Sri Sri Sri Mookambika Educational Society's
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE
Peddasettipalli (V), Proddatur-516360.

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2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website

JNTUA - R20 Regulation - Course Outcomes

Principal
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: II B.TECH - I SEM				BRANCH: ECE
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Complex variables and Transforms	20A54302	CO1	Understand the analyticity of complex functions and conformal mappings.
			CO2	Apply cauchy's integral formula and cauchy's integral theorem to evaluate improper integrals along contours.
			CO3	Understand the usage of laplace transforms, fourier transforms and z transforms.
			CO4	Evaluate the fourier series expansion of periodic functions.
			CO5	Understand the use of fourier transforms and apply z transforms to solve difference equations.
2	Signals & Systems	20A04301T	CO1	Understand the mathematical description and representation of continuous-time and discretetime signals and systems. Also understand the concepts of various transform techniques.
			CO2	Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.
			CO3	Analyze the frequency spectra of various continuous-time and discrete-time signals using different transform methods.
			CO4	Classify the systems based on their properties and determine the response of them.
3	Electrical Engineering	20A02303T	CO1	Able to acquire knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.
			CO2	Able to solve the problems on R L C circuits for different excitations using different approaches.
			CO3	Analyze the complex circuits of R L C circuits.
			CO4	Able to solve the problems the e.m.f. generated on DC Generator.
			CO5	Able to acquire knowledge about how to determine the efficiency and regulation of single phase transformer and synchronous machine.
4	Analog Circuits	20A04302T	CO1	Understand the characteristics of differential amplifiers, feedback and power amplifiers.
			CO2	Examine the frequency response of multistage and differential amplifier circuits using BJT &

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				MOSFETs at low and high frequencies.
			CO3	Investigate different feedback and power amplifier circuits based on the application.
			CO4	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillator circuits.
			CO5	Evaluate the performance of different tuned amplifiers and multivibrators
			CO6	Design analog circuits for the given specifications and application.
5	Managerial Economics & Financial Analysis	20A52301	CO1	Define the concepts related to Managerial Economics, financial accounting and management.
			CO2	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and Markets.
			CO3	Apply the Concept of Production cost and revenues for effective Business decision.
			CO4	Analyze how to invest their capital and maximize returns.
			CO5	Evaluate the capital budgeting techniques.
			CO6	Develop the accounting statements and evaluate the financial performance of business entity.
6	Simulation Lab	20A04301P	CO1	Learn how to use the MATLAB software and know syntax of MATLAB programming.
			CO2	Understand how to simulate different types of signals and system response.
			CO3	Find the Fourier Transform of a given signal and plot amplitude and phase characteristics.
			CO4	Analyze the response of different systems when they are excited by different signals and plot power spectral density of signals.
			CO5	Generate/Simulate different random signals for the given specifications.
7	Electrical Engineering Lab	20A02303P	CO1	To determine the various parameters experimentally.
			CO2	To understand various characteristics of DC generators and DC motors.
			CO3	To predetermine the efficiency and regulation of a 1-ϕ transformer
8	Analog Circuits Lab	20A04302P	CO1	Know about the usage of equipment /components /software tools used to conduct the experiments in analog circuits.
			CO2	Conduct the experiment based on the knowledge acquired in the theory about various

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				analog circuits using BJT/MOSFETs to find the important parameters of the circuit (viz. Voltage gain, Current gain, bandwidth, input and output impedances etc) experimentally.
			CO3	Analyze the given analog circuit to find required important metrics of it theoretically.
			CO4	Draw the relevant graphs between important metrics of the system from the observed measurements.
			CO5	Compare the experimental results with that of theoretical ones and infer the conclusions.
			CO6	Design the circuit for the given specifications.
9	Application Development with Python	20A05305	CO1	Identify the issues in software requirements specification and enable to write SRS documents for software development problems
			CO2	Explore the use of Object oriented concepts to solve Real-life problems
			CO3	Design database for any real-world problem
			CO4	Solve mathematical problems using Python programming language
10	Universal Human Values	20A52201	CO1	Students are expected to become more aware of themselves, and their surroundings (family, society, nature)
			CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
			CO3	They would have better critical ability.
			CO4	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
			CO5	It is hoped that they would be able to apply what they have learnt to their own self in different dayto-day settings in real life, at least a beginning would be made in this direction.

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: II B.TECH - II SEM			BRANCH: ECE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Probability Theory & Stochastic Processes	20A54403	CO1	Understanding the concepts of Probability, Random Variables, Random Processes and their characteristics learn how to deal with multiple random variables, conditional probability, joint distribution and statistical independence.
			CO2	Formulate and solve the engineering problems involving random variables and random processes.
			CO3	Analyze various probability density functions of random variables.
			CO4	Derive the response of linear system for Gaussian noise and random signals as inputs.
2	Digital Logic Design	20A04303T	CO1	Understand the properties of Boolean algebra, other logic operations, and minimization of Boolean functions using Karnaugh map.
			CO2	Make use of the concepts to solve the problems related to the logic circuits.
			CO3	Analyze the combinational and sequential logic circuits.
			CO4	Develop digital circuits using HDL, and Compare various Programmable logic devices.
			CO5	Design various logic circuits using Boolean algebra, combinational and sequential logic circuits
3	Electro Magnetic Waves & Transmission Lines	20A04401	CO1	Explain basic laws of electromagnetic fields and know the wave concept.
			CO2	Solve problems related to electromagnetic fields.
			CO3	Analyze electric and magnetic fields at the interface of different media.
			CO4	Derive Maxwell's equations for static and time varying fields.
			CO5	Analogy between electric and magnetic fields.
			CO6	Describes the transmission lines with equivalent circuit and explain their characteristic with various lengths
4	Communication Systems	20A04402T	CO1	Recognize/List the basic terminology used in analog and digital communication techniques for transmission of information/data.
			CO2	Explain/Discuss the basic operation of different analog and digital communication systems at

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				baseband and passband level.
			CO3	Compute various parameters of baseband and passband transmission schemes by applying basic engineering knowledge.
			CO4	Analyze/Investigate the performance of different modulation & demodulation techniques to solve complex problems in the presence of noise.
			CO5	Evaluate/Assess the performance of all analog and digital modulation techniques to know the merits and demerits of each one of them in terms of bandwidth and power efficiency.
5	Linear & Digital IC Applications	20A04403T	CO1	List out the characteristics of Linear and Digital ICs.
			CO2	Discuss the various applications of linear & Digital ICs.
			CO3	Solve the application based problems related to linear and digital ICs.
			CO4	Analyze various applications based circuits of linear and digital ICs.
			CO5	Design the circuits using either linear ICs or Digital ICs from the given specifications.
6	Digital Logic Design Lab	20A04303P	CO1	Understand the pin configuration of various digital ICs used in the lab.
			CO2	Conduct the experiment and verify the properties of various logic circuits.
			CO3	Analyze the sequential and combinational circuits.
			CO4	Design of any sequential/combinational circuit using Hardware/ HDL.
7	Communication Systems Lab	20A04402P	CO1	Know about the usage of equipment/components/software tools used to conduct the experiments in analog and digital modulation techniques.
			CO2	Conduct the experiment based on the knowledge acquired in the theory about modulation and demodulation schemes to find the important metrics of the communication system experimentally.
			CO3	Analyze the performance of a given modulation scheme to find the important metrics of the system theoretically.
			CO4	Draw the relevant graphs between important metrics of the system from the observed measurements.

