



VAAGDEVI COLLEGE OF ENGINEERING

Autonomous

Bollikunta, Khila Warangal (Mandal), Warangal Urban-506 005 (T.S), www.vaagdevi.edu.in
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Course Outcomes for B.Tech – ECE-R20 for the academic year 2020-2021 onwards

Course Outcome	Semester I Sem	(B20MA01) Linear Algebra & Calculus	L: 3 T: 1 P: 0 C: 4
After the completion of this course, the students should be able to			
1	Understand the principles of matrix to calculate the characteristics of system of linear equations using multiple methods.		
2	Determine Eigen values, Eigenvectors of matrices.		
3	Analyse the nature of sequence and series to identify the convergence.		
4	Evaluate limits of single-variable functions graphically and computationally.		
5	Calculate Partial derivatives, extreme of functions of multiple variables.		
Course Outcome	Semester I Sem	(B20CS01) Programming for Problem Solving	L: 4 T: 0 P: 0 C: 4
After the completion of this course, the students should be able to			
1	Understanding how problems are posed and how they can be analyzed for obtaining solutions.		
2	Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.		
3	Implementing different operations on arrays and creating and using of functions to solve problems.		
4	Understanding and exploring the various methods of memory allocations.		
5	Ability to design and implement different types of file structures using standard methodology.		
Course Outcome	Semester I Sem	(B20PH01) Modern Physics	L:3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understands the basic principles and hypothesis of quantum mechanics.		
2	Analyse and apply the concepts of wave optics for accurate determination of the interference in thin films, Newton's rings and the diffraction in single slit etc.		
3	Describes the characteristics and working of lasers and their applications in various fields.		
4	Classify the materials on the basis of energy band gap, and evaluates the carrier concentration of given semiconductors for device applications.		
5	Apply the concepts of the light propagation in optical fibres in optical communication systems.		
Course Outcome	Semester I Sem	(B20CH02) Chemistry	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to gain			
1	The knowledge of electrochemical cells, different batteries		
2	The required principles and concepts of corrosion, control methods.		
3	The knowledge of water treatment.		
4	The knowledge of polymers and their importance in day to day life.		
5	The required principles and concepts of passive devices.		



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Course Outcome	Semester I Sem	(B20ME01) Engineering Drawing	L: 0 T: 0 P: 4 C: 2
After the completion of this course, the students should be able to			
1	Understand various commands, modify the applications and object properties in AUTOCAD.		
2	Analyse the Projections of Points and solids.		
3	Estimate the use of drawings, dimensioning, scales and conic sections.		
4	Compare the Conversion of Isometric views to Orthographic views.		
Course Outcome	Semester I Sem	(B20PH05) Physics Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Estimate the frequency of tuning for and AC supply with the help of stretched strings.		
2	Analyze as well as compare the intensity distribution of interference and diffraction Patterns.		
3	Draw the characteristics of electrical and electronic circuits and evaluate the dependent Parameters.		
4	Explore and understand the applications of semiconducting devices.		
5	Evaluates the wavelength and radius of curvature of Plano convex lens by Newton's rings.		
Course Outcome	Semester I Sem	(B20CS02) Programming for Problem Solving Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Understand basic structure of the C Programming, data types, declaration and usage of variables, control structures and all related concepts.		
2	Understand any algorithm and Write the C programming code in executable form.		
3	Implement Programs using functions, pointers and arrays, and use the pre-processors to solve real time problems.		
4	Ability to use file structures and implement programs on files.		
Course Outcome	Semester II Sem	(B20MA02) Differential Equations & Vector Calculus	L: 3 T: 1 P: 0 C: 4
After the completion of this course, the students should be able to			
1	Apply the fundamental concepts of ordinary differential equations to real time problems.		
2	Find the complete solution of a non homogeneous differential equations and applying its concepts in Engineering problems.		
3	Evaluate the multiple integrals in various coordinate systems.		
4	Apply the concepts of gradient, divergence and curl to formulate Engineering problems.		
5	Analyse line, surface and volume integrals using fundamental theorems.		
Course Outcome	Semester II Sem	(B20EC01) Basic Electronic devices	L: 3 T: 1 P: 0 C: 4
After the completion of this course, the students should be able to			
1	Analyze the characteristics of the PN junction diode and Zener diode.		
2	Design the rectifiers with and without filters for specified DC voltage.		
3	Illustrate the voltage-current characteristics of Junction Transistor and different		



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	configurations of Transistor.		
4	Design and analyze the different biasing circuits and amplifier circuits.		
5	Acquire knowledge about the construction, theory and characteristics of FET and MOSFET.		
Course Outcome	Semester II Sem	(B20EE03) Electrical Circuits	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Learn basics of electrical circuits such as laws, transformation and network theorems and network reduction techniques.		
2	Generate voltage and current waveforms for 3 phase AC circuits and study the relationship between Voltage and current in star and delta connections.		
3	Analyze two port networks with ABCD parameters.		
4	Analyze the steady state and transient operation of series and parallel RLC circuits.		
5	Classify various types for filters and attenuators and study their characteristics.		
Course Outcome	Semester II Sem	(B20CS05) Basic Python programming	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Defining the fundamentals of writing Python scripts.		
2	Expressing the Core Python scripting elements such as variables and flow control structures.		
3	Apply Python functions to facilitate code reuse.		
4	Extending how to work with lists and sequence data.		
5	Adapting the code robust by handling errors and exceptions properly.		
Course Outcome	Semester II Sem	(B20EN02) English Language and Interactive Communication Skills Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1.	Understand the nuances of English language through audio-visual experience and group activities.		
2.	Speak with clarity and confidence which in turn enhances their employability skills.		
3.	Develop their listening skills so that they may appreciate its role in developing LSRW skills language and improve their pronunciation.		
4.	Involve the students in speaking activities in various contexts.		
Course Outcome	Semester II Sem	(B20EC02) Basic Electronic Devices Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Demonstrate the characteristics and operation of Semiconductor diodes.		
2	Analyze different rectifier circuits.		
3	Demonstrate V-I characteristics of BJT, FET and UJT.		
4	Design simple electronic circuits.		
Course Outcome	Semester II Sem	(B20CS09) Basic Python programming Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Expressing the Core Python scripting elements such as variables and flow control structures.		
2	Apply Python functions to facilitate code reuse.		
3	Extending how to work with lists and sequence data.		
4	Adapting the code robust by handling errors and exceptions properly.		



