PARVATHAREDDY BABUL REDDY
VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE
(Autonomous)
(Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC)
KAVALI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Regulation:R21		
COURSE CODE	**NAME OF THE COURSE**	**K-LEVEL**
I-I SEM		
(21A110101) CALCULAS AND SPECIAL FUNCTIONS		
C111.1	Utilize mean value theorems to real life problems.	**K3**
C111.2	Familiarize with functions of several variables which is useful in optimization.	**K3**
C111.3	Important tools of calculus in higher dimensions as well as familiar with 2- dimensional coordinate systems.	**K4**
C111.4	Important tools of calculus in higher dimensions as well as familiar with 3- dimensional coordinate systems.	**K4**
C111.5	Utilize special functions in evaluating definite integrals.	**K3**
(21A110102) MATHEMATICAL METHODS		
C112.1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications.	**K3**
C112.2	Understand and solve the roots of equation using Bisection method, Iterative method, Regular Falsi method, Newton Raphson method and solve the system of algebraic equations.	**K2**
C112.3	Apply concept of interpolation and derive interpolating polynomial using Newton's forward and backward formulae, Lagrange's formulae, Gauss forward and backward formulae.	**K3**
C112.4	Solving initial value problems to ordinary differential equations.	**K3**
C112.5	Determine the process of finding integral equations using Simson's 1/3, Simson's 3/8 Rule and Trapezoidal rule and fitting a best curve using least squares method	**K3**
(21A020301) FUNDAMENTALS OF ELECTRICAL CIRCUITS		
C113.1	Determine the equivalent impedance by using network reduction techniques and determine the current through, voltage across and power through any element	**K3**
C113.2	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	**K3**
C113.3	Determine the real power, reactive power, power factor of a given excitation.	**K3**
C113.4	Apply the network theorems suitably	**K3**
C113.5	Analyze the three-phase circuits with star-delta transformation	**K4**
(21A050302) C PROGRAMMING & DATA STRUCTURES		
C114.1	Solve computational problems, choose appropriate control structure depending on the problem to be solved	**K3**
C114.2	Design applications in C using Arrays and Strings.	**K3**
C114.3	Modularize the problem and also solution	**K3**
C114.4	Design applications in C using Functions, Pointers, and Structures	**K3**
C114.5	Explore various operations on Stacks, Queues and Linked lists.	**K4**
(21A030301) ENGINEERING DRAWING		
C115.1	Construction of various conic curves, Cycloid curves	**K3**
C115.2	Construction of projections of Points, Lines applied in engineering	**K3**
C115.3	Construction of projections of Planes.	**K3**
C115.4	Construction of projection of solids development of surfaces regular Solids	**K3**
C115.5	Representation of Ortho and Isometric views of solids	**K3**

(21A020302) FUNDAMENTALS OF ELECTRICAL CIRCUITS LAB		
C116.1	Design and verify the various Kirchhoff's laws	**K3**
C116.2	Understand the electrical circuits by using mesh and nodal analysis	**K2**
C116.3	Remember, understand and apply various theorems and verify practically.	**K2**
C116.4	Understand and analyze active, reactive power measurements in three phase balanced circuits.	**K2**
C116.5	Determine the active, reactive power measurements in three phase balanced and unbalanced circuits	**K3**
(21A050303) C PROGRAMMING & DATA STRUCTURES LAB		
C117.1	Demonstrate the basic concepts of C programming language.	**K2**
C117.2	Select the right control structure for solving the problem.	**K3**
C117.3	Develop C programs using functions, arrays, structures and pointers.	**K3**
C117.4	Illustrate the concepts Stacks and Queues.	**K2**
C117.5	Design operations on Linked lists	**K4**
(21A110201) COMMUNICATIVE ENGLISH LAB		
C118.1	Use creativity in listening to formal and informal conversations.	**K3**
C118.2	Analyze the concepts of active listening and barriers to listening.	**K4**
C118.3	Communicate effectively in everyday life using right oral expressions.	**K3**
C118.4	Acquire the confidence to present themselves effectively during academic and professional presentations.	**K3**
C118.5	Acquire basic knowledge of non-verbal communication and its importance.	**K3**
I-II SEM		
(21A110103) DIFFERENTIAL EQUATIONS & VECTOR CALCULAS		
C121.1	Solve the differential equations related to various engineering fields	**K3**
C121.2	Apply a range of techniques to find solutions of standard PDEs	**K3**
C121.3	Identify solution methods for partial differential equations that model physical processes	**K3**
C121.4	Interpret physical meaning of differential operators such as gradient, divergence & curl.	**K2**
