



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

Course Outcomes of 2018 Scheme

Course Name: CEE101(18MAT11) Calculus and Linear Algebra	
CEE101.1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve
CEE101.2	Learn the notion of partial differential equation to calculate rates of change of multivariant functions and solve the problems related to composite functions and Jacobians
CEE101.3	Applying the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
CEE101.4	Solve first order linear/ non linear differential equation analytically using standard methods.
CEE101.5	Make use of matrix theory for solving a system of linear equations and compute eigen values and eigen vectors required for matrix diagonalization process.
Course Name: CEE102(18CHE12) Engineering Chemistry	
CEE102.1	use of free energy in equilibria rationalize bulk properties and process using thermodynamic consideration electrochemical energy system .
CEE102.2	Causes and effects of corrosion of metal and control of corrosion . Modification of surface properties of metal to develop .
CEE102.3	Production and consumption of energy for industrialization of country and living standards of people. Production and use of electrochemical cells , concentration cells fuel cells ,classical batteries and modern batteries.
CEE102.4	Environmental pollution waste management and water chemistry.
CEE102.5	Different techniques of instrumental analysis of materials and synthesis , properties and applications of nano materials.
Course Name: CEE103(18CPS13) C PROGRAMMING FOR PROBLEM SOLVING	
CEE103.1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc.
CEE103.2	Construct a programming solution to the given problem using C
CEE103.3	Identify and correct the syntax and logical errors in C programs.
CEE103.4	Modularize the given problem using functions and structures.
Course Name: CEE104(18ELN14) Basic Electronics	



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE104.1	Describe the operation of diodes, BJT, FET and Operational Amplifiers.
CEE104.2	Design and explain the construction of rectifiers, regulators, amplifiers and oscillators.
CEE104.3	Describe general operating principles of SCRs and its application.
CEE104.4	Explain the working and design of Fixed voltage IC regulator using 7805 and Astable oscillator using Timer IC555.
CEE104.5	Explain the different number system and their conversions and construct simple combinational and sequential logic circuits using Flip Flops. Describe the basic principle of operation of communication system and mobile phones
Course Name: CEE105 (18ME15) ELEMENTS OF MECHANICAL ENGINEERING	
CEE105.1	Identify different sources of energy and their conversion process
CEE105.2	Explain the working principle of hydraulic turbines, pumps, IC engines and refrigeration
CEE105.3	Recognize various metal joining process and power transmission elements
CEE105.4	Understand the properties of common engineering materials and their application in engineering industry
CEE105.5	Discuss the working of conventional machine tools, machining processes, tools and accessories and advanced manufacturing systems.
Course Name: CEE106 (18CHEL16) Engineering Chemistry Lab	
CEE106.1	Explain various methods of volumetric analysis i.e. Redox, Iodometric, complexometric, Neutralization etc. and use of conductivity meter for measurement of conductance of water sample.
CEE106.2	Apply the use of internal and external indicators and their comparison for redox titrations and mechanisms of iodometric titrations and use of double indicator method in a single titration.
CEE106.3	Estimate the amount of various components using instrumental method.
CEE106.4	Estimate the amount of various components using instrumental method.
CEE106.5	Perform laboratory experiments correctly using appropriate techniques and safety procedures.
Course Name: CEE107 (18CPL17) C Programming Laboratory	