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Course Outcome	Semester II Sem	(B20ME03) Engineering & IT Workshop	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Know the fundamental knowledge of House wiring and soldering and their usage in real time Applications.		
2	Gain knowledge on electronic components and measuring instruments.		
3	Use basic concepts of computer hardware for assembly and disassembly.		
4	Use Microsoft tools for exercise.		
Course Outcome	Semester III Sem	(B20MA09) Numerical Methods and Complex Variables	L: 3 T: 1 P: 0 C: 4
After the completion of this course, the students should be able to			
1	Find a better approximate root of a given equation using appropriate iterative method.		
2	Evaluate the integration to solve the differential equations using numerical techniques.		
3	Analyse the complex function with reference to their analyticity.		
4	Expand the complex functions by using Taylor's and Laurent's series.		
5	Evaluate the real integrals and transforms the functions from one plane to another plane.		
Course Outcome	Semester III Sem	(B20EC03) Signals and Systems	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Apply the knowledge of vectors, orthogonal basis to signals. Analyze the spectral characteristics of Continuous-time periodic signals using Fourier series.		
2	Demonstrate and apply Fourier transform on various signals.		
3	Apply the Laplace transform and Fourier transform for the analysis of continuous-time signals.		
4	Analyse systems based on their properties and determine the response of LTI system.		
5	Understand the concepts of convolution and correlation of signals.		
Course Outcome	Semester III Sem	(B20EC04) Electronic Circuits Analysis	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Construct and analyze the Low frequency model of transistor and evaluate the h-parameters.		
2	Analyze the single and multi stage amplifiers in high frequency region.		
3	Design and construct the negative feedback amplifiers and oscillators according to the required specifications.		
4	Determine the efficiencies of large signal amplifiers.		
5	Compare and contrast various tuned amplifiers.		
Course Outcome	Semester III Sem	(B20EC05) Switching Theory and Logic Design	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Utilize and explain the functionality of logic gates (AND, NAND, OR, NOR, XOR, XNOR, NOT).		
2	Design different combinational circuits using minimization techniques.		
3	Explain various flip flops and design various registers.		
4	Analyze and design basic sequential circuits and counters.		
5	Analyze and minimize completely specified and incompletely specified sequential machines.		
Course Outcome	Semester III Sem	(B20EE10) Electrical Technology	L: 3 T: 0 P: 0 C: 3



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After the completion of this course, the students should be able to			
1	Study the basics of magnetic circuits and its analysis.		
2	Understand the principle of operation of DC machines and their applications.		
3	Analyze the construction, types, performance and its applications		
4	Understand the rotating magnetic field, operation and characteristics.		
5	Understand the operation of AC machines.		
Course Outcome	Semester III Sem	(B20EN01) English for Effective Communication	L: 2 T: 0 P: 0 C: 2
After the completion of this course, the students should be able to			
1	Skim and scan the digital text to summarize it for future reference.		
2	Read the text to make notes according to their needs.		
3	Use English language effectively in spoken and written forms.		
4	Communicate confidently in various contexts and different cultures.		
5	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.		
Course Outcome	Semester III Sem	(B20EC06) Electronic Circuits Analysis Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Understand the concept of multistage amplifiers, analysis of multistage amplifier and plot frequency response.		
2	Design, construct and test amplifier circuits and interpret the results.		
3	Operate electronic test equipment and hardware/software tools to characterize the behaviour		
4	Synthesize and evaluate single stage and multi stage amplifiers.		
Course Outcome	Semester III Sem	(B20EC07) Electronic Simulation EDA Tools Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Illustrate different types of signals and methods of generating them using MATLAB.		
2	Demonstrate the importance of convolution and correlation for different applications.		
3	Simulate various digital circuits.		
4	Design and develop functional analysis of combinational & sequential circuits.		
Course Outcome	Semester III Sem	(B20EC08) Project Based Learning-1	L: 0 T: 0 P: 2 C: 1
After the completion of this course, the students should be able to			
1	Apply the fundamental and engineering concepts in projects.		
2	Develop the skills that include critical thinking, communication and creativity.		
3	Identify meaningful connections across content of the course.		
4	Design and develop learning concept models for societal perceptive.		
5	Develop team work among multidisciplinary environment and engages lifelong learning.		
Course Outcome	Semester IV Sem	(B20EC12) Pulse and Digital Circuits	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Design the circuits for generating desired wave shapes (non-sinusoidal) for different applications like computers, control systems and counting and timing systems.		
2	Analyze the applications of diode as Integrator, differentiator, clippers and clamper circuits.		
3	Analyze the switching characteristics and applications of diode and transistor.		
4	Analyze and design multivibrators for various applications and sweep circuits.		