C121.5	Estimate the workdone against a field , circulation and flux using vector calculus.	**K4**
(21A110104) APPLIED PHYSICS		
C122.1	Analyze the differences between interference, diffraction & polarization with applications.	**K2**
C122.2	Identify the importance of lasers and fiber optics in different engineering fields	**K4**
C122.3	Understand the response of dielectric & magnetic materials to the applied electric & magnetic fields	**K4**
C122.4	Explain the important properties of crystals & structure determination using X-ray diffraction along withthe nano materials.	**K4**
C122.5	Elaborate the physical properties of semiconductors and superconductors	**K4**
(21A110105) APPLIED CHEMISTRY		
C123.1	Explain the salient features of different theories along with their applications.	**K3**
C123.2	Discuss about the model engineering materials.	**K3**
C123.3	Apply the knowledge of various electrodes and electrochemical cells and the development of new batteries.	**K2**
C123.4	Identify the different polymers and their uses in various fields of engineering.	**K2**
C123.5	Analyze the knowledge of different analytical techniques used in engineering and also development of new techniques.	**K4**
(21A110202) ENGLISH FOR PROFESSIONAL		
C124.1	Demonstrate word knowledge and its usage in appropriate contexts.	**K3**
C124.2	Recognize and incorporate basic grammar mechanics and sentence variety in writing.	**K3**
C124.3	Improve comprehension skills through intensive and extensive reading practice.	**K3**
C124.4	Learn and apply various writing formats for effective communication.	**K3**
C124.5	Improve writing skills needed for professional correspondence in various contexts.	**K3**

(21A040301) ELECTRONIC DEVICES & CIRCUITS LAB		
C125.1	Describe basic operation and characteristics of various PN junction diodes.	**K3**
C125.2	Analyze diode circuits for different applications such as rectifiers with and without filters, regulators, and voltage doubler.	**K4**
C125.3	Explain principle, operation, and applications of BJT, FET & MOSFET.	**K4**
C125.4	Design various biasing circuits for BJT, FET & MOSFET.	**K4**
C125.5	Analyze BJT amplifiers using h parameter model.	**K4**
(21A110108a) APPLIED PHYSICS LAB		
C126.1	Operate optical instruments like microscope and spectrometer.	**K3**
C126.2	Determine thickness of a hair/paper with the concept of interference.	**K4**
C126.3	Plot the intensity of the magnetic field of circular coil carrying current with distance.	**K3**
C126.4	Evaluate the acceptance angle of an optical fiber and numerical aperture.	**K4**
C126.5	Determine the resistivity of the given semiconductor using four probe method.	**K4**
(21A110108B) APPLIED CHEMISTRY LAB		
C127.1	Distinguish different types of titrations in the volumetric analysis	**K3**
C127.2	Determine the cell constant and conductance of solutions	**K3**
C127.3	Measure the strength of an acid present in secondary batteries	**K4**
C127.4	Analyze the effect of absorbance of given sample solution on concentration by using colorimetry.	**K4**
C127.5	Prepare advanced polymer Bakelite materials.	**K3**
(21A050301) ENGINEERING & ITWORKSHOP LAB		
C128.1	Apply wood working skills and Build different parts with metal sheets in real world applications.	**K3**
C128.2	Apply fitting operations in various applications and Preparation of moulds and castings.	**K3**
C128.3	Apply different types of basic electric circuit connections.	**K3**
C128.4	Prepare documentation, spread sheets for calculations and slides for Presentation.	**K3**
C128.5	Identify Computer peripherals and its functions , Internet browsing to obtain therequired information	**K2**
(21A040302) ELECTRONIC DEVICES & CIRCUITS LAB		
C129.1	Compute the parameters of Diodes and Transistors from the characteristics.	**K3**
C129.2	Demonstrate the rectifier and voltage regulator circuits using diodes.	**K3**
C129.3	Analyze the Characteristics of UJT and SCR	**K3**
C129.4	Design biasing circuit of BJT and FET.	**K3**
(21A000001) ENVIRONMENTAL SCIENCE		
C1210.1	Grasp multidisciplinary nature of environmental studies and various renewable and nonrenewable	**K2**
C1210.2	Understand flow and bio-geo- chemical cycles and ecological pyramids.	**K4**
C1210.3	Understand various causes of pollution and solid waste management and related preventive	**K4**
C1210.4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land	**K2**
C1210.5	Casus of population explosion, value education and welfare programmes.	**K2**
II-I SEM		
(21A110112) Complex Variable & Transforms		
C211.1	Understand functions of Complex variable and its properties, and find derivatives of complex functions, analyticity of complex functions.	**K3**
