving skills by identifying and resolving issues encountered during the testing of Mini Project.	5	Synthesis	
C300.4	Prepare a technical report based on the Mini project.	3	Apply	
C300.5	Develop communication and presentation skills by effectively deliver technical seminar based on the Mini Project work.	5	Synthesis	

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Class: BE Electronics and Telecommunication Engineering

Course	Radiation & Microwave Theory	Course Code:- 404181	2019 Pattern	Sem-I
Class	BE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C481.1	Apply the fundamentals of electromagnetic to derive free space propagation equation and distinguish various performance parameters of antenna.	3	Apply	
C481.2	Identify various modes in the waveguide. Compare: coaxial line, rectangular waveguides & striplines and identify applications of the same.	2	Understand	
C481.3	Explore construction and working of principles passive microwave devices/components.	2	Understand	
C481.4	Explore construction and working of principles active microwave devices/components.	2	Understand	
C481.5	Analyze the structure, characteristics, operation, equivalent circuits and applications of various microwave solid state active devices.	3	Analyse	
C481.6	Know the various microwave systems, device set ups of microwave measurement devices and Identify the effect of radiations on environmental sustainability.	1	Remember	

Course	VLSI Design and Technology	Course Code:- 404182	2019 Pattern	Sem-I
Class	BE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C482.1	Develop effective HDL codes for digital design.	6	Develop	
C482.2	Apply knowledge of real time issues in digital design.	3	Apply	
C482.3	Model digital circuit with HDL, simulate, synthesis and prototype in PLDs.	3	Model	
C482.4	Design CMOS circuits for specified applications.	6	Design	
C482.5	Analyze various issues and constraints in design of an ASIC.	4	Analyse	
C482.6	Apply knowledge of testability in design and Build In Self-Test (BIST) circuit.	3	Apply	

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Course	Cloud Computing	Course Code:- 404183	2019 Pattern	Sem-I
Class	BE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C483.1	Understand the basic concepts of Cloud Computing.	2	Understand	
C483.2	Describe the underlying principles of different Cloud Service Models.	2	Understand	
C483.3	Classify the types of Virtualizations	2	Understand	
C483.4	Examine the Cloud Architecture and understand the importance of Cloud Security.	4	Analysis	
C483.5	Develop applications on Cloud Platforms.	3	Apply	
C483.6	Evaluate distributed computing and the Internet of Things.	4	Analysis	

Course	Elective - 3 (E&RTOS)	Course Code:- 404184	2019 Pattern	Sem-I
Class	BE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C484.1	Apply design metrics of Embedded systems to design real time applications to match recent trends in technology.	3	Apply	
C484.2	Apply Real time systems concepts.	3	Apply	
C484.3	Evaluate μ COS operating system and its services.	5	Evaluate	
C484.4	Apply Embedded Linux Development Environment and testing tools.	3	Apply	
C484.5	Analyse Linux operating system and device drivers.	4	Analyse	
C484.6	Analyse the hardware – software co design issues for testing of real time Embedded system.	4	Analyse	

Course	Elective - 4 (EPD)	Course Code:- 404185	2019 Pattern	Sem-I
Class	BE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements	Blooms Taxonomy		
		Level	Descriptor	
C485.1	Understand and explain design flow of design of electronics product	2	Understand	
C485.2	Associate with various circuit design issues and testing	3	Apply	
C485.3	Inferring different software designing aspects and the Importance of product test & test specifications	5	Evaluate	
C485.4	Summarizing printed circuit boards and different parameters	2	Understand	
C485.5	Estimating assorted product design aspects.	4	Analyse	

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C485.6	Exemplifying special design considerations and importance of documentation.	2	Understand
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Course	Lab Practice - 1 (RMT & Cloud Computing)	Course Code:- 404186	2019 Pattern	Sem-I
Class	BE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C486.1	Illustrate the fundamental parameters of antennas operating at various frequencies.		3	Apply
C486.2	Devise set ups of microwave measurement devices to measure performance parameters of microwave components in various applications.		5	Synthesis
C486.3	Develop applications on Cloud Platforms.		3	Apply
C486.4	Examine the application of IoT based on cloud and Tools for building a cloud.		4	Analysis

Course	Lab Practice - 2 (VLSI Design & Elective -3)	Course Code:- 404187	2019 Pattern	Sem-I
Class	BE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C487.1	Write the VHDL Code for various schematics viz. LCD Interface, Counter, Keypad Interface and demonstrate the same.		2	Comprehension
C487.2	Prepare the CMOS Layout of basic Gates, Universal Gates, Adders and Multiplexers and simulate the same.		2	Comprehension
C487.3	Understand the concepts of multitasking, priority scheduling, and context switching in RTOS.		2	Understand
C487.4	Apply the concepts learned in the course to solve real-world problems in embedded systems and IoT.		2	Apply

Course	Project Stage - I	Course Code:- 404188	2019 Pattern	Sem-I
Class	BE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C488.1	Demonstrate a sound technical knowledge in field of E&TC in the form of project.		2	Demonstrate
C488.2	Undertake real life problem identification, formulation and solution.		3	Apply
C488.3	Design engineering solutions to complex problems utilizing a systematic approach.		6	Design