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5	Design the time base generators and sampling gates with the knowledge of basic principles.		
Course Outcome	Semester IV Sem	(B20EC13) Analog and Digital Communications	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Analyze and simulate the concepts of AM and AM Demodulation in communication.		
2	Interpret with various angle modulation and demodulation systems.		
3	Demonstrate the understanding of various baseband transmission techniques.		
4	Demonstrate the understanding of various digital modulation and demodulation techniques.		
5	Explain different error detection and error correction codes like block codes, cyclic codes and convolution codes.		
Course Outcome	Semester IV Sem	(B20EC14) Electromagnetic Theory and Transmission Lines.	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Apply vector calculus to electrostatic fields in different engineering situations. Use Gauss's Law, Coulomb's law to find fields and potentials for a variety of situations including charge distributions.		
2	Explain, illustrate & can apply the concept of Magnetostatics in different engineering situations.		
3	Analyze & explain the concept of conductors, dielectrics & capacitance, electromagnetic waves characteristics & terminologies and; be able to compute the Pointing vector and identify the power flow direction.		
4	Study time varying Maxwell's equations and their applications is electromagnetic problems.		
5	Describes the transmission lines with equivalent circuit and explain their characteristics & use its knowledge in different engineering situations.		
Course Outcome	Semester IV Sem	(B20EC15) Probability Theory and Stochastic Process	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the basic concepts of probability theory and random processes.		
2	Solve simple engineering problems with the knowledge of two dimensional random variables.		
3	Compare and contrast the various random processes.		
4	Analyze the autocorrelation and cross correlation functions and their properties.		
5	Understand concepts of information theory and Shannon law.		
Course Outcome	Semester IV Sem	(B20EC16) Computer Organization	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Describe the fundamental organization of a computer system.		
2	Understand the concepts of register transfer logic and arithmetic operations.		
3	Understand the concepts of Hardwired control and micro programmed control.		
4	Explain the I/O and memory organization in depth.		
5	Understand the concepts of parallel processing, pipelining and inter processor communication.		
Course Outcome	Semester IV Sem	(B20EC17) Pulse and Digital Circuits Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Understand the applications of diode as integrator, differentiator, clippers and clamper circuits.		
2	Demonstrate basic logic gates and sampling gates		
3	Design and analyze various multivibrator circuits and Schmitt trigger circuit.		



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4	Design and analyze UJT relaxation oscillator and boot-strap sweep circuits		
Course Outcome	Semester IV Sem	(B20EC18) Analog and Digital Communications lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Understand the different types of modulation techniques.		
2	Understanding the multiplexing and coding schemes.		
3	Assess different digital modulation and demodulation techniques.		
4	Apply suitable modulation schemes and coding for various applications.		
Course Outcome	Semester IV Sem	(B20EC19) Hardware Design Lab	L: 0 T: 0 P: 2 C: 1
After the completion of this course, the students should be able to			
1	Design their own projects on PCB up to industrial grade.		
2	Understand the Design concepts of various Analog circuits and their applications.		
3	Design and analyze the different Digital logic circuits.		
4	Understand the Arduino Uno board and to interface various real time application circuits.		
Course Outcome	Semester IV Sem	(B20EC20) Project Based Learning-2	L: 0 T: 0 P: 2 C: 1
After the completion of this course, the students should be able to			
1	Apply the fundamental and engineering concepts in projects.		
2	Develop the skills that include critical thinking, communication and creativity.		
3	Identify meaningful connections across content of the course.		
4	Design and develop learning concept models for societal perceptive.		
5	Develop team work among multidisciplinary environment and engages lifelong learning.		
Course Outcome	Semester V Sem	(B20EC23) Linear & Digital IC Applications	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the operational amplifiers with linear integrated circuits.		
2	Classify various active filter configurations based on frequency response and construct using 741 Op-Amp.		
3	Design and describe the concepts of timer using IC 555, basic principle of PLL.		
4	Understand various ADC and DAC techniques		
5	Design Combinational and Sequential circuits using ICs.		
Course Outcome	Semester V Sem	(B20EC24) Digital Signal Processing	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Identify the different types of the discrete signals and systems.		
2	Understand the DFT, FFT and interrelation between DFT and various transforms.		
3	Understand the characteristics of FIR filters and classify the different types of windowing techniques.		
4	Design a I IR digital filters for a given specifications and Apply the knowledge to real world		
5	Understand different types of signal processing architectures.		
Course Outcome	Semester V Sem	(B20EC25) Control Systems	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the concept of feedback and analyze the control system components by their		



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	Mathematical modeling.		
2	Estimate the time domain specifications and steady state error.		
3	Apply various time domain techniques to assess the system performance.		
4	Formulate different types of analysis in frequency domain to explain the nature of stability of the		
5	Test system Controllability and Observability using state space representation and applications of state space representation to various systems.		
Course Outcome	Semester V Sem	(B20EC26) Electronic Measurements and Instrumentation (Professional Elective – I)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Describe the fundamental concepts, different terminology related to measurements and principles of instrumentation.		
2	Explain the operations of the various instruments required in measurements.		
3	Apply the measurement techniques for different types of tests.		
4	Select specific instrument for various parameters measurement.		
5	Apply knowledge of different oscilloscopes like CRO, DSO and display devices.		
Course Outcome	Semester V Sem	(B20EC27) Computer Networks (Professional Elective – I)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Will be in a position to understand World Wide internet concepts.		
2	Should be able to demonstrate and explore the basics of Computer Networks and various protocols.		
3	Will be in position to administrate a network and flow of information.		
4	Able to contrast different internetworking protocols.		
5	Able to demonstrate different Internet Transport Protocols.		
Course Outcome	Semester V Sem	(B20EC28) Basic JAVA Programming (Professional Elective – I)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the use of OOP concepts and solve real world problems using OOP techniques.		
2	Solve the inter-disciplinary applications using the concept of inheritance.		
3	Understand the multithreading concepts and develop efficient applications.		
4	Design GUI based applications and develops applets for web applications.		
5	Develop program using JDBC connectivity to access data from database and execute different queries to		
Course Outcome	Semester V Sem	(B20MB01) Managerial Economics & Financial Analysis	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the nature, scope and importance of Managerial Economics.		
2	Know what is demand, analyze demand and how elasticity of demand is used for pricing decisions and to evaluate methods for forecasting demand.		
3	Know how production function is carried out to achieve least cost combination of Inputs and how to analyze cost.		
4	Understand the characteristics of different kinds of markets and outline different form of business		
5	Organization and analyze how capital budgeting techniques are used for investment decisions.		