C211.2	Apply Cauchy's integral Theorem and Cauchy's integral formula,integration of complex functions using Residue theorem.	**K3**
C211.3	Analyze the concept Laplace and Inverse Laplace Transforms to solve Differential equations.	**K4**
C211.4	Determine the process of finding Fourier series expression of the given function, Fourier coeffivient(Euler's) and expansion of Half range series.	**K2**
C211.5	Identify the applications of Fourier integrals, properties of Fourier Transforms. Analyze the concept of Z transforms and its properties.	**K3**

(21A020401) Electro Magnetic Fields		
C212.1	Understand the concept of electrostatics	**K3**
C212.2	Understand the concepts of Conductors and Dielectrics	**K3**
C212.3	Understand the fundamental laws related to Magneto Statics	**K3**
C212.4	Understand the concepts of Magnetic Potential and Magnetic force	**K3**
C212.5	Understand the concepts of Time varying Fields	**K3**
(21A020402)Electrical Circuit Analysis		
C213.1	Analyze the various locus diagrams and Resonance circuits	**K4**
C213.2	Calculate the various two-port network parameters	**K3**
C213.3	Calculate the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.	**K3**
C213.4	Applications of Fourier transforms to electrical circuits excited by non-sinusoidal sources are known.	**K4**
C213.5	Design the filters, equalizers and PSPICE programs for Circuit Analysis	**K4**
	(21A020403) Electrical Machines - I	
C214.1	Understand the concepts of magnetic circuits, principle and operations of DC machines, starters and single and three phase transformers.	**K3**
C214.2	Understand the construction, operation and armature windings of a DC generator and also able to analyze the characteristics of DC generators	**K3**
C214.3	Evaluate generated emf, back emf, speed, efficiency and regulations of DC machines	**K4**
C214.4	Analyze single phase transformer operation and characteristics.	**K4**
C214.5	Analyze three phase transformer operation and characteristics.	**K4**
(21A020307) Digital Electronic Circuits		
C215.1	Understand various number systems, error detecting, correcting binary codes, logic families, combinational and sequential circuits.	**K3**
C215.2	Apply Boolean laws, k-map and Q-M methods to minimize switching functions. Also describe the various performance metrics for logic families.	**K2**
C215.3	Design combinational and sequential logic circuits.	**K3**
C215.4	Compare different types of Programmable logic devices and logic families.	**K2**
C215.5	Analyze the various Logic families	**K4**
(21A020404) Electrical Circuits & Simulation Lab		
C216.1	Understand and compare basic electric circuit theorems with actual working circuits.	**K4**
C216.2	Students can Design and understand RLC series and parallel circuits and its resonance condition	**K3**
C216.3	Measure power in three phase circuits in day to day life.	**K3**
C216.4	Understand simulation programs for DC circuit analysis using PSPICE.	**K4**
(21A020308) Digital Electronic Circuits Lab		
C217.1	Understand working of logic families and logic gates.	**K3**
C217.2	Design and implement Combinational and Sequential logic circuits.	**K4**
C217.3	Understand the process of Analog to Digital conversion and Digital to Analog conversion.	**K3**
C217.4	Use PLDs to implement the given logical problem.	**K3**
(21A020405) Electrical Machines -I Lab		
C218.1	Conduct and analyze load test on DC shunt generator	**K3**
C218.2	Understand and analyze magnetization characteristics of DC shunt generator	**K3**
C218.3	Understand and analyze speed control techniques and efficiency of DC machines	**K3**
C218.4	Understand to predetermine efficiency and regulation of single-phase Transformers.	**K3**
(21A050701) Python Programming		
C219.1	Understand the basic concepts of Python Programming language such as conditional processing, Loops, and other data structures.	**K3**
C219.2	Ability to explore python especially the built-in objects of Python.	**K4**
C219.3	Ability to create practical and contemporary applications such as Machine Learning algorithms.	**K4**

(21A000002) Constitution of India		
C2110.1	Understand historical background of the constitution making and its importance for building a democratic India.	**K3**
C2110.2	Understand the functioning of three wings of the government ie., executive, legislative and judiciary.	**K3**
C2110.3	Understand the value of the fundamental rights and duties for becoming good citizen of India.	**K3**
C2110.4	Analyze the decentralization of power between central, state and local self-government	**K4**
C2110.5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.	**K2**
II-II SEM		
(21A030302) Engineering Mechanics		
C221.1	Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	**K4**