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C488.4	Demonstrate the knowledge, effective communication skills and attitudes as professional engineer.	2	Demonstrate
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Course	Fiber Optic Communication	Course Code:- 404190	2019 Pattern	Sem-II
Class	BE E&TC			
Course Outcome Code	Statements		Blooms Taxonomy Level	Descriptor
C490.1	Explain the basic working mechanism and components of optical fiber communication system.		2	Understand
C490.2	Compare and contrast different types of optical sources based on their performance parameters.		4	Analyse
C490.3	Compare and contrast different types of optical detectors based on their performance parameters.		4	Analyse
C490.4	Evaluate the performance viability of optical links using the power and rise time budget analysis and explain the working principles of WDM systems.		4	Analyse
C490.5	Explain the working principles and architectures of optical networks.		2	Understand
C490.6	Explain the significance of measuring numerical aperture, attenuation, macro bending loss, fiber dispersion and measurement equipment's in fiber optic systems.		2	Understand

Course	Elective - 5 Embedded System Design	Course Code:- 404191	2019 Pattern	Sem-II
Class	BE E&TC			
Course Outcome Code	Statements		Blooms Taxonomy Level	Descriptor
C491.1	Apply the design aspects of embedded system for real world application.		3	Apply
C491.2	Create and debug a firmware for the Embedded System using ARM Cortex M4.		6	Create
C491.3	Develop a specific software code for the functionality of the Embedded System.		3	Apply
C491.4	Utilize an open source RTOS for embedded system design.		3	Apply
C491.5	Create an advanced embedded system using STM32F4 Microcontroller.		6	Create
C491.6	Explore Embedded Android system with libraries.		2	Understand



Course	Elective - 6	Course Code:- 404192	2019 Pattern	Sem-II
Class	BE E&TC	Theory Teaching Scheme:- 3Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C492.1	Design websites using free tools like Wordpress and explore it for digital marketing.		3	Design
C492.2	Apply various keywords for a website & to perform SEO.		3	Apply
C492.3	Understand the various SEM Tools and implement the Digital Marketing Tools.		2	Understand
C492.4	Illustrate the use of Facebook, Instagram and Youtube for Digital Marketing in real life.		3	illustrate
C492.5	Use Linked in platform for various campaigning.		2	Use
C492.6	Understand the importance of recent trends in digital marketing.		2	Understand

Course	Innovation & Entrepreneurship	Course Code:- 404193	2019 Pattern	Sem-II
Class	BE E&TC	Tutorial Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C493.1	Understand Innovation, Entrepreneurship and characteristics of an entrepreneur		2	Comprehend
C493.2	Develop a strong understanding of the Design Process and its application in variety of business settings.		5	Synthesize
C493.3	Generate sustainable ideas		5	Synthesize
C493.4	Explore various processes required to be an entrepreneur.		3	Apply
C493.5	Understand patents and its process of filing.		2	Comprehend
C493.6	Choose and use appropriate social media for marketing.		3	Apply

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Course	Digital Business Management	Course Code:- 404194	2019 Pattern	Sem-II
Class	BE E&TC	Tutorial Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C494.1	Identify the Drivers of Digital Business		1	Identify
C494.2	Illustrate various approaches and techniques for E-Business and Management.		3	Illustrate
C494.3	Prepare E-Business Plan.		6	Compose

Course	Fiber Optic Lab	Course Code:- 404195	2019 Pattern	Sem-II
Class	BE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C495.1	Estimate the Numerical Aperture and measure the attenuation characteristics of a given optical fiber using appropriate experimental setups.		2	Understand
C495.2	Evaluate the performance of the optical source, photo detector setup and fiber optic link.		4	Analysis
C495.3	Utilize the simulation software to simulate a WDM system and optical power budget and rise time budget analysis of optical fiber systems.		3	Apply
C495.4	Compile technical information related to state of art components, standards, simulation tools and current technological trends by accessing the online resources to update their domain knowledge.		4	Analysis

Course	Lab Practice - 3 (Elective - 5) ESD Lab	Course Code:- 404196	2019 Pattern	Sem-II
Class	BE E&TC	Practical Teaching Scheme:- 2Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C496.1	Evaluate the functionality of the LED, LCD and push button switch in the context of STM32F4.		5	Evaluate
C496.2	Explain the significance of using interrupts in UART communication and the role of CubeMX in FreeRTOS configuration.		2	Understand
C496.3	Create a program to write Timer and ADC drivers using HAL functions.		6	Create
C496.4	Create a detailed report on the STM32F4 board with its components, functionalities, and usage.		6	Create

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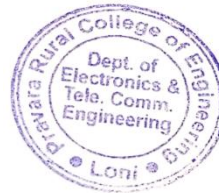
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Course	Project Stage - II	Course Code:- 404197	2019 Pattern	Sem-II
Class	BE E&TC	Practical Teaching Scheme:- 10 Hrs/Week		
Course Outcome Code	Statements		Blooms Taxonomy	
			Level	Descriptor
C497.1	To develop comprehensive solution to the problem identified and meet the requirements as stated in project part 1.		3	Apply
C497.2	Design and develop the solution for identified problem using hardware and software tools with cost effectiveness and maintaining ethical values.		3	Apply
C497.3	Achieve the desired results within stipulated time and do critical analysis of results and their interpretation.		5	Evaluate
C497.4	To impart skills in preparing detailed report describing the project and results.		3	Apply
C497.5	Communicate technical and general information by means of oral as well as written presentation skills with professionalism.		2	Demonstrate




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