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE107.1	Write algorithms, flowcharts and program for simple problems.
CEE107.2	Correct syntax and logical errors to execute a program.
CEE107.3	Write iterative and wherever possible recursive programs.
CEE107.4	Demonstrate use of functions, arrays, strings, structures and pointers in problem
Course Name: CEE108 (18EGH18) Technical English - I	
CEE108.1	Use Grammatical English and Essentials of language skills and identify the nuances of phonetics, intonation and flawless pronunciation
CEE108.2	Implement English Vocabulary at command and language proficiency
CEE108.3	Identify common errors in spoken and written Communication
CEE108.4	Understand and improve the non verbal communication and kinesics
CEE108.5	Perform well in campus recruitment, engineering and all other general competitive examinations
Course Name: CEE211 (18MAT21) ADVANCED CALCULUS & NUMERICAL METHODS	
CEE111.1	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
CEE111.2	Demonstrate various physical models through higher order differential equations and solve such linear ordinary differential equations.
CEE111.3	Construct a variety of partial differential equations and solution by exact methods/method of separation of variables.
CEE111.4	Explain the applications of infinite series and obtain series solution of ordinary differential equations.
CEE111.5	Apply the knowledge of numerical methods in the modeling of various physical and engineering phenomena.
Course Name: CEE212 (18PHY22) ENGINEERING PHYSICS	
CEE112.1	Understand various types of oscillations and their implications, the role of Shock waves in various fields and recognize the elastic properties of materials for engineering applications.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE112.2	Realize the interrelation between time varying electric and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication.
CEE112.3	Compute Eigen values, Eigen functions, momentum of atomic and subatomic particles using Time independent 1-D Schrodinger's wave equation.
CEE112.4	Compute Eigen values, Eigen functions, momentum of atomic and subatomic particles using Time independent 1-D Schrodinger's wave equation.
CEE112.5	Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.
Course Name: CEE213 (18ELE23) BASIC ELECTRICAL ENGINEERING	
CEE113.1	Analyse DC and AC Circuit
CEE113.2	Explain the principle of operation and construction single phase transformer
CEE113.3	Explain the principle of operation and construction DC and Synchronous machine
CEE113.4	Explain the principle of operation and construction 3-phase induction motor
CEE113.5	Discuss the concept of electrical wiring, circuit protecting devices and earthing
Course Name: CEE214 (18CIV24) BASIC ELECTRICAL ENGINEERING	
CEE114.1	Mention the application of various fields of Civil Engineering
CEE114.2	Compute the resultant of given force system subjected to various loads
CEE114.3	Compute the reaction of Forces, Moments and other loads on system of rigid bodies and compute the reactive forces that develop as a result of the external loads
CEE114.4	Locate the Centroid and compute the Moment of Inertia of regular and built up sections
CEE114.5	Express the relation between the motion of bodies and analyze the bodies in motion
Course Name: CEE215 (18EGDL25) Engineering Graphics	
CEE115.1	Prepare engineering drawings as BIS conventions mentioned in the relevant codes and produce computer generated drawings using CAD Software
CEE115.2	Use knowledge of orthographic projections to represent engineering and present the same in the form of drawings



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE115.3	Develop isometric drawings of simple objects reading the orthographic projections of those objects
Course Name: CEE216 (18PHYL26) Engineering Physics Laboratory	
CEE116.1	Apprehend the concepts of interference of light, diffraction of light, Fermi energy and magnetic effect of current.
CEE116.2	Understand the principles of operations of optical fibres and semiconductor devices such as photo diode and NPN transistor using simple circuits.
CEE116.3	Determine elastic moduli and moment of inertia of given materials with the help of suggested procedures.
CEE116.4	Recognize the resonance concept and its practical applications
CEE116.5	Understand the importance of measurement procedure, honest recording and representing the data, reproduction of final results.
Course Name: CEE217 (18EEL27) Basic Electrical and Electronics Lab	
CEE117.1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory
CEE117.2	Compare power factor of lamps
CEE117.3	Determine impedance of an electrical circuit and power consumed in a 3 phase load
CEE117.4	Determine earth resistance and understand two way and three way control of lamps
Course Name: CEE218 (18EGH28) Technical English - II	
CEE118.1	Identify common errors in spoken and written Communication
CEE118.2	Get familiarized with English vocabulary and language proficiency
CEE118.3	Improve nature and style of sensible writing and acquire employment and workplace communication skills
CEE118.4	Understand and improve the non verbal communication and kinesics
CEE118.5	Perform well in campus recruitment, engineering and all other general competitive examinations
Course Name: CEE201(18MAT31) Engineering Mathematics III	



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE201.1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.
CEE201.2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory
CEE201.3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.
CEE201.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods
CEE201.5	Determine the externals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis
Course Name: CEE202 (18EE32) Electric Circuit Analysis	
CEE202.1	Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using source shifting,
CEE202.2	Solve complex electric circuits using network theorems
CEE202.3	Discuss resonance in series and parallel circuits and also the importance of initial conditions and their evaluation.
CEE202.4	Synthesize typical waveforms using Laplace transformation
CEE202.5	Solve unbalanced three phase systems and also evaluate the performance of two port networks
Course Name: CEE203 (18EE33) Transformers and Generators	
CEE203.1	understand the construction and operation of single phase, 3-phase transformers and Autotransformer
CEE203.2	Analyze the performance of transformers by polarity test, Sumpner's test and phase conversion, , 3-phase connection and parallel operation
CEE203.3	Understand the construction and working of AC and DC Generators
CEE203.4	Analyze the performance of the AC Generators on infinite bus and parallel operation
CEE203.5	Determine the regulation of AC Generator by Slip test, EMF, MMF, and ZPF Methods.
Course Name: CEE204(18EE34) Analog Electronic Circuits	
CEE204.1	Obtain the output characteristics of clipper and clamper circuits.
CEE204.2	Design and compare biasing circuits for transistor amplifiers & explain the transistor switching
CEE204.3	Explain the concept of feedback, its types and design of feedback circuits