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Course Outcome	Semester V Sem	(B20EC29) Linear & Digital IC Applications Lab	L: 0 T: 0 P: 2 C: 1
After the completion of this course, the students should be able to			
1	Design circuits using operational amplifiers for various applications.		
2	Understand the different logical gates & decoders, flip-flops.		
3	Apply the knowledge of OP-AMPS to design various analog circuits.		
4	Compare linear and digital integrated IC's.		
Course Outcome	Semester V Sem	(B20EC30) Digital Signal Processing Lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Analyze signals using the discrete Fourier transform (DFT).		
2	Understand Convolution process.		
3	Understand FFT algorithm for efficient computation of DFT.		
4	Design IIR & FIR filters.		
Course Outcome	Semester V Sem	(B20EN03) Advanced English Communication skills lab	L: 0 T: 0 P: 3 C: 1.5
After the completion of this course, the students should be able to			
1	Participate in group discussion to present their viewpoints briefly and effectively.		
2	Inculcate flair for writing and felicity in written expression in Résumé / Curriculum Vitae / reports.		
3	Participate confidently with appropriate body language in interviews.		
4	Enhance their team building skills and capabilities for effective decision making.		
Course Outcome	Semester V Sem	(B20EC31) Project Based Learning-3	L: 0 T: 0 P: 2 C: 1
After the completion of this course, the students should be able to			
1	Apply the fundamental and engineering concepts in projects.		
2	Develop the skills that include critical thinking, communication and creativity.		
3	Identify meaningful connections across content of the course.		
4	Design and develop learning concept models for societal perceptive.		
5	Develop team work among multidisciplinary environment and engages lifelong learning.		
Course Outcome	Semester VI Sem	(B20EC32) Microprocessors & Microcontrollers	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Illustrate the internal organization of popular 8086/8051 microprocessors/microcontrollers. Contrast hardware and software interaction and integration.		
2	Design microprocessors and microcontrollers based systems and develop microcontroller based systems for real time applications.		
3	Understand microcontroller 8051 and its programming.		
4	Explain the Memory organization classification and their applications.		
5	Assess programming interfacing etc of various devices with microprocessors and external world.		
Course Outcome	Semester VI Sem	(B20EC33) VLSI Design	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Design digital applications using Verilog HDL		
2	Understand IC technology and basic electrical properties of MOS and BiCMOS.		



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3	Design the layout of circuits using various design rules. Develop and design the gate level circuits		
4	Gain the knowledge to design data path subsystems like Adders, Shifters, and ALUs etc.		
5	Illustrate different programmable logic devices and CMOS testing.		
Course Outcome	Semester VI Sem	(B20EC34) Antennas & Wave Propagation	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Define the parameters like antenna efficiency, beam efficiency, radiation resistance etc. in the design of an antenna.		
2	Explain antenna arrays, illustrate antenna measurements and arrange a setup to carry out the antenna pattern measurements in the laboratory.		
3	Understand the design issues and operation of fundamental antennas like Yagi-Uda, Frequency independent and Aperture antennas.		
4	Classify the different wave propagation mechanisms, determine their characteristic features and estimate the parameters involved.		
5	Analyze the structure of Ionosphere for the wave propagation and Solve problems on Critical frequency, Maximum usable frequency and Skip distance.		
Course Outcome	Semester VI Sem	(B20EC35) Design of Fault Tolerant Systems (Professional Elective – II)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand various concepts of Fault modeling, fault diagnosis, and test Pattern Generation.		
2	Design fault tolerant systems based on modular redundancy techniques.		
3	Gain knowledge of Basic concepts of self checking circuits and able to design fault safe circuits.		
4	Understand the concepts of Design for Testability with various testability measures including BIST technique.		
5	Study the various Standard IEEE Test Access Methods required for testing the digital circuits.		
Course Outcome	Semester VI Sem	(B20EC36) Fiber Optical Communications (Professional Elective – II)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand and analyze the constructional parameters of opticalfibres.		
2	Design an optical system.		
3	Estimate the losses due to attenuation, absorption, scattering and bending.		
4	Compare various optical detectors and choose suitable one for different applications.		
5	Develop the concepts of optical system design.		
Course Outcome	Semester VI Sem	(B20EC37) Digital Image Processing (Professional Elective – II)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Gain the knowledge of digital image fundamentals and image transforms.		
2	Understand image enhancement in spatial and frequency domain.		
3	Understand the different methods to restore an image.		
4	Analyze image segmentation techniques and morphological image processing techniques.		