C221.2	Analyze the forces in the members of the frames/truss.	**K4**
C221.3	Understand the concept of friction and its applications.	**K3**
C221.4	Understand the concept of centroid and location of centroid of plane figures and material bodies.	**K3**
C221.5	Understand moment of inertia, determining moment of inertia of plane figures and material bodies.	**K3**
(21A020406) Analog Electronic Circuits		
C222.1	Discuss various types of feedback amplifiers, oscillators and large signal amplifiers	**K4**
C222.2	Explain the operation of various electronic circuits and linear Ics	**K3**
C222.3	Apply various types of electronic circuits to solve engineering problems	**K4**
C222.4	Justify choice of transistor configuration in a cascade amplifier	**K3**
C222.5	Design electronic circuits for a given specification	**K4**
(21A020407) Electrical Machines II		
C223.1	Understand the basics of ac machine windings, construction, principle of working, equivalent circuit of induction and synchronous machines.	**K3**
C223.2	Analyze the phasor diagrams of induction and synchronous machine, parallel operation of alternators, synchronization and load division of synchronous generators.	**K4**
C223.3	Analyze the various methods of starting in single phase induction machines	**K4**
C223.4	Apply the concepts to determine V and inverted V curves and power circles of synchronous motor.	**K3**
C223.5	Analyze the various methods of starting in both induction and synchronous machines.	**K4**
(21A020408) Control Systems Engineering		
C224.1	Understand the concepts of control systems classification, feedback effect, mathematical modelling and apply the concepts of Block diagram reduction, Signal flow graph method	**K3**
C224.2	Analyze time response analysis, error constants, and stability characteristics of a given mathematical model using different methods.	**K4**
C224.3	State the state space formulation for obtaining mathematical and Root locus,	**K4**
C224.4	Understand the Bode, Nyquist, and Polar plots for stability calculations, Design and develop different compensators, controllers	**K3**
C224.5	Analyze the stability concepts, state space models, controllability and observability and demonstrate the use of these techniques.	**K4**
(21A110203) Managerial Economics & Financial Analysis		
C225.1	Analyse the consumer behaviour with regard to their product or services and measure demand of a particular product or services by applying various methods in given situation	**K4**
C225.2	Determine Break Even Point (BEP) of an enterprise Assess the cost behaviour, costs useful for managerial decision making	**K3**
C225.3	Determine the price of a product or services in given market condition	**K3**
C225.4	Analyze the financial position by using different types of ratios and interpret the financial accounting	**K4**
C225.5	Evaluate the investment proposals under payback period, ARR, IRR, NPV & PI methods	**K3**

(21A020409) Electrical Machines II Lab		
C226.1	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.	**K4**
C226.2	Predetermine regulation of a three-phase alternator by synchronous impedance & m.m.f methods.	**K3**
C226.3	Predetermine the regulation of Alternator by Zero Power Factor method Xd and Xq determination of salient pole synchronous machine.	**K3**
C226.4	Evaluate and analyze V and inverted V curves of 3 phase synchronous motor	**K4**
(21A020410) Control Systems & Simulation Lab		
C227.1	Get the knowledge of feedback control and transfer function of DC servo motor.	**K4**
C227.2	Model the systems and able to design the controllers and compensators.	**K4**
C227.3	Get the knowledge about the effect of poles and zeros location on transient and Steady state behaviour of second order systems and can implement them to practical Systems and MATLAB	**K4**
C227.4	Determine the performance and time domain specifications of first and second order Systems.	**K4**
(21A020411) ANALOG ELECTRONIC CIRCUITS LAB		
C228.1	List various types of feedback amplifiers, oscillators and large signal amplifiers	**K3**
C228.2	Explain the operation of various electronic circuits and linear Ics	**K4**
C228.3	Apply various types of electronic circuits to solve engineering problems	**K3**
C228.4	Analyze various electronic circuits and regulated power supplies for proper understanding	**K4**
C228.5	Justify choice of transistor configuration in a cascade amplifier	**K4**
(21A020701) ELECTRICAL ENGINEERING WORKSHOP-I		
C229.1	Demonstrate knowledge on different tools used to service the electrical appliances.	**K4**
C229.2	Analyze and understand the various lamps and load connections.	**K4**
C229.3	Understand the importance of earthing in valuable load appliances.	**K3**
C229.4	Demonstrate how to trouble shoot the electrical domestic appliances.	**K4**