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			CO5	Compare the experimental results with that of theoretical ones and infer the conclusions.
8	Linear & Digital IC Applications Lab	20A04403P	CO1	Understand the pin configuration of each linear/ digital IC and its functional diagram.
			CO2	Conduct the experiment and obtain the expected results.
			CO3	Analyze the given circuit/designed circuit and verify the practical observations with the analyzed results.
			CO4	Design the circuits for the given specifications using linear and digital ICs.
			CO5	Acquaintance with lab equipment about the operation and its use.
9	Soft Skills	20A52401	CO1	Memorize various elements of effective communicative skills.
			CO2	Interpret people at the emotional level through emotional intelligence.
			CO3	Apply critical thinking skills in problem solving
			CO4	analyse the needs of an organization for team building.
			CO5	Judge the situation and take necessary decisions as a leader.
			CO6	Develop social and work-life skills as well as personal and emotional well-being
10	Design Thinking for Innovation	20A99401	CO1	Define the concepts related to design thinking.
			CO2	Explain the fundamentals of Design Thinking and innovation
			CO3	Apply the design thinking techniques for solving problems in various sectors.
			CO4	Analyse to work in a multidisciplinary environment
			CO5	Evaluate the value of creativity
			CO6	Formulate specific problem statements of real time issues

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: III B.TECH - I SEM				BRANCH: ECE
S.No	Subject Name	Subject Code	\<span\>Course Outcomes (CO): Student will be able to\</span\>	

S.No	Subject Name	Subject Code		Course Outcomes (CO): Student will be able to
1	Control Systems Engineering	20A04501	CO1	Identify open and closed loop control system.
			CO2	Formulate mathematical model for physical systems.
			CO3	Use standard test signals to identify performance characteristics of first and second-order systems.
			CO4	Analyze stability of the closed and open loop systems.
			CO5	Design closed-loop control system to satisfy dynamic performance specifications using frequency response, root-locus, and state-space techniques.
2	Digital Signal Processing	20A04502T	CO1	Formulate difference equations for the given discrete time systems.
			CO2	Apply FFT algorithms for determining the DFT of a given signal.
			CO3	Compare FIR and IIR filter structures
			CO4	Design digital filter (FIR & IIR) from the given specifications.
			CO5	Outline the concept of multirate DSP and applications of DSP.
3	Micro Processors & Micro Controllers	20A04503T	CO1	Distinguish between microprocessors & microcontrollers
			CO2	Develop assembly language programming
			CO3	Describe interfacing of 8086 with peripheral devices
			CO4	Design applications using microcontrollers
4	Computer Architecture & Organization	20A04504A	CO1	Understand the basics of instructions sets and their impact on processor design.
			CO2	Demonstrate an understanding of the design of the functional units of a digital computer system.
			CO3	Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
			CO4	Design a pipeline for consistent execution of instructions with minimum hazards.
			CO5	Recognize and manipulate representations of numbers stored in digital computers.
5	Optimization Techniques	20A54501	CO1	Formulate a linear programming problem and solve it by various methods.

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			CO2	Give an optimal solution in assignment jobs,give transportation of items from sources to destinations.
			CO3	Identify strategies in a game for optimal profit.
			CO4	Implement project planning.
6	Digital Signal Processing Lab	20A04502P	CO1	Implement various DSP Algorithms using software packages.
			CO2	Implement DSP algorithms with Digital Signal Processor.
			CO3	Analyze and observe magnitude and phase characteristics (Frequency response Characteristics) of digital IIR-Butterworth, Chebyshev filters.
			CO4	Analyze and observe magnitude and phase characteristics (Frequency response Characteristics) of digital FIR filters using window techniques.
			CO5	Analyze digital filters using Software Tools.
7	Micro Processors & Micro Controllers Lab	20A04503P	CO1	Formulate problems and implement algorithms using Assembly language.
			CO2	Develop programs for different applications.
			CO3	Interface peripheral devices with 8086 and 8051.
			CO4	Use Assembly/Embedded C programming approach for solving real world problems
8	PCB Design & Prototype Development	20A04509	CO1	Understand a single layer and multilayer PCB
			CO2	Create and fabricate a PCB.
			CO3	Evaluate and test a PCB.

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: III B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Antennas & Micro Wave Engineering	20A04601T	CO1	Learn about the antenna's basics and wire antennas.
			CO2	Gain knowledge on few types of antennas, their operation and applications.
			CO3	Understand the uses of antenna arrays and analyze waveguides and resonators
			CO4	Analyze various microwave components and understand the principles of different microwave sources.
			CO5	Gain knowledge on microwave semiconductor devices and microwave measurements.
2	VLSI Design	20A04602T	CO1	Acquire qualitative knowledge about the fabrication process of integrated circuit using MOS transistors
			CO2	Draw the layout of any logic circuit which helps to understand and estimate parasitic of any logic circuit.
			CO3	Design building blocks of data path using gates.
			CO4	Design simple memories using MOS transistors and can understand design of large memories.
			CO5	Understand the concept of testing and adding extra hardware to improve testability of system.
3	Data Communication & Networks	20A04603T	CO1	Understand the basics of data communication, networking, internet and their importance.
			CO2	Analyze the services and features of various protocol layers in data networks.
			CO3	Differentiate wired and wireless computer networks.
			CO4	Analyse TCP/IP and their protocols.
			CO5	Recognize the different internet devices and their functions.
4	Optical Communications	20A04604C	CO1	Understand and analyze the constructional parameters of optical fibres.
			CO2	Estimate the losses due to attenuation, absorption, scattering and bending.
			CO3	Compare various optical detectors and choose suitable one for different applications.
5	Principles of Operating System	20A05605A	CO1	Demonstrate and understand of computer systems and operating systems functions.
			CO2	Distinguish between process and thread and classify scheduling algorithms.

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			CO3	Solve synchronization and deadlock problems.
			CO4	Compare various memory management schemes.
			CO5	Explain file systems concepts and i/o management.
6	Antennas & Micro Wave Engineering Lab	20A04601P	CO1	Understand the working, different microwave components and sources in a microwave bench.
			CO2	Verify the characteristics of various microwave components using microwave bench setup.
			CO3	Design and study of various antennas.
			CO4	Analyze performance characteristics of Antennas.
7	VLSI Design Lab	20A04602p	CO1	Design any logic circuit using CMOS transistor.
			CO2	Use different software tools for analysis of circuits.
			CO3	Design layouts to the CMOS circuits.
			CO4	Use different software tools for analog layout
8	Data Communication & Networks Lab	20A04603P	CO1	Familiarize with the network simulation tools.
			CO2	Usage of the network simulators to study the various aspects that effect network performance.
9	RF System Design	20A04607	CO1	Verify the basic principles and design aspects involved in high frequency communication systems components.
			CO2	Conduct the experiments on different high frequency components to analyze and interpret data to produce meaningful conclusion and match with theoretical concepts.
			CO3	Design and develop RF components using microstrip technology.
			CO4	Apply knowledge of basic RF Electronics for realizing any RF system.
10	Intellectual Property Rights and Patents	20A99601	CO1	Understand IPR law& Cyber law
			CO2	Discuss registration process, maintenance and litigations associated with trademarks
			CO3	Illustrate the copy right law
			CO4	Enumerate the trade secret law.

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: IV B.TECH - I SEM				BRANCH: ECE
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to

S.No	Subject Name	Subject Code	CO	Course Outcomes (CO): Student will be able to
1	Satellite Communication	20A04701C	CO1	Learn the dynamics of the satellite.
			CO2	Understand the communication satellite design.
			CO3	Understand how analog and digital technologies are used for satellite communication networks.
			CO4	Learn the design of satellite links.
			CO5	Study the design of Earth station and tracking of the satellites
2	Radar Engineering	20A04702C	CO1	Learn the basic working principle of Radar and target detection procedure.
			CO2	Know the working and applications of CW and Frequency modulated Radar.
			CO3	Gain the knowledge of about MTI and Pulse Doppler Radar.
			CO4	Understand different methods of tracking a target and analyze the effect of noise at the Receiver.
			CO5	Learn about the phased array antennas and navigational aids.
3	Cellular & Mobile Communications	20A04703C	CO1	Know about cell coverage for signal and traffic, diversity techniques and mobile antennas by the use of Engineering Mathematics.
			CO2	Explain impairments due to multipath fading channel, fundamental techniques to overcome different fading effects, frequency management, Channel assignment and types of handoff.
			CO3	Apply concepts to solve problems on mobile antennas and cellular systems.
			CO4	Analyze Co-channel and Non Co-channel interferences, different Hand-offs and dropped call Rates.
			CO5	Evaluate performance of dropped call rate and false alarm rate.
			CO6	Compare different handoffs.
4	Management Science	20A52701b2	CO1	Understand the concepts & principles of anagement and designs of organization in a practical world.
			CO2	Apply the knowledge of Work-study principles & Quality Control techniques in industry.
			CO3	Analyze the concepts of HRM in Recruitment, Selection and Training & Development.
			CO4	Evaluate PERT/CPM Techniques for projects of

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				an enterprise and estimate time & cost of project & to analyze the business through SWOT.
			CO5	Create Modern technology in management science.
5	Software Engineering	20A05704C	CO1	Obtain basic software life cycle activity skills.
			CO2	Design software requirements specifications for given problems.
			CO3	Implement structure, object oriented analysis and design for given problems.
			CO4	Design test cases for given problems.
			CO5	Apply quality management concepts at the application level.
6	Renewable Energy Systems	20A02705	CO1	Understand various alternate sources of energy for different suitable application requirements.
			CO2	Understand the concepts of solar energy generation strategies and wind energy system.
			CO3	Analyze Solar and Wind energy systems.
			CO4	Understand the basics of Geothermal Energy Systems, various diversified energy scenarios of ocean, biomass and fuel cells.
7	Industrial IOT & Automation	20A04707	CO1	Discover key IIoT concepts including identification, sensors, localization, wireless protocols, data storage and security.
			CO2	Explore IoT technologies, architectures, standards, and regulation.
			CO3	Realize the value created by collecting, communicating, coordinating, and leveraging the data from connected devices.
			CO4	Examine technological developments that will likely shape the industrial landscape in the future.
			CO5	Understand how to develop and implement own IoT technologies, solutions, and applications.