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5	Analyze the different image compression techniques.		
Course Outcome	Semester VI Sem	(B20EC38) Radar Systems (Professional Elective – III)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Illustrate the importance of radar fundamentals and analysis of the radar equation.		
2	Understand the working principle of CW and FM-CW radar and its applications.		
3	Understand the working principle of MTI and pulse Doppler radar.		
4	Understand the different radar tracking methods.		
5	Understand the radar receivers and also extraction of radar signal from noisy signal.		
Course Outcome	Semester VI Sem	(B20EC39) Speech Processing (Professional Elective – III)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Learn the fundamentals of digital speech processing.		
2	Demonstrate the different time domain models of speech processing.		
3	Understand the concepts of linear predictive coding for speech processing.		
4	Analyze the different techniques of speech processing		
5	Make use of different speech and speaker recognition techniques and Hidden Markov.		
Course Outcome	Semester VI Sem	(B20EC40) Machine learning (Professional Elective – III)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Discuss different application on Machine Learning problems.		
2	Describe various algorithms on Machine Learning mentioning its strengths and weaknesses.		
3	Illustrate the basic theory focused on Machine Learning models and Learning Techniques.		
4	Improve the performance of Machine Learning algorithms with different parameters.		
5	Analyze Probabilistic models and features of Machine Learning.		
Course Outcome	Semester VI Sem	(B20EC41) VLSI & e-CAD Lab	L: 0 T: 0 P:2 C:1
After the completion of this course, the students should be able to			
1	Acquire knowledge on High end Simulation tools like Mentor Graphics, Tanner EDA etc.		
2	Design digital circuits at different levels using programming concepts.		
3	Implement any type of digital systems.		
4	Program any available FPGA and CPLD using implementation tool.		
Course Outcome	Semester VI Sem	(B20EC42) Microprocessors & Microcontrollers Lab	L: 0 T: 0 P:2 C:1
After the completion of this course, the students should be able to			
1	Demonstrate experimentally basic programming of Microprocessor.		
2	Recall the microprocessor interfacing with various peripherals for various applications.		
3	Apply the basic programming of microcontroller.		
4	Examine microprocessor interfacing with various peripherals for various applications.		
Course Outcome	Semester VI Sem	(B20EC43) Project Based Learning-4	L: 0 T: 0 P: 2 C:1
After the completion of this course, the students should be able to			



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1	Apply the fundamental and engineering concepts in projects.		
2	Develop the skills that include critical thinking, communication and creativity.		
3	Identify meaningful connections across content of the course.		
4	Design and develop learning concept models for societal perceptive.		
5	Develop team work among multidisciplinary environment and engages lifelong learning.		
Course Outcome	Semester VI Sem	(B20MC05) Logical Reasoning and Quantitative Aptitude	L: 2 T: 0 P: 0 C: 0
After the completion of this course, the students should be able to			
1	Apply quantitative reasoning and mathematical analysis methodologies to understand and solve problems.		
2	Apply quantitative correctly arrive at meaningful conclusions regarding their answers and manipulate equations and formulas in order to solve for the desired variable.		
3	Interpret given information correctly, determine which mathematical model best describes the data, and apply the model correctly.		
4	Correctly apply mathematical language and notation to explain the reasoning underlying their conclusions when solving problems using mathematical or statistical techniques.		
5	Improve their mathematical skills in various general aspects to solve real time problems.		
Course Outcome	Semester VII Sem	(B20EC44) Microwave Engineering	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the significance of microwaves and microwave transmission lines.		
2	Identify the different wave guide components and applications		
3	Analyze the characteristics of various microwave tubes.		
4	Learn the different types of microwave solid state devices.		
5	Gain knowledge of microwave Measurement.		
Course Outcome	Semester VII Sem	(B20EC45) Embedded Systems	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand and design embedded systems.		
2	Understand the architecture of Arm processors.		
3	Develop a system using IO devices and interfacing to external world.		
4	Understand types of memory.		
5	Understand embedded firmware design approaches.		
Course Outcome	Semester VII Sem	(B20EC46) Wireless and Mobile Communication (Professional Elective – IV)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Estimate the impairments due to multi path fading channel.		
2	Explain an Importance of the fundamental techniques to overcome the different fading effects.		
3	Distinguish the co-channel and Non co-channel interference.		
4	Inspect cell coverage for signal and traffic, diversity techniques and mobile antennas.		
5	Relate and explain the functioning of frequency management, Channel assignment and types of handoff.		
Course	Semester		L: 3 T: 0 P: 0 C: 3



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Outcome	VII Sem	(B20EC47) CMOS Circuit Design (Professional Elective – IV)	
After the completion of this course, the students should be able to			
1	Understand the fundamentals of VLSI design flow & interchange formats of VLSI design tools.		
2	Develop the understanding to analyze circuit characterization & its performance estimation.		
3	Develop the understanding to analyze the combinational circuit design using various circuit families In VLSI.		
4	Apply the knowledge of sequential circuit design in VLSI for various design applications.		
5	Analyze low power design strategies suitable for various design applications in VLSI.		
Course Outcome	Semester VII Sem	(B20EC48) Artificial Intelligence (Professional Elective – IV)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Remember various AI concepts like the AI technique, level of models, there underlying assumptions etc		
2	Understand the concepts of AI search techniques		
3	Apply knowledge Representation techniques		
4	Analyze different structures of representation		
5	Evaluate AI search techniques, Create Expert systems		
Course Outcome	Semester VII Sem	(B20EC49) Sensor Networks (Professional Elective – V)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the overview of sensor & networks.		
2	Explore the various architectures of sensors & network		
3	Understand the various protocols in sensor networks.		
4	Identify the infrastructure and establishment of sensor networks.		
5	Explore various sensor network platforms and tools.		
Course Outcome	Semester VII Sem	(B20EC50) Satellite Communication (Professional Elective – V)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the historical background, basic concepts and frequency allocations for satellite communication		
2	Understand the satellite sub systems like Telemetry, tracking, command and monitoring power system.etc.		
3	Understand various Satellite Multiple Access techniques		
4	Understand the earth station technology and terrestrial interface networks.		
5	Understand the applications of Satellites and GPS system.		
Course Outcome	Semester VII Sem	(B20EC51) Robotics and Automation (Professional Elective – V)	L: 3 T: 0 P: 0 C: 3
1	Understand the basic components and specifications used in robotics and automation.		
2	Understand and implement the different types of motors and sensors during designing of robotics system.		