C229.5	Perform the soldering practices.	**K4**
III-I SEM		
(21A020412) POWER SYSTEM ARCHITECTURE		
C311.1	Remember and understand the concepts of conventional and nonconventional power generating systems.	**K2**
C311.2	Apply the economic aspects to the power generating systems.	**K3**
C311.3	Analyze the transmission lines and obtain the transmission line parameters and constants.	**K4**
C311.4	Design and develop the schemes to improve the generation and capability of transmission line to meet the day-to-day power requirements.(	**K3**
C311.5	Describe the design features of electrical distribution systems.	**K3**
	(21A020413) POWER ELECTRONICS	
C312.1	Understand the operation, characteristics and usage of basic Power Semiconductor devices	**K2**
C312.2	Understand different types of Rectifier circuits with different operating conditions.	**K2**
C312.3	Understand DC-DC converters operation and analysis of their characteristics.	**K2**
C312.4	Understand the construction and operation of voltage source inverters, Voltage controllers and Cyclo Converters.	**K2**
C312.5	Apply all the above concepts to solve various numerical problems solving	**K3**
	(21A020414) ELECTRICAL MEASUREMENTS	
C313.1	Understand the operation, characteristics and usage of basic Power Semiconductor devices	**K2**
C313.2	Understand different types of Rectifier circuits with different operating conditions.	**K2**
C313.3	Understand DC-DC converters operation and analysis of their characteristics.	**K4**
C313.4	Understand the construction and operation of voltage source inverters, Voltage controllers and Cyclo Converters.	**K4**
C313.5	Apply all the above concepts to solve various numerical problems solving	**K3**

	(21A050502)COMPUTER ARCHITECTURE & ORGANIZATION	
C314.1	Develop a detailed understanding of computer systems	**K4**
C314.2	Cite different number systems, binary addition and subtraction, standard, floating-point, and micro-operations	**K3**
C314.3	Develop a detailed understanding of architecture and functionality of central processing unit	**K4**
C314.4	Exemplify in a better way the I/O and memory organization	**K3**
C314.5	Illustrate concepts of parallel processing, pipelining and inter processor communication. (K3)	**K3**
	(21A020415)DESIGN OF PHOTOVOLTAIC SYSTEMS	
C315.1	Understand the operation, characteristics and usage of basic power semiconductor devices	**K2**
C315.2	Understand the basic concepts of PV Cells.	**K2**
C315.3	Understand the concepts of Energy estimation and Sizing	**K2**
C315.4	Understand the Design MPPT	**K2**
C315.5	Analyze PV system along with its interfacing	**K4**
	(21A0204182)POWER ELECTRONICS LAB	
C316.1	Understand and analyze various characteristics of power electronic devices with gate firing circuits and forced commutation techniques	**K3**
C316.2	Analyze the operation of single-phase half &fully-controlled converters and inverters with different types of loads.	**K4**
C316.3	Analyze the operation of DC-DC converters.	**K4**
C316.4	Analyze the operation of single-phase AC voltage controllers.	**K4**
C316.5	Analyze the operation of Cyclo converters.	**K4**
	(21A020419)ELECTRICAL MEASUREMENTS LAB	
C317.1	Calibrate various electrical measuring instruments	**K4**
C317.2	Accurately determine the values of inductance and capacitance using AC bridges.	**K3**
C317.3	Compute the coefficient of coupling between two coupled coils.	**K3**
C317.4	Accurately determine the values of very low resistances.	**K3**
C317.5	Measure reactive power in 3-phase circuit using single wattmeter.	**K4**
	(21A050708)WEB DESIGNING	
C318.1	Analyze a web page and identify its elements and attributes.	**K4**
C318.2	Create web pages using XHTML and Cascading Styles sheets.	**K4**
C318.3	Build dynamic web pages.	**K4**
C318.4	Build web applications using PHP.	**K4**
C318.5	Write simple client-side scripts using AJAX	**K4**
	(21A000003)UNIVERSAL HUMAN VALUES	
C319.1	Identify the significance and need of values in the society.	**K2**
C319.2	Understand the meaning of Harmony in the Self the Co-existence of Self and Body.	**K2**
C319.3	Understanding the value of harmonious relationships and explore their role in ensuring a harmonious society	**K2**
C319.4	Examine the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	**K3**
C319.5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	**K3**
	(21A050708)WEB DESIGNING	
C3110.1	Analyze a web page and identify its elements and attributes.	**K4**
C3110.2	Create web pages using XHTML and Cascading Styles sheets.	**K4**
C3110.3	Build dynamic web pages.	**K4**
C3110.4	Build web applications using PHP.	**K4**
C3110.5	Write simple client-side scripts using AJAX	**K4**

Head of the Department