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: II B.TECH - I SEM				BRANCH: EEE
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to
1	Complex variables and Transforms	20A54302	CO1	Understand the analyticity of complex functions and conformal mappings.
			CO2	Apply cauchy's integral formula and cauchy's integral theorem to evaluate improper integrals along contours.
			CO3	Understand the usage of laplace transforms, fourier transforms and z transforms.
			CO4	Evaluate the fourier series expansion of periodic functions.
			CO5	Understand the use of fourier transforms and apply z transforms to solve difference equations.
2	Electrical Circuit Analysis	20A02301T	CO1	Understand the analysis of three phase balanced and unbalanced circuits and to measure active and reactive powers in three phase circuits.
			CO2	To get knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.
			CO3	Applications of Fourier transforms to electrical circuits excited by non-sinusoidal sources are known.
			CO4	To design filters and equalizers.
3	DC Machines & Transformers	20A02302T	CO1	Understand the concepts of magnetic circuits, principle and operations of DC machines, starters and single and three phase transformers.
			CO2	Also analyze the performance characteristics with the help of OC and SC tests of transformer.
			CO3	Analyze armature reaction, parallel operation, speed control and characteristics of DC machines.
			CO4	Evaluate generated emf, back emf, speed, efficiency and regulations of DC machines and efficiency and regulation of transformer also load sharing of parallel connected transformers.
			CO5	Design winding diagrams of DC machines and equivalent circuit of transformer.
4	Digital Logic Design	20A04303T	CO1	Understand the properties of Boolean algebra, other logic operations, and minimization of Boolean functions using Karnaugh map.
			CO2	Make use of the concepts to solve the problems related to the logic circuits.
			CO3	Analyze the combinational and sequential logic circuits.
			CO4	Develop digital circuits using HDL, and Compare various Programmable logic devices

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			CO5	Design various logic circuits using Boolean algebra, combinational and sequential logic circuits.
5	Managerial Economics & Financial Analysis	20A52301	CO1	Define the concepts related to Managerial Economics, financial accounting and management.
			CO2	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and Markets.
			CO3	Apply the Concept of Production cost and revenues for effective Business decision.
			CO4	Analyze how to invest their capital and maximize returns.
			CO5	Evaluate the capital budgeting techniques.
			CO6	Develop the accounting statements and evaluate the financial performance of business entity.
6	Electrical Circuit Analysis Lab	20A02301P	CO1	Understand and experimentally verify various resonance phenomenon.
			CO2	Understand and analyze various current locus diagrams.
			CO3	Apply and experimentally analyze two port network parameters.
7	DC Machines & Transformers Lab	20A02302P	CO1	Able to conduct and analyze load test on DC shunt generator.
			CO2	Able to understand and analyze magnetization characteristics of DC shunt generator.
			CO3	Able to understand and analyze speed control techniques and efficiency of DC machines.
			CO4	Able to understand to predetermine efficiency and regulation of single-phase Transformers.
8	Digital Logic Design Lab	20A04303P	CO1	Understand the pin configuration of various digital ICs used in the lab.
			CO2	Conduct the experiment and verify the properties of various logic circuits.
			CO3	Analyze the sequential and combinational circuits.
			CO4	Design of any sequential/combinational circuit using Hardware/ HDL.
9	Application Development with Python	20A05305	CO1	Identify the issues in software requirements specification and enable to write SRS documents for software development problems
			CO2	Explore the use of Object oriented concepts to solve Real-life problems
			CO3	Design database for any real-world problem
			CO4	Solve mathematical problems using Python programming language

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10	Universal Human Values	20A52201	CO1	Students are expected to become more aware of themselves, and their surroundings (family, society, nature)
			CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
			CO3	They would have better critical ability.
			CO4	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
			CO5	It is hoped that they would be able to apply what they have learnt to their own self in different day to-day settings in real life, at least a beginning would be made in this direction.

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: II B.TECH - II SEM				BRANCH: EEE
S.No	Subject Name	Subject Code		Course Outcomes (CO): Student will be able to

S.No	Subject Name	Subject Code	CO	Course Outcomes (CO): Student will be able to
1	Numerical Methods & Probability Theory	20A54402	CO1	Apply numerical methods to solve algebraic and transcendental equations.
			CO2	Derive interpolating polynomials using interpolation formulae.
			CO3	Solve differential and integral equations numerically.
			CO4	Apply Probability theory to find the chances of happening of events.
			CO5	Understand various probability distributions and calculate their statistical constants.
2	Analog Electronic Circuits	20A04404T	CO1	List various types of feedback amplifiers, oscillators and large signal Amplifiers.
			CO2	Explain the operation of various electronic circuits and linear ICs.
			CO3	Apply various types of electronic circuits to solve engineering problems.
			CO4	Analyse various electronic circuits and regulated power supplies for proper understanding
			CO5	Justify choice of transistor configuration in a cascade amplifier.
			CO6	Design electronic circuits for a given specification.
3	Power Electronics	20A02401T	CO1	Understand the operation, characteristics and usage of basic Power Semiconductor Devices.
			CO2	Understand different types of Rectifier circuits with different operating conditions.
			CO3	Understand DC-DC converters operation and analysis of their characteristics.
			CO4	Understand the construction and operation of voltage source inverters, Voltage Controllers and Cyclo Converters.
			CO5	Apply all the above concepts to solve various numerical problem solving.
4	AC Machines	20A02402T	CO1	Understand the basics of ac machine windings, construction, principle of working, equivalent circuit of induction and synchronous machines.
			CO2	Analyze the phasor diagrams of induction and synchronous machine, parallel operation of alternators, synchronization and load division of synchronous generators.

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			CO3	Apply the concepts to determine V and inverted V curves and power circles of synchronous motor.
			CO4	Analyze the various methods of starting in both induction and synchronous machines.
5	Electromagnetic Field Theory	20A02403T	CO1	Understand the concept of electrostatics.
			CO2	Understand the concepts of Conductors and Dielectrics.
			CO3	Understand the fundamental laws related to Magneto Statics.
			CO4	Understand the concepts of Magnetic Potential and Time varying Fields.
6	Analog Electronic Circuits Lab	20A04404P	CO1	Analyze various amplifier circuits.
			CO2	Design multistage amplifiers.
			CO3	Design OPAMP based analog circuits.
			CO4	Understand working of logic gates.
			CO5	Design and implement Combinational and Sequential logic circuits.
7	Power Electronics Lab	20A02401P	CO1	Understand and analyze various characteristics of power electronic devices with gate firing circuits and forced commutation techniques.
			CO2	Analyze the operation of single-phase half &fully-controlled converters and inverters with different types of loads.
			CO3	Analyze the operation of DC-DC converters, single-phase AC Voltage controllers, cyclo converters with different loads.
			CO4	Create and analyze various power electronic converters using PSPICE software.
8	AC Machines Lab	20A02402P	CO1	Analyze and apply load test, no-load and blocked-rotor tests for construction of circle diagram and equivalent circuit determination in a single phase induction motor.
			CO2	Predetermine regulation of a three-phase alternator by synchronous impedance &m.m.f methods.
			CO3	Predetermine the regulation of Alternator by Zero Power Factor method Xd and Xq determination of salient pole synchronous machine.
			CO4	Evaluate and analyze V and inverted V curves of 3 phase synchronous motor
9	Circuits Simulation & Analysis using PSPICE	20A02404	CO1	Simulation of various circuits using PSPICE software.
			CO2	Simulation of single-phase half & fully-