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3	Use manipulators, Actuators and Grippers and their design considerations in robotics and automation.		
4	Understand the basic concepts of AVR microcontrollers.		
5	Implement the programming and interfacing concepts of AVR microcontroller in robotic designing.		
Course Outcome	Semester VII Sem	(B20EC52) MICROWAVE ENGINEERING LAB	L: 0 T: 0 P:2 C: 1
1	Demonstrate a microwave bench for measuring microwave parameters.		
2	Measure parameters like attenuation, VSWR, etc.,		
3	Gain knowledge about Various components used for Microwave communication and their applications		
4	Analyze the characteristics of all microwaves engineering component		
Course Outcome	Semester VII Sem	(B20EC53) EMBEDDED SYSTEMS LAB	L: 0 T: 0 P: 2 C: 1
1	Develop the programming concepts of 8bit, 16bit, and 32 bit micro controllers.		
2	Understand working principle and programming concepts of ARM processor		
3	Understand types of memory, interacting to external world and		
4	Analyze the different I/O devices and their interfacing concepts, understand the concepts of real time applications.		
Course Outcome	Semester VII Sem	(B20EC54) MINI PROJECT AND INTERNSHIP	L: 0 T: 0 P: 0 C: 2
1	Demonstrate a sound technical knowledge of their selected project topic.		
2	Identify and summarize an appropriate list of literature review, analyze previous researchers' work and relate them to current project.		
3	Present the project outlining the approach and expected results using good oral and written presentation skills.		
4	Apply critical and creative thinking in the design of engineering projects not only limited to electronics and communication engineering domain but if possible to other interdisciplinary domains as well.		
5	Design and develop a functional product prototype while working in a team		
6	Communicate with engineers and the community at large in written and oral forms.		
7	Consider the business context and commercial positioning of designed devices or systems		
Course Outcome	Semester VII Sem	(B20EC55) PROJECT PHASE – I	L: 0 T: 0 P: 8 C: 4
1	Demonstrate a sound technical knowledge of their selected project topic.		
2	Identify and summarize an appropriate list of literature review, analyze previous researchers' work and relate them to current project.		
3	Formulate clearly a work plan and procedures.		
4	Present the project outlining the approach and expected results using good oral and written presentation skills.		
5	Undertake problem identification, formulation and solution.		
6	Apply critical and creative thinking in the design of engineering projects not only limited to electronics and communication engineering domain but if possible to other interdisciplinary		



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	domains as well.		
7	Design and develop a functional product prototype while working in a team		
8	Demonstrate the knowledge, skills and attitudes of a professional engineer when working in a team or working as a team leader.		
9	Communicate with engineers and the community at large in written and oral forms.		
10	Consider the business context and commercial positioning of designed devices or systems		
Course Outcome	Semester VIII Sem	(B20EC56) Digital Signal Processor & Architecture (Professional Elective – VI)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand the DFT, FFT, DSP system and Explain the DSP computational building blocks and addressing capabilities.		
2	Distinguish between the architectural features of General purpose processors and DSP processors.		
3	Discuss and understand the TMS320C54xx Processor.		
4	Understand the Analog devices family of DSP devices.		
5	Analyze the interface of various devices to DSP Processors.		
Course Outcome	Semester VIII Sem	(B20EC57) FPGA Architecture & Applications (Professional Elective – VI)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Understand PLDs & its use depending on application or design		
2	Understand FPGAs & its use depending on application		
3	Develop the understanding to analyzes RAM programmable Xilinx & Anti-Fuse Programmable Actel FPGAs architectures for applications		
4	Develop the understanding to analyze PROM programmable Altera FPGAs& other commercially		
5	Apply the knowledge of FPGAs for various design applications		
Course Outcome	Semester VIII Sem	(B20EC58) Internet of Things (Professional Elective – VI)	L: 3 T: 0 P: 0 C: 3
After the completion of this course, the students should be able to			
1	Interpret the vision of IOT from a global context.		
2	Perceive building blocks of Internet of Things and its characteristics		
3	Learn the basic concepts of Python		
4	Implement the python programming using Raspberry.		
5	Develop Python web applications and cloud servers for IOT.		
Course Outcome	Semester VIII Sem	(B20EC59) TECHNICAL SEMINAR	L: 0 T: 0 P: 2 C: 1
After the completion of this course, the students should be able to			
1	Write technical documents and give oral presentations related to the work completed.		
2	Demonstrate the ability to collaborate with others as they work on intellectual projects (reading, writing, speaking, researching...).		
3	Explain the role of self-efficacy, personal goals, and motivation in improving academic life		
4	Describe the behaviors and characteristics of an effective learner		
5	Gain knowledge of fast and rapidly changing by self learning		
6	Develop the interpersonal skills, soft skills and creativity.		



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Course Outcome	Semester VIII Sem	(B20EC60) PROJECT PHASE - II	L: 0 T: 0 P: 16 C: 8
After the completion of this course, the students should be able to			
1	Demonstrate a sound technical knowledge of their selected project topic.		
2	Identify and summarize an appropriate list of literature review, analyze previous researchers' work and relate them to current project.		
3	Formulate clearly a work plan and procedures.		
4	Present the project outlining the approach and expected results using good oral and written presentation skills.		
5	Undertake problem identification, formulation and solution.		
6	Apply critical and creative thinking in the design of engineering projects not only limited to electronics and communication engineering domain but if possible to other interdisciplinary domains as well.		
7	Design and develop a functional product prototype while working in a team		
8	Demonstrate the knowledge, skills and attitudes of a professional engineer when working in a team or working as a team leader.		
9	Communicate with engineers and the community at large in written and oral forms.		
10	Consider the business context and commercial positioning of designed devices or systems		
Course Outcome	Semester VII or VIII Sem	(B20CE55) Disaster Preparedness & Planning Management (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Attain knowledge on various types, stages, phases in disaster management		
2	Recognize various types of natural disaster, Mitigation and Management Systems		
3	Know the different types of manmade disasters and its effects		
4	Explain Remote sensing technology and GIS in disaster mitigation and management.		
5	Know the concepts of risk, warning and forecasting methods in disaster management		
Course Outcome	Semester VII or VIII Sem	(B20CE56) Environmental Management (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Comprehend the need for Environmental Management		
2	Identify the attributes of Environment Management system and standards		
3	Apply different methodologies for impact assessment		
4	To understand the various Environment management plan		
5	Identify the techniques and control measures for Environment management		
Course Outcome	Semester VII or VIII Sem	(B20CE57) Urban Planning (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Describe the importance of proper urban planning for a healthy city		
2	Apply basic methods for urban planning		
3	Describe housing development schemes		
4	Design public transport and non-motorized transport facilities for a city		
5	Describe smart city developments in India and abroad and its various elements		