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE204.4	Design and analyse the power amplifier circuits and oscillators for different frequencies.
CEE204.5	Design and analysis of FET and MOSFET amplifiers

Course Name: CEE205(18EE35) Digital System Design

CEE205.1	Develop simplified switching equation using Karnaugh Maps and QuineMcClusky techniques.
CEE205.2	Design Multiplexer, Encoder, Decoder, Adder, Subtractors and Comparator as digital combinational control circuits
CEE205.3	Design flip flops, counters, shift registers as sequential control circuits
CEE205.4	Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits.
CEE205.5	Explain the functioning of Read only and Read/Write Memories, Programmable ROM, EPROM and Flash memory

Course Name: CEE206(18EE36) Electrical and Electronic Measurements

CEE206.1	Measure resistance, inductance and capacitance using bridges and determine earth resistance.
CEE206.2	Explain the working of various meters used for measurement of Power & Energy.
CEE206.3	Understand methods of extending the range of instruments & instrument transformers
CEE206.4	Explain the working of different electronic instruments.
CEE206.5	Explain the working of different display and recording devices

Course Name: CEE207(18EEL37) ELECTRICAL MACHINES LABORATORY - 1

CEE207.1	Evaluate the performance of transformers from the test data obtained.
CEE207.2	Connect and operate two single phase transformers of different KVA rating in parallel.
CEE207.3	Connect single phase transformers for three phase operation and phase conversion.
CEE207.4	Compute the voltage regulation of the synchronous generator using the test data obtained in the laboratory.
CEE207.5	Evaluate the performance of synchronous generators from the test data and assess the performance of synchronous generator connected to infinite bus.

Course Name: CEE208(18EEL38) ELECTRONICS LABORATORY



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE208.1	Design and test rectifier circuits with and without capacitor filters.
CEE208.2	Determine h-parameter models of transistor for all modes
CEE208.3	Design and test BJT and FET amplifier and oscillator circuits.
CEE208.4	Realize Boolean expressions, adders and subtractors using gates.
CEE208.5	Design and test Ring counter/Johnson counter, Sequence generator and 3 bit counters
Course Name: CEE211(18MAT41) COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS	
CEE211.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
CEE211.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
CEE211.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.
CEE211.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
CEE211.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.
Course Name: CEE212(18EE42) Power Generation & Economics	
CEE212.1	Describe the working of hydroelectric, steam, nuclear power plants and state functions of major equipment of the power plants.
CEE212.2	Classify various substations and explain the functions of major equipments in substations.
CEE212.3	Explain the types of grounding and its importance.
CEE212.4	Infer the economic aspects of power system operation and its effects.
CEE212.5	Explain the importance of power factor improvement
Course Name: CEE213(18EE43) TRANSMISSION AND DISTRIBUTION	
CEE213.1	Explain transmission and distribution scheme, identify the importance of different transmission systems and types of insulators.
CEE213.2	Analyze and compute the parameters of the transmission line for different configurations.
CEE213.3	Assess the performance of overhead lines.
CEE213.4	Interpret corona, explain the use of underground cables.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka
Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE213.5	Classify different types of distribution systems; examine its quality & reliability.
Course Name: CEE214(18EE44) ELECTRIC MOTORS	
CEE214.1	Explain the construction, operation and classification of DC Motor, AC motor and Special purpose motors.
CEE214.2	Describe the performance characteristics & applications of Electric motors.
CEE214.3	Demonstrate and explain the methods of testing of DC machines and determine losses and efficiency.
CEE214.4	Control the speed of DC motor and induction motor.
CEE214.5	Explain the starting methods, equivalent circuit and phasor diagrams, torque angle, effect of change in excitation and change in load, hunting and damping of synchronous motors.
Course Name: CEE215(18EE45) ELECTROMAGNETIC FIELD THEORY	
CEE215.1	Use different coordinate systems, Coulomb's Law and Gauss Law for the evaluation of electric fields produced by different charge configurations.
CEE215.2	Calculate the energy and potential due to a system of charges & Explain the behavior of electric field across a boundary conditions.
CEE215.3	Explain the Poisson's, Laplace equations and behavior of steady magnetic fields.
CEE215.4	Explain the behavior of magnetic fields and magnetic materials.
CEE215.5	Asses time varying fields and propagation of waves in different media
Course Name: CEE216(18EE46) Operational Amplifiers and Linear ICs	
CEE216.1	Describe the characteristics of ideal and practical operational amplifier
CEE216.2	Design filters and signal generators using linear ICs.
CEE216.3	Demonstrate the application of Linear ICs as comparators and rectifiers
CEE216.4	Analyze voltage regulators for given specification using op-amp and IC voltage regulators.
CEE216.5	Summarize the basics of PLL and Timer
Course Name: CEE217(18EEL47) ELECTRICAL MACHINES LABORATORY - 2	
CEE217.1	Test DC machines to determine their characteristics and also to control the speed of DC motor.
CEE217.2	Pre-determine the performance characteristics of DC machines by conducting suitable tests.
CEE217.3	Perform load test on single phase and three phase induction motor to assess its performance.
CEE217.4	Conduct test on induction motor to pre-determine the performance characteristics