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				controlled converters, and inverters
			CO3	Simulation of single-phase AC Voltage controllers with different loads
10	Design Thinking for Innovation	20A99401	CO1	Define the concepts related to design thinking.
			CO2	Explain the fundamentals of Design Thinking and innovation
			CO3	Apply the design thinking techniques for solving problems in various sectors.
			CO4	Analyse to work in a multidisciplinary environment
			CO5	Evaluate the value of creativity
			CO6	Formulate specific problem statements of real time issues

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: III B.TECH - I SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Power System Architecture	20A02501	CO1	Remember and understand the concepts of conventional and nonconventional power generating systems.
			CO2	Apply the economic aspects to the power generating systems.
			CO3	Analyse the transmission lines and obtain the transmission line parameters and constants.
			CO4	Design and develop the schemes to improve the generation and capability of transmission line to meet the day-to-day power requirements.
2	Control Systems	20A02502T	CO1	Understand the concepts of control systems classification, feedback effect, mathematical modelling, time response and frequency response characteristics, state space analysis
			CO2	Apply the concepts of Block diagram reduction, Signal flow graph method and state space formulation for obtaining mathematical and Root locus, Bode, Nyquist, Polar plots for stability calculations, controllability and observability and demonstrate the use of these techniques.
			CO3	Analyse time response analysis, error constants, and stability characteristics of a given mathematical model using different methods.
			CO4	Design and develop different compensators, controllers and their performance evaluation for various conditions. Implement them in solving various engineering applications.
3	Measurements & Sensors	20A02503T	CO1	Able to Understand the working of various instruments and equipments used for the measurement of various electrical engineering parameters like voltage, current, power, phase etc in industry as well as in power generation, transmission and distribution sectors
			CO2	Able to analyze and solve the varieties of problems and issues coming up in the vast field of electrical measurements.
			CO3	Analyse the different operation of extension range ammeters and voltmeters, DC and AC bridge for measurement of parameters and

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				different characteristics of periodic and aperiodic signals using CRO.
			CO4	Design and development of various voltage and current measuring meters and the varieties of issues coming up in the field of electrical measurements.
4	Switch gear and Protection	20A02504a	CO1	Understand the operation of different circuit breakers.
			CO2	Analyze the concepts of different relays which are used in real time power system operation.
			CO3	Apply various protective schemes for Transformers, Rotating machines, Bus bars, Feeders.
			CO4	Develop the practical applications of power system operation and planning.
5	Optimization Techniques	20A54501	CO1	Formulate a linear programming problem and solve it by various methods.
			CO2	Give an optimal solution in assignment jobs, give transportation of items from sources to destinations.
			CO3	Identify strategies in a game for optimal profit.
			CO4	Implement project planning.
6	Control Systems Lab	20A02502P	CO1	Get the knowledge of feedback control and transfer function of DC servo motor.
			CO2	Model the systems and able to design the controllers and compensators.
			CO3	Get the knowledge about the effect of poles and zeros location on transient and steady state behavior of second order systems and can implement them to practical systems and MATLAB.
			CO4	Determine the performance and time domain specifications of first and second order systems.
7	Measurements & Sensors Lab	20A02503P	CO1	Calibrate various electrical measuring instruments.
			CO2	Accurately determine the values of inductance and capacitance using AC bridges.
			CO3	Compute the coefficient of coupling between two coupled coils.
			CO4	Accurately determine the values of very low resistances.
8	Soft Skills	20A52401	CO1	Memorize various elements of effective communicative skills.
			CO2	Interpret people at the emotional level through

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				emotional intelligence.
			CO3	Apply critical thinking skills in problem solving
			CO4	analyse the needs of an organization for team building.
			CO5	Judge the situation and take necessary decisions as a leader.
			CO6	Develop social and work-life skills as well as personal and emotional well-being

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: III B.TECH - II SEM				**BRANCH: EEE**
S.No	**Subject Name**	**Subject Code**		**Course Outcomes (CO): Student will be able to**
1	Power System Analysis	20A02601T	CO1	Remember and understand the concepts of per unit values, Y Bus and Z bus formation, load flow studies, symmetrical and unsymmetrical fault calculations.
			CO2	Apply the concepts of good algorithm for the given power system network and obtain the converged load flow solution and experiment some of these methods using modern tools and examine the results.
			CO3	Analyse the symmetrical faults and unsymmetrical faults and done the fault calculations, analyse the stability of the system and improve the stability. Demonstrate the use of these techniques through good communication skills.
			CO4	Develop accurate algorithms for different networks and determine load flow studies and zero, positive and negative sequence impedances to find fault calculations.
2	Digital Signal Computing Platforms	20A04602T	CO1	Understand the basic architecture & pin diagram of 8086 microprocessor, 8051 Microcontroller, DSP Processor and FPGA Processors.
			CO2	Apply the concepts to design Assembly language programming to perform a given task, Interrupt service routines for all interrupt types.
			CO3	Design Real time applications by writing Assembly Language Programs for the Digital Signal Processors, Xilinx programming for Spartan FPGA boards and use Interrupts for real-time control applications.
			CO4	Analyse various real time systems by using various controllers.
3	Digital Signal Processing	20A04502T	CO1	Formulate difference equations for the given discrete time systems.
			CO2	Apply FFT algorithms for determining the DFT of a given signal.
			CO3	Compare FIR and IIR filter structures.
			CO4	Design digital filter (FIR & IIR) from the given specifications.
			CO5	Outline the concept of multirate DSP and applications of DSP.

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4	HVDC & Facts	20A02604a	CO1	Understand the necessity of HVDC systems as emerging transmission networks.
			CO2	Understand the necessity of reactive power compensation devices.
			CO3	Design equivalent circuits of various HVDC system configurations.
			CO4	Design and analysis of various FACTS devices.
5	Principles of Operating System	20A05605A	CO1	Demonstrate and understand of computer systems and operating systems functions.
			CO2	Distinguish between process and thread and classify scheduling algorithms.
			CO3	Solve synchronization and deadlock problems.
			CO4	Compare various memory management schemes.
			CO5	Explain file systems concepts and i/o management.
6	Power Systems Analysis Lab	20A02601P	CO1	Get the practical knowledge on calculation of sequence impedance, fault currents, voltages and sub transient reactance's.
			CO2	Get the practical knowledge on how to draw the equivalent circuit of three winding transformer.
			CO3	Get the knowledge on development of MATLAB program for formation of Y and Z buses.
			CO4	Get the knowledge on development of MATLAB programs for Gauss-Seidel and Fast Decouple Load Flow studies.
			CO5	Get the knowledge on development of SIMULINK model for single area load frequency problem.
7	Digital Computing Platforms Lab	20A02602T	CO1	Write Assembly language programming on 8086 Microprocessors.
			CO2	To Interface various devices with 8086
			CO3	To develop MASAM Programming
			CO4	For Interfacing of 8051 Microcontroller with its peripheral devices.
6	Digital Signal Processing Lab	20A04502P	CO1	Implement various DSP Algorithms using software packages.
			CO2	Implement DSP algorithms with Digital Signal Processor.
			CO3	Analyze and observe magnitude and phase characteristics (Frequency response Characteristics) of digital IIR-Butterworth, Chebyshev filters.
			CO4	Analyze and observe magnitude and phase

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				characteristics (Frequency response Characteristics) of digital FIR filters using window techniques.
			CO5	Analyze digital filters using Software Tools.
9	Applications of Soft Computing Tools In Electrical Engineering	20A02606	CO1	Understand the basic concepts of Electrical Engineering.
			CO2	Apply the concepts to design MATLAB models.
			CO3	Analyse various Electrical engineering applications through MATLAB.
			CO4	Develop real time models using MATLAB.
10	Intellectual Property Rights and Patents	20A99601	CO1	Understand IPR law& Cyber law
			CO2	Discuss registration process, maintenance and litigations associated with trademarks.
			CO3	Illustrate the copy right law.
			CO4	Enumerate the trade secret law.