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Course Outcome	Semester VII or VIII Sem	(B20EE54) Electrical Power Utilisation and Safety (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Know about the electric heating and welding		
2	Gain the knowledge on illumination system.		
3	Understand the electrical installation, estimation and costing.		
4	Understand the importance of power factor.		
5	Gain the knowledge on safety and protection.		
Course Outcome	Semester VII or VIII Sem	(B20EE55) Concepts of Control systems (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the basic concept control systems.		
2	Know the mathematical model of the systems.		
3	Estimate the time domain specifications and steady state error.		
4	Know the frequency response analysis.		
5	Understand concept of stability.		
Course Outcome	Semester VII or VIII Sem	(B20EE56) Renewable Energy Sources (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Know about the global and national energy scenario.		
2	Understand the concept of solar energy.		
3	Know the basics of wind energy.		
4	Differentiate the hydel and tidal power plants.		
5	Explore the bio-mass, geothermal and ocean energy.		
Course Outcome	Semester VII or VIII Sem	(B20ME59) Non-Conventional Energy Sources (Open Elective)	C:3 L: 3 T: 0 P: 0
1	Apply the technology to capture the energy from the renewable sources like sun, Wind, ocean, biomass, geothermal.		
2	Use different renewable energy sources to produce electrical power minimize the Use of conventional energy sources to produce electrical energy		
3	Identify the fact that the conventional energy resources are depleted		
4	Understand direct energy conversion		
5	Learn different methods in solar energy system.		
Course Outcome	Semester VII or VIII Sem	(B20ME45) Robotics (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Apply the knowledge of robotics in real time human life applications.		
2	Analyze the concept of CAD/CAM and automation to the robotics.		
3	Compare knowledge of robot applications in manufacturing like, material handling, loading and unloading etc.		
4	Experiment the robotics to the spot and continuous arc welding and spray painting.		
5	Relate the Robot Application in Manufacturing.		
Course Outcome	Semester VII or VIII Sem	(B20ME33) Mechatronics	L: 3 T: 0 P: 0 C: 3
1	Use the control system, mechatronics design systems and measurement systems.		



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2	Work on various actuating systems.		
3	Convert the signals from one form to another form.		
4	Estimate the micro controllers and micro processors.		
5	Develop the simple programming code for PLC's.		
Course Outcome	Semester VII or VIII Sem	(B20EC37) Digital Image Processing (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Gain the knowledge of digital image fundamentals and image transforms.		
2	Understand image enhancement in spatial and frequency domain.		
3	Understand the different methods to restore an image.		
4	Analyze image segmentation techniques and morphological image processing.		
5	Analyze the different image compression techniques.		
Course Outcome	Semester VII or VIII Sem	(B20EC46) Wireless and Mobile Communication (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Estimate the impairments due to multi path fading channel.		
2	Explain an Importance of the fundamental techniques to overcome the different fading effects.		
3	Distinguish the co-channel and Non co-channel interference.		
4	Inspect cell coverage for signal and traffic, diversity techniques and mobile antennas.		
5	Relate and explain the functioning of frequency management, Channel assignment and types of handoff.		
Course Outcome	Semester VII or VIII Sem	(B20EC49) Sensor Networks (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the overview of sensor & networks.		
2	Explore the various architectures of sensors & network		
3	Understand the various protocols in sensor networks.		
4	Identify the infrastructure and establishment of sensor networks.		
5	Explore various sensor network platforms and tools.		
Course Outcome	Semester VII or VIII Sem	(B20EC61) Biomedical Instrumentation (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the functions of bio amplifiers, characteristics of medical instruments and bio signals.		
2	Discuss the various internal, external Bio electrodes and relations between electrical and mechanical activities of heart.		
3	Compare various concepts of Cardiac Instrumentation and gain the knowledge about		
4	Analyze the Therapeutic Equipment and their operation.		
5	Acquires knowledge about neuro-muscular Instrumentation like ECG EMG and EEG.		
Course Outcome	Semester VII or VIII Sem	(B20CS19) Data base Management Systems (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Perceive the fundamental concepts of database management.		
2	Analyze database models & Entity Relationship models and to draw the E-R diagram for the given case study.		
3	Apply relational Database Theory, and be able to write relational algebra expressions for queries.		
4	Apply Normalization Process to construct the database and explain Basic Issues of Transaction		