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE217.5	Conduct test on synchronous motor to draw the performance curves.
Course Name: CEE218(18EEL48) OP- AMP AND LINEAR ICS LABORATORY	
CEE218.1	To conduct experiment to determine the characteristic parameters of OP-Amp
CEE218.2	To design test the OP-Amp as Amplifier, adder, subtractor, differentiator and integrator.
CEE218.3	To design test the OP-Amp as oscillators and filters.
CEE218.4	Design and study of Linear IC's as multivibrator power supplies.

Course Name: CEE301(18EE51) MANAGEMENT AND ENTREPRENEURSHIP	
CEE301.1	Explain the field of management, task of the manager, planning and steps in decision making.
CEE301.2	Discuss the structure of organization, importance of staffing, leadership styles, modes of communication, techniques of coordination and importance of managerial control in business.
CEE301.3	Explain the concepts of entrepreneurship and a businessman's social responsibilities towards different groups.
CEE301.4	Show an understanding of role of SSI's in the development of country and state/central level institutions/agencies supporting business enterprises.
CEE301.5	Discuss the concepts of project management, capital budgeting, project feasibility studies, need for project report and new control techniques
Course Name: CEE302(18EE52) MICROCONTROLLER	
CEE302.1	Outline the 8051 architecture, registers, internal memory organization, addressing modes.
CEE302.2	Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming.
CEE302.3	Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmetic operations, data conversion and timer/counter programming.
CEE302.4	Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial data communication and interrupt programming.
CEE302.5	Program 8051 to work with external devices for ADC, DAC, Stepper motor control, DC motor control, Elevator control.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka
Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

Course Name: CEE303(18EE53)POWER ELECTRONICS

CEE303.1	To give an overview of applications power electronics, different types of power semiconductor devices, their switching characteristics, power diode characteristics, types, their operation and the effects of power diodes on RL circuits.
CEE303.2	To explain the techniques for design and analysis of single phase diode rectifier circuits.
CEE303.3	To explain different power transistors, their steady state and switching characteristics and limitations.
CEE303.4	To explain different types of Thyristors, their gate characteristics and gate control requirements.
CEE303.5	To explain the design, analysis techniques, performance parameters and characteristics of controlled rectifiers, DC- DC, DC -AC converters and Voltage controllers.

Course Name: CEE304(18EE54) SIGNALS AND SYSTEMS

CEE304.1	Explain the generation of signals, behavior of system and the basic operations that can be performed on signals and properties of systems.
CEE304.2	Apply convolution in both continuous and discrete domain for the analysis of systems given impulse response of a system.
CEE304.3	Solve the continuous time and discrete time systems by various methods and their representation by block diagram.
CEE304.4	Perform Fourier analysis for continuous and discrete time, linear time invariant systems.
CEE304.5	Apply Z-transform and properties of Z transform for the analysis of discrete time systems.

Course Name: CEE305(18EE55) ELECTRICAL MACHINE DESIGN

CEE305.1	Identify and list