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: IV B.TECH - I SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Electrical & Electronics Instrumentation	20A02701c	CO1	Understand Measuring systems, error measurements, test signals, different types of data transmission and modulation techniques.
			CO2	Analyze various telemetry systems, basic operation of Data acquisition systems, measuring meters and signal analyzers.
			CO3	Understand Transducers and their measurement of electrical and non-electrical quantities.
			CO4	Apply the concepts to design various applications of the above.
2	Electrical Distribution System & Automation	20A02702A	CO1	Understand basics of distribution systems and substations, modelling of various loads.
			CO2	Evaluation of load flow solutions in distribution system.
			CO3	Evaluation of power loss and feeder cost
			CO4	Analyze the concepts of SCADA, Automation distribution system and management.
3	Linear & Digital IC Applications	20A04403T	CO1	List out the characteristics of Linear and Digital ICs.
			CO2	Discuss the various applications of linear & Digital ICs.
			CO3	Solve the application-based problems related to linear and digital ICs.
			CO4	Analyze various applications based circuits of linear and digital ICs.
			CO5	Design the circuits using either linear ICs or Digital ICs from the given specifications.
4	Management Science	20A52701b2	CO1	Understand the concepts & principles of anagement and designs of organization in a practical world.
			CO2	Apply the knowledge of Work-study principles & Quality Control techniques in industry.
			CO3	Analyze the concepts of HRM in Recruitment, Selection and Training & Development.
			CO4	Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project & to analyze the business through SWOT.
			CO5	Create Modern technology in management science.
5	Software Engineering	20A05704C	CO1	Obtain basic software life cycle activity skills.
			CO2	Design software requirements specifications for

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				given problems.
			CO3	Implement structure, object oriented analysis and design for given problems.
			CO4	Design test cases for given problems.
			CO5	Apply quality management concepts at the application level.
6	Principles of Cellular & Mobile Communications	20A04706	CO1	Understand the concepts and operation of cellular systems.
			CO2	Apply the concepts of cellular systems to solve engineering problems.
			CO3	Analyse cellular systems for meaningful conclusions, Evaluate suitability of a cellular system in real time applications.
			CO4	Design cellular patterns based on frequency reuse factor.
7	Energy Conservation & Audit	20A02706	CO1	Understand energy conservation policies in India.
			CO2	Design energy conservation techniques in electrical machines.
			CO3	Apply energy conservation techniques in electrical installations, Co-generation and relevant tariff for reducing losses in facilities.
			CO4	Design and analyze energy audit for electrical system.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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YEAR/SEM: II B.TECH - I SEM				BRANCH: CSE
S.No	Subject Name	Subject Code		Course Outcomes (CO): Student will be able to
1	Discrete Mathematics & Graph Theory	20A54304	CO1	Apply mathematical logic to solve problems.
			CO2	Understand the concepts and perform the operations related to sets, relations and functions.
			CO3	Gain the conceptual background needed and identify structures of algebraic nature.
			CO4	Apply basic counting techniques to solve combinatorial problems.
			CO5	Formulate problems and solve recurrence relations.
			CO6	Apply Graph Theory in solving computer science problems
2	Digital Electronics& Microprocessors	20A04304T	CO1	Design any Logic circuit using basic concepts of Boolean Algebra.
			CO2	Design any Logic circuit using basic concepts of PLDs.
			CO3	Design and develop any application using 8086 Microprocessor.
			CO4	Design and develop any application using 8051 Microcontroller.
3	Advanced Data Structures & Algorithms	20A05301T	CO1	Analyze the complexity of algorithms and apply asymptotic notations.
			CO2	Apply non-linear data structures and their operations.
			CO3	Understand and apply greedy, divide and conquer algorithms.
			CO4	Develop dynamic programming algorithms for various real-time applications.
			CO5	Illustrate Backtracking algorithms for various applications.
4	Object Oriented Programming Through Java	20A05302T	CO1	Solve real-world problems using OOP techniques.
			CO2	Apply code reusability through inheritance, packages and interfaces
			CO3	Solve problems using java collection framework and I/O classes.
			CO4	Develop applications by using parallel streams for better performance.
			CO5	Develop applets for web applications.
			CO6	Build GUIs and handle events generated by user interactions.

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			CO7	Use the JDBC API to access the database
5	Computer Organization	20A05303	CO1	Understand computer architecture concepts related to the design of modern processors, memories and I/Os.
			CO2	Identify the hardware requirements for cache memory and virtual memory.
			CO3	Design algorithms to exploit pipelining and multiprocessors.
			CO4	Understand the importance and trade-offs of different types of memories.
			CO5	Identify pipeline hazards and possible solutions to those hazards.
6	Digital Electronics& Microprocessors Lab	20A04304P	CO1	Design any Logic circuit using basic concepts of Boolean Algebra.
			CO2	Design any Logic circuit using basic concepts of PLDs.
			CO3	Design and develop any application using 8086 Microprocessor.
			CO4	Design and develop any application using 8051 Microcontroller.
7	Advanced Data Structures and Algorithms Lab	20A05301P	CO1	Understand and apply data structure operations.
			CO2	Understand and apply non-linear data structure operations.
			CO3	Apply Greedy, divide and conquer algorithms.
			CO4	Develop dynamic programming algorithms for various real-time applications.
			CO5	Illustrate and apply backtracking algorithms, further able to understand non-deterministic algorithms.
8	Object Oriented Programming Through Java Lab	20A05302P	CO1	Recognize the Java programming environment.
			CO2	Develop efficient programs using multi threading.
			CO3	Design reliable programs using Java exception handling features.
			CO4	Extend the programming functionality supported by Java.
			CO5	Select appropriate programming constructs to solve a problem.
9	Web application Development	20A05304	CO1	Construct web sites with valid HTML, CSS, Java Script
			CO2	Create responsive Web designs that work on phones, tablets, or traditional laptops and wide screen monitors.
			CO3	Develop websites using jQuery to provide interactivity and engaging user experiences

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			CO4	Embed Google chart tools in a website for better visualization of data.
			CO5	Design and develop web applications using Content Management Systems like WordPress
10	Environmental Science	20A99201	CO1	Grasp multidisciplinary nature of environmental studies and various renewable and nonrenewable resources.
			CO2	Understand flow and bio-geo- chemical cycles and ecological pyramids.
			CO3	Understand various causes of pollution and solid waste management and related preventive measures.
			CO4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.
			CO5	Casus of population explosion, value education and welfare programmes.

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YEAR/SEM: II B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Deterministic & Stochastic Statistical Methods	20A54404	CO1	Apply logical thinking to problem-solving in context.
			CO2	Employ methods related to these concepts in a variety of data science applications.
			CO3	Use appropriate technology to aid problem-solving and data analysis.
			CO4	The Bayesian process of inference in probabilistic reasoning system.
			CO5	Demonstrate skills in unconstrained optimization.
2	Database Management Systems	20A05401T	CO1	Design a database for a real-world information system
			CO2	Define transactions that preserve the integrity of the database
			CO3	Generate tables for a database
			CO4	Organize the data to prevent redundancy
			CO5	Pose queries to retrieve the information from the database.
3	Operating Systems	20A05402T	CO1	Realize how applications interact with the operating system
			CO2	Analyze the functioning of a kernel in an Operating system.
			CO3	Summarize resource management in operating systems
			CO4	Analyze various scheduling algorithms
			CO5	Examine concurrency mechanism in Operating Systems
			CO6	Apply memory management techniques in the design of operating systems
			CO7	Understand the functionality of the file system
			CO8	Compare and contrast memory management techniques.
			CO9	Understand deadlock prevention and avoidance.
			CO10	Perform administrative tasks on Linux based systems.
4	Software Engineering	20A05403T	CO1	Obtain basic software life cycle activity skills.
			CO2	Design software requirements specifications for given problems.
			CO3	Implement structure, object oriented analysis and design for given problems.
			CO4	Design test cases for given problems.