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5	Compare the basic Database storage structures and access techniques: File Organization indexing methods including B- Tree and Hashing.		
Course Outcome	Semester VII or VIII Sem	(B20CS12) Java Programming (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the use of OOP concepts and solve real world problems using OOP techniques.		
2	Solve the inter-disciplinary applications using the concept of inheritance.		
3	Develop robust and faster applications by applying different exception handling mechanisms.		
4	Understand the multithreading concepts and develop efficient applications.		
5	Design GUI based applications and develops applets for web applications.		
Course Outcome	Semester VII or VIII Sem	(B20CS55) Introduction to Network Security (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Identifies various types of vulnerabilities, attacks, mechanisms and security services.		
2	Compare and contrast symmetric and asymmetric encryption algorithms.		
3	Implementation of message authentication, hashing algorithms.		
4	Explore E-Mail security, S/MIME Functionality.		
5	Develop intrusion detection system and designing of various types of firewalls.		
Course Outcome	Semester VII or VIII Sem	(B20CS56) Introduction to Cloud Computing (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Ability to understand various service delivery models of a cloud computing architecture.		
2	Ability to understand the ways in which the cloud can be programmed and deployed.		
3	Understanding Cloud Computing Architecture and Management		
4	Understanding cloud service Models.		
5	Understanding cloud service providers.		
Course Outcome	Semester VII or VIII Sem	(B20CS37) Internet of Things (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Interpret the vision of IoT from global context.		
2	Perceive building blocks of Internet of Things and its characteristics.		
3	Learn the basic concepts of Python. Implement the python programming using Raspberry.		
4	Perceive the application areas of IoT. Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.		
5	Determine the Market perspective of IoT. Develop Python web applications and cloud servers for IoT.		
Course Outcome	Semester VII or VIII Sem	(B20CS04) Data Structures and Algorithms (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Define the basic techniques of algorithm analysis		
2	Examine the linear and non linear data structures.		
3	Develop Priority Queues and Balanced Trees.		
4	Understand Hashing Techniques and Graph applications.		
5	Apply suitable algorithms for sorting Technique.		
Course Outcome	Semester VII or VIII Sem	(B20AI03) Artificial Intelligence	L: 3 T: 0 P: 0 C: 3



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		(Open Elective)	
1	Possess the ability to formulate an efficient problem space for a problem expressed in English.		
2	Possess the ability to select a search algorithm for a problem.		
3	Possess the skill for representing knowledge using the appropriate technique.		
4	Possess the ability to apply AI techniques to solve problems of Game Playing.		
5	Possess the Expert Systems, Machine Learning and Natural Language Processing.		
Course Outcome	Semester VII or VIII Sem	(B20AI29) Introduction to Machine Learning (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Explain the theory underlying machine learning.		
2	Learn beyond binary classification.		
3	Recognize and implement various genetic algorithms.		
4	Construct algorithms to learn tree, to learn linear, non-linear models and Probabilistic models.		
5	Able to analyze the data.		
Course Outcome	Semester VII or VIII Sem	(B20AI30) Neural Networks (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Describe different neural networks of various architectures		
2	Understand the feed forward and feed backward.		
3	Design the training of neural networks.		
4	Learn various learning rules.		
5	Develop the testing of neural networks and do the perform analysis of these networks for various pattern recognition application.		
Course Outcome	Semester VII or VIII Sem	(B20AI31) Introduction to Cyber Security (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Outline key terms and concepts in cyber law, intellectual property and cybercrimes.		
2	Understand basic cryptography and stenography.		
3	Explore the vulnerabilities, threats and cybercrimes posed by criminals.		
4	Identify various security challenges phased by mobile devices and identify various types of tools and methods used in cybercrime, develops the secure counter methods to maintain security protection.		
Course Outcome	Semester VII or VIII Sem	(B20DS24) Introduction to Data science (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the basic concepts of Data Science.		
2	Learn about types of data and data pre processing.		
3	Understand the techniques for data analytics.		
4	Learn the statistical fundamentals related to Data Science.		
5	Understand the concepts of Machine Learning for Data Science.		
Course Outcome	Semester VII or VIII Sem	(B20DS25) Data Handling and Visualization (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the fundamentals of Data Visualization.		



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2	Learn the concepts of Visualizing Distributions.		
3	Understand how to Visualizing Proportions and Nested Proportions.		
4	Learn the concepts of Visualizing Associations and Time series data.		
5	Understand the different Visualizing Trends.		
Course Outcome	Semester VII or VIII Sem	(B20DS26) Introduction to Big Data (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the importance of Big Data.		
2	Learn about the types of data and Big Data Analytics.		
3	Understand the Big Data technology components and applications.		
4	Learn the basics of Hadoop Eco system.		
5	Understand the map reduce fundamentals.		
Course Outcome	Semester VII or VIII Sem	(B20DS27) Introduction to Computer Forensics (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the definition of computer forensics fundamentals.		
2	Describe the types of computer forensics technology. Analyze various computer forensics systems.		
3	Illustrate the methods for data recovery, evidence collection and data seizure.		
4	Summarize duplication and preservation of digital evidence. Evaluate the effectiveness of available digital forensics tools.		
5	Employ fundamental computer theory in the context of computer forensics practices.		
Course Outcome	Semester VII or VIII Sem	(B20MB02) Management Science (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Outline the fundamentals of management and contributions to management.		
2	Define the social Responsibilities of an organization towards stakeholders and build the suitable organization structure and to identify factors influencing plant location and layout decisions.		
3	Know importance of materials management, evaluate quality of products using SQC techniques and Identify the basic concepts of marketing mix and Human Resource concepts.		
4	Know how PERT and CPM different and to construct network by proper planning organizing an managing the efforts to accomplish a successful project.		
5	Appraise all contemporary management practices and analyze how these contemporary management practices one applicable in modern business and service organizations.		
Course Outcome	Semester VII or VIII Sem	(B20MB03) Entrepreneurship Development (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Explain characteristics, Qualities, Skills and Functions of Entrepreneur.		
2	Demonstrates Entrepreneur Scenario in India and abroad.		
3	Summarizes necessity for business ethics and ethical guidelines in business.		
4	Interprets about Government Grants and subsidies and Entrepreneurship promotion schemes.		
5	Prioritizes corporate social responsibility and professional ethics by company secretaries.		
Course Outcome	Semester VII or VIII Sem	(B20MB06) Intellectual Property Rights (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Outline the increasing importance of Intellectual Property Rights		



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2	Utilize post registration procedures and trade mark registration process
3	Explain the copyright principles and rights
4	Prioritize the law of patents and patent ownership
5	Develop the trade secret and maintenance