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			CO5	Apply quality management concepts at the application level.
5	Managerial Economics & Financial Analysis	20A52301	CO1	Define the concepts related to Managerial Economics, financial accounting and management.
			CO2	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets.
			CO3	Apply the Concept of Production cost and revenues for effective Business decision.
			CO4	Analyze how to invest their capital and maximize returns.
			CO5	Evaluate the capital budgeting techniques.
			CO6	Develop the accounting statements and evaluate the financial performance of business entity.
6	Database Management SystemsLab	20A05401P	CO1	Design database for any real world problem
			CO2	Implement PL/SQL programs
			CO3	Define SQL queries
			CO4	Decide the constraints
			CO5	Investigate for data Inconsistency.
7	Operating Systems Lab	20A05402P	CO1	Trace different CPU Scheduling algorithms.
			CO2	Implement Bankers Algorithms to Avoid and prevent the Dead Lock.
			CO3	Evaluate Page replacement algorithms.
			CO4	Illustrate the file organization techniques.
			CO5	Illustrate shared memory proces.
			CO6	Design new scheduling algorithms.
8	Software Engineering Lab	20A05403P	CO1	Acquaint with historical and modern software methodologies.
			CO2	Understand the phases of software projects and practice the activities of each phase.
			CO3	Practice clean coding.
			CO4	Take part in project management.
			CO5	Adopt skills such as distributed version control, unit testing, integration testing, build management, and deployment.
9	Exploratory Data Analysis with R	20A05404	CO1	Install and use R for simple programming tasks.
			CO2	Extend the functionality of R by using add-on packages.
			CO3	Extract data from files and other sources and perform various data manipulation tasks on them.
			CO4	Explore statistical functions in R.
			CO5	Use R Graphics and Tables to visualize results of various statistical operations on data.
			CO6	Apply the knowledge of R gained to data

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					Analytics for real-life applications.
10	Design Thinking for Innovation	20A99401		CO1	Define the concepts related to design thinking.
				CO2	Explain the fundamentals of Design Thinking and innovation.
				CO3	Apply the design thinking techniques for solving problems in various sectors.
				CO4	Analyse to work in a multidisciplinary environment.
				CO5	Evaluate the value of creativity.
				CO6	Formulate specific problem statements of real time issues.

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: III B.TECH - I SEM				BRANCH: CSE
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Computer Networks	20A05501T	CO1	Identify the software and hardware components of a computer network.
			CO2	Design software for a computer network.
			CO3	Develop new routing, and congestion control algorithms.
			CO4	Assess critically the existing routing protocols.
			CO5	Explain the functionality of each layer of a computer network.
			CO6	Choose the appropriate transport protocol based on the application requirements.
2	Artificial Intelligence	20A05502T	CO1	Apply searching techniques for solving a problem.
			CO2	Design Intelligent Agents.
			CO3	Develop Natural Language Interface for Machines.
			CO4	Design mini robots.
			CO5	Summarize past, present and future of Artificial Intelligence.
3	Formal Languages and Automata Theory	20A05503	CO1	List types of Turing Machines.
			CO2	Design Turing Machine.
			CO3	Formulate decidability and undesirability problems.
4	Software Project Management	20A05504a	CO1	Describe the fundamentals of Project Management.
			CO2	Recognize and use Project Scheduling Techniques.
			CO3	Familiarize with Project Control Mechanisms.
			CO4	Understand Team Management.
			CO5	Recognize the importance of Project Documentation and Evaluation.
5	Optimization Techniques	20A54501	CO1	Formulate a linear programming problem and solve it by various methods.
			CO2	Give an optimal solution in assignment jobs, give transportation of items from sources to destinations.
			CO3	Identify strategies in a game for optimal profit.
			CO4	Implement project planning.
6	Computer Networks Lab	20A05501P	CO1	Design scripts for Wired network simulation.
			CO2	Design scripts of static and mobile wireless networks simulation.
			CO3	Analyze the data traffic using tools.

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			CO4	Design JAVA programs for client-server communication.
			CO5	Construct a wired and wireless network using the real hardware.
7	Artificial Intelligence Lab	20A05502P	CO1	Implement search algorithms.
			CO2	Solve Artificial intelligence problems.
			CO3	Design chatbot and virtual assistant.
8	Advanced Web Application Development	20A05506	CO1	Create dynamic websites using PHP and MySQL.
			CO2	Handle Authentication using Sessions, JWT.
			CO3	Secure Web applications from common attacks like Injection, XSS.
			CO4	Integrate Libraries to dynamically generate documents, spreadsheets, pdfs, etc.
			CO5	Host Websites in traditional web hosting platforms and also Cloud based infrastructure

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: III B.TECH - II SEM				BRANCH: CSE
S.No	Subject Name	Subject Code		Course Outcomes (CO): Student will be able to
1	Compiler Design	20A05601T	CO1	Differentiate the various phases of a compiler.
			CO2	Design code generator.
			CO3	Apply code optimization techniques.
			CO4	Identify the tokens and verify the code.
2	Machine Learning	20A05602T	CO1	Identify machine learning techniques suitable for a given problem.
			CO2	Solve the problems using various machine learning techniques.
			CO3	Design application using machine learning techniques.
3	Internet of Things	20A05603T	CO1	Understand general concepts of Internet of Things.
			CO2	Apply design concept to IoT solutions.
			CO3	Analyze various M2M and IoT architectures.
			CO4	Evaluate design issues in IoT applications.
			CO5	Create IoT solutions using sensors, actuators and Devices.
4	Software Testing	20A05604a	CO1	Understand the basic testing procedures.
			CO2	Develop reliable software.
			CO3	Design test cases for testing different programming constructs.
			CO4	Test the applications by applying different testing methods and automation tools.
5	Basic VLSI Design	20A04606	CO1	Identify the CMOS layout levels, and the design layers used in the process sequence.
			CO2	Describe the general steps required for processing of CMOS integrated circuits.
			CO3	Design static CMOS combinational and sequential logic at the transistor level.
			CO4	Demonstrate different logic styles such as complementary CMOS logic, pass-transistor Logic, dynamic logic, etc.
			CO5	Interpret the need for testability and testing methods in VLSI.
6	Intellectual Property Rights & Patent	20A99601	CO1	Understand IPR law & Cyber law
			CO2	Discuss registration process, maintenance and litigations associated with trademarks
			CO3	Illustrate the copy right law
			CO4	Enumerate the trade secret law.
7	Compiler Design Lab	20A5601P	CO1	Design, develop, and implement a compiler for any language.

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			CO2	Use LEX and YACC tools for developing a scanner and a parser.
			CO3	Design and implement LL and LR parsers
			CO4	Design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity
8	Machine Learning Lab	20A5602P	CO1	Understand the Mathematical and statistical prospectives of machine learning algorithms through python programming
			CO2	Appreciate the importance of visualization in the data analytics solution.
			CO3	Derive insights using Machine learning algorithms
9	Internet of Things Lab	20A05603P	CO1	Know the various IoT sensors and understand the functionality.
			CO2	Design and analyze IoT experiments and transfer the data to IoT Clouds.
			CO3	Design the IoT systems for real time applications.
			CO4	Understand Drones and Perform Internet of Drones Experiments.
10	Soft Skills	20A52401	CO1	Memorize various elements of effective communicative skills.
			CO2	Interpret people at the emotional level through emotional intelligence.
			CO3	Apply critical thinking skills in problem solving
			CO4	Analyse the needs of an organization for team building.
			CO5	Judge the situation and take necessary decisions as a leader.
			CO6	Develop social and work-life skills as well as personal and emotional well-being

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: IV B.TECH - I SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to
1	Cloud Computing	20A05701a	CO1	Ability to create cloud computing environment.
			CO2	Ability to design applications for Cloud environment.
			CO3	Design & develop backup strategies for cloud data based on features.
			CO4	Use and Examine different cloud computing services.
			CO5	Apply different cloud programming model as per need.
2	Fundamentals of AR/VR	20A05702a	CO1	Demonstrate human interaction with computers.
			CO2	Animate using Virtual reality and 3D Art optimization.
			CO3	Design audio and video interaction paradigms
			CO4	Design Data visualization tools.
			CO5	Apply VR/AR in various fields in industry
3	Full Stack Development	20A05703a	CO1	Develop a fully functioning website and deploy on a web server.
			CO2	Gain Knowledge about the front end and back end tools.
			CO3	Find and use of code packages based on their documentation to produce working results in a project.
			CO4	Create web pages that function using external data.
4	Management Science	20A52701b	CO1	Understand the concepts & principles of management and designs of organization in a practical world.
			CO2	Apply the knowledge of Work-study principles & Quality Control techniques in industry
			CO3	Analyze the concepts of HRM in Recruitment, Selection and Training & Development.
			CO4	Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project & to analyze the business through SWOT.
			CO5	Create Modern technology in management science
5	Principles of Communication Systems	20A04506P	CO1	Understand the concept of various modulation schemes and multiplexing
			CO2	Apply the concept of various modulation schemes to solve engineering problems
			CO3	Analyse various modulation schemes, and

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				evaluate various modulation scheme in real time applications.
6	Renewable Energy Systems	20A02705	CO1	Understand various alternate sources of energy for different suitable application requirements.
			CO2	Understand the concepts of solar energy generation strategies and wind energy system.
			CO3	Analyze Solar and Wind energy systems.
			CO4	Understand the basics of Geothermal Energy Systems, various diversified energy scenarios of ocean, biomass and fuel cells.
7	Mobile Application Development	20A05706	CO1	Demonstrate the configuration of Android Software Development tools.
			CO2	Design and develop Mobile Applications using Android and Kotlin.
			CO3	Develop a complex android application by using apis, Libraries, and message handling Techniques.
			CO4	Construct the mobile application using a hybrid framework or SDK.
			CO5	Release and publish an application on Google Play Store.

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DEPARTMENT OF

BASIC SCIENCE & HUMANITIES

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: I B.TECH - I SEM				BRANCH: ECE & EEE
S.No	Subject Name	Subject Code		Course Outcomes (CO): Student will be able to
1	Linear Algebra and Calculus	20A54101	CO1	Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.
			CO2	Utilize mean value theorems to real life problems.
			CO3	Familiarize with functions of several variables which is useful in optimization.
			CO4	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems
			CO5	Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions
2	Applied Physics	20A56201T	CO1	Study the different realms of physics and their applications in both scientific and technological systems through physical optics.
			CO2	Identify the wave properties of light and the interaction of energy with the matter.
			CO3	Asses the electromagnetic wave propagation and its power in different media.
			CO4	Understands the response of dielectric and magnetic materials to the applied electric and magnetic fields.
			CO5	Study the quantum mechanical picture of subatomic world along with the discrepancies between the classical estimates and laboratory observations of electron transportation phenomena by free electron theory and band theory.
			CO6	Elaborate the physical properties exhibited by materials through the understanding of properties of semiconductors and super conductors.
3	Communicative English	20A52101T	CO1	Retrieve the knowledge of basic grammatical concepts.
			CO2	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO3	Apply grammatical structures to formulate

				sentences and correct word forms.
			CO4	Analyze discourse markers to speak clearly on a specific topic in informal discussions.
			CO5	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
			CO6	Create a coherent paragraph interpreting a figure/graph/chart/table.
4	Fundamentals of Electrical Circuits	20A02101T	CO1	Given a network, find the equivalent impedance by using network reduction techniques and determine the current through any element and voltage across and power through any element.
			CO2	Given a circuit and the excitation, determine the real power, reactive power, power factor etc,.
			CO3	Apply the network theorems suitably.
			CO4	Determine the Dual of the Network, develop the Cut Set and Tie-set Matrices for a given Circuit. Also understand various basic definitions and concepts.
5	Engineering Drawing	20A03101T	CO1	Draw various curves applied in engineering.
			CO2	Show projections of solids and sections graphically.
			CO3	Draw the development of surfaces of solids.
6	Engineering Graphics Lab	20A03101P	CO1	Use computers as a drafting tool.
			CO2	Draw isometric and orthographic drawings using CAD packages.
7	Applied Physics Lab	20A56201P	CO1	Operate optical instruments like microscope and spectrometer.
			CO2	Determine thickness of a hair/paper with the concept of interference.
			CO3	Estimate the wavelength of different colors using diffraction grating and resolving power.
			CO4	Plot the intensity of the magnetic field of circular coil carrying current with distance.
			CO5	Evaluate the acceptance angle of an optical fiber and numerical aperture.
			CO6	Determine the resistivity of the given semiconductor using four probe method.
			CO7	Identify the type of semiconductor i.e., n-type or p-type using hall effect.
			CO8	Calculate the band gap of a given semiconductor.
8	Communicative English Lab	20A52101P	CO1	Listening and repeating the sounds of English Language.
			CO2	Understand the different aspects of the English

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				language.
			CO3	Proficiency with emphasis on LSRW skills
			CO4	Apply communication skills through various language learning activities.
			CO5	Analyze the English speech sounds, stress, rhythm, intonation and syllable.
			CO6	Division for better listening and speaking comprehension.
			CO7	Evaluate and exhibit acceptable etiquette essential in social and professional settings.
			CO8	Create awareness on mother tongue influence and neutralize it in order to
			CO9	Improve fluency in spoken English.
9	Fundamentals of Electrical Circuits Lab	20A02101P	CO1	Remember, understand and apply various theorems and verify practically.
			CO2	Understand and analyze active, reactive power measurements in three phase balanced & un balanced circuits.

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: I B.TECH - II SEM			BRANCH: ECE & EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Differential Equations & Vector Calculus	20A54201	CO1	Solve the differential equations related to various engineering fields.
			CO2	Identify solution methods for partial differential equations that model physical processes.
			CO3	Interpret the physical meaning of different operators such as gradient, curl and divergence.
			CO4	Estimate the work done against a field, circulation and flux using vector calculus.
2	Chemistry	20A51101T	CO1	Compare the materials of construction for battery and electrochemical sensors.
			CO2	Explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers & conducting polymers.
			CO3	Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.
			CO4	Apply the principle of Band diagrams in application of conductors and semiconductors.
3	C-Programming & Data Structures	20A05201T	CO1	Analyse the basicconcepts of C Programming language.
			CO2	Design applications in C, using functions, arrays, pointers and structures.
			CO3	Apply the concepts of Stacks and Queues in solving the problems.
			CO4	Explore various operations on Linked lists.
			CO5	Demonstrate various tree traversals and graph traversal techniques.
			CO6	Design searching and sorting methods.
4	Electronic Devices & Circuits	20A04101T	CO1	Understand principle of operation, characteristics and applications of Semiconductor diodes, Bipolar Junction Transistor and MOSFETs.
			CO2	Applying the basic principles solving the problems related to Semiconductor diodes, BJTs, and MOSFETs.
			CO3	Analyze diode circuits for different applications such as rectifiers, clippers and clampers also analyze biasing circuits of BJTs, and MOSFETs.
			CO4	Design of diode circuits and amplifiers using BJTs, and MOSFETs.

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			CO5	Compare the performance of various semiconductor devices.
5	Engineering Workshop	20A03202	CO1	Apply wood working skills in real world applications.
			CO2	Build different objects with metal sheets in real world applications.
			CO3	Apply fitting operations in various applications.
			CO4	Apply different types of basic electric circuit connections.
			CO5	Use soldering and brazing techniques.
6	IT Workshop	20A05202	CO1	Disassemble and Assemble a Personal Computer and prepare the computer ready to use.
			CO2	Prepare the Documents using Word processors and Prepare spread sheets for calculations using excel and also the documents using LAteX.
			CO3	Prepare Slide presentations using the presentation tool.
			CO4	Interconnect two or more computers for information sharing.
			CO5	Access the Internet and Browse it to obtain the required information.
7	C-Programming & Data Structures Lab	20A05201P	CO1	Demonstrate basic concepts of C programming language.
			CO2	Develop C programs using functions, arrays, structures and pointers.
			CO3	Illustrate the concepts Stacks and Queues.
			CO4	Design operations on Linked lists.
			CO5	Apply various Binary tree traversal techniques.
			CO6	Develop searching and sorting methods.
8	Chemistry Lab	20A51101P	CO1	Determine the cell constant and conductance of solutions.
			CO2	Prepare advanced polymer Bakelite materials.
			CO3	Measure the strength of an acid present in secondary batteries.
			CO4	Analysethe IR of some organic compounds.
9	Electronic Devices & Circuits Lab	20A04101P	CO1	Understand the basic characteristics and applications of basic electronic devices.
			CO2	Observe the characteristics of electronic devices by plotting graphs.
			CO3	Analyze the Characteristics of UJT, BJT, MOSFET.
			CO4	Design MOSFET / BJT based amplifiers for the given specifications.
			CO5	Simulate all circuits in PSPICE /Multisim.

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10	Environmental Science	20A99201	CO1	Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources.
			CO2	Understand flow and bio-geo- chemical cycles and ecological pyramids.
			CO3	Understand various causes of pollution and solid waste management and related preventive measures.
			CO4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.
			CO5	Casus of population explosion, value education and welfare programmes.

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COURSE OUTCOMES				REGULATION: R20
YEAR/SEM: I B.TECH - I SEM				**BRANCH: CSE**
S.No	**Subject Name**	**Subject Code**	**Course Outcomes (CO):** Student will be able to	
1	Linear Algebra and Calculus	20A54101	CO1	Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.
			CO2	Utilize mean value theorems to real life problems.
			CO3	Familiarize with functions of several variables which is useful in optimization (L3).
			CO4	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems
			CO5	Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions
2	Chemistry	20A51101T	CO1	Compare the materials of construction for battery and electro chemical sensors.
			CO2	Explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers& conducting polymers.
			CO3	Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.
			CO4	Apply the principle of Band diagrams in application of conductors and semiconductors.
3	C-Programming & Data Structures	20A05201T	CO1	Analyse the basic concepts of C Programming language.
			CO2	Design applications in C, using functions, arrays, pointers and structures.
			CO3	Apply the concepts of Stacks and Queues in solving the problems.
			CO4	Explore various operations on Linked lists.
			CO5	Demonstrate various tree traversals and graph traversal techniques.
			CO6	Design searching and sorting methods.
4	Basic Electrical & Electronics Engineering	20A02101T	CO1	Apply concepts of KVL/KCL in solving DC circuits.
			CO2	Understand and choose correct rating of a transformer for a specific application.
			CO3	Illustrate working principles of DC Motor.
			CO4	Identify type of electrical machine based on their operation.
			CO5	Understand the basics of Power generation,

				Transmission and Distribution.
			CO6	Explain the theory, construction, and operation of electronic devices.
			CO7	Apply the concept of science and mathematics to explain the working of diodes and its applications, working of transistor and to solve the simple problems based on the applications,
			CO8	Analyze small signal amplifier circuits to find the amplifier parameters.
			CO9	Design small signal amplifiers using proper biasing circuits to fix up proper Q point.
			CO10	Distinguish features of different active devices including Microprocessors.
5	Engineering Workshop	20A03202	CO1	Apply wood working skills in real world applications.
			CO2	Build different objects with metal sheets in real world applications.
			CO3	Apply fitting operations in various applications.
			CO4	Apply different types of basic electric circuit connections.
			CO5	Use soldering and brazing techniques.
6	IT Workshop	20A05202	CO1	Disassemble and Assemble a Personal Computer and prepare the computer ready to use.
			CO2	Prepare the Documents using Word processors and Prepare spread sheets for calculations .using excel and also the documents using LAteX.
			CO3	Prepare Slide presentations using the presentation tool.
			CO4	Interconnect two or more computers for information sharing.
			CO5	Access the Internet and Browse it to obtain the required information.
7	Chemistry Lab	20A51101P	CO1	Determine the cell constant and conductance of solutions.
			CO2	Prepare advanced polymer Bakelite materials.
			CO3	Measure the strength of an acid present in secondary batteries.
			CO4	Analysethe IR of some organic compounds.
8	C-Programming & Data Structures Lab	20A05201P	CO1	Demonstrate basic concepts of C programming language.
			CO2	Develop C programs using functions, arrays, structures and pointers.
			CO3	Illustrate the concepts Stacks and Queues.

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			CO4	Design operations on Linked lists.
			CO5	Apply various Binary tree traversal techniques.
			CO6	Develop searching and sorting methods.
9	Basic Electrical & Electronics Engineering Lab	20A02101P	CO1	Understand Kirchoff's Laws & Superposition theorem.
			CO2	Analyze the various characteristics on DC Machines by conducting various tests.
			CO3	Analyze I – V Characteristics of PV Cell.
			CO4	Apply the knowledge to perform various tests on 1-phase transformer.
			CO5	Learn the. characteristics of basic electronic devices like PN junction diode, Zener diode & BJT.
			CO6	Construct the given circuit in the lab
			CO7	Analyze the application of diode as rectifiers, clippers and clampers and other circuits.
			CO8	Design simple electronic circuits and verify its functioning.

B. Siddeswar

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COURSE OUTCOMES			REGULATION: R20	
YEAR/SEM: I B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Probability & Statistics	20A54202	CO1	Make use of the concepts of probability and their applications.
			CO2	Apply discrete and continuous probability distributions.
			CO3	Classify the concepts of data science and its importance.
			CO4	Interpret the association of characteristics and through correlation and regression tools.
			CO5	Design the components of a classical hypothesis test.
			CO6	Infer the statistical inferential methods based on small and large sampling tests.
2	Applied Physics	20A56201T	CO1	Study the different realms of physics and their applications in both scientific and technological systems through physical optics.
			CO2	Identify the wave properties of light and the interaction of energy with the matter.
			CO3	Asses the electromagnetic wave propagation and its power in different media.
			CO4	Understands the response of dielectric and magnetic materials to the applied electric and magnetic fields.
			CO5	Study the quantum mechanical picture of subatomic world along with the discrepancies between the classical estimates and laboratory observations of electron transportation phenomena by free electron theory and band theory.
			CO6	Elaborate the physical properties exhibited by materials through the understanding of properties of semiconductors and super conductors.
3	Communicative English	20A52101T	CO1	Retrieve the knowledge of basic grammatical concepts.
			CO2	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO3	Apply grammatical structures to formulate sentences and correct word forms.
			CO4	Analyze discourse markers to speak clearly on a specific topic in informal discussions.

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			CO5	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
			CO6	Create a coherent paragraph interpreting a figure/graph/chart/table.
4	Python Programming & Data Science	20A05101T	CO1	Apply the features of Python language in various real applications.
			CO2	Identify the appropriate data structure of Python for solving a problem.
			CO3	Demonstrate data analysis, manipulation and visualization of data using Python libraries.
			CO4	Enumerate machine learning algorithms.
			CO5	Analyze the various applications of Data Science.
			CO6	Design solutions for real-world problems using Python.
5	Engineering Drawing	20A03101T	CO1	Draw various curves applied in engineering.
			CO2	Show projections of solids and sections graphically.
			CO3	Draw the development of surfaces of solids.
6	Engineering Graphics Lab	20A03101P	CO1	Use computers as a drafting tool.
			CO2	Draw isometric and orthographic drawings using CAD packages.
7	Communicative English Lab	20A52101P	CO1	Listening and repeating the sounds of English Language.
			CO2	Understand the different aspects of the English language.
			CO3	Proficiency with emphasis on LSRW skills
			CO4	Apply communication skills through various language learning activities.
			CO5	Analyze the English speech sounds, stress, rhythm, intonation and syllable.
			CO6	Division for better listening and speaking comprehension.
			CO7	Evaluate and exhibit acceptable etiquette essential in social and professional settings.
			CO8	Create awareness on mother tongue influence and neutralize it in order to
			CO9	Improve fluency in spoken English.
8	Applied Physics Lab	20A56201P	CO1	Operate optical instruments like microscope and spectrometer.
			CO2	Determine thickness of a hair/paper with the concept of interference.
			CO3	Estimate the wavelength of different colors using diffraction grating and resolving power.

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(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

			CO4	Plot the intensity of the magnetic field of circular coil carrying current with distance.
			CO5	Evaluate the acceptance angle of an optical fiber and numerical aperture.
			CO6	Determine the resistivity of the given semiconductor using four probe method.
			CO7	Identify the type of semiconductor i.e., n-type or p-type using hall effect.
			CO8	Calculate the band gap of a given semiconductor.
9	Python Programming & Data Science Lab	20A05101P	CO1	Illustrate the use of various data structures.
			CO2	Analyze and manipulate Data using Pandas.
			CO3	Creating static, animated, and interactive visualizations using Matplotlib.
			CO4	Understand the implementation procedures for the machine learning algorithms.
			CO5	Apply appropriate data sets to the Machine Learning algorithms.
			CO6	Identify and apply Machine Learning algorithms to solve real-world problems.
10	Universal Human Values	20A52201	CO1	Students are expected to become more aware of themselves, and their surroundings (family, society, nature)
			CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
			CO3	They would have better critical ability.
			CO4	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
			CO5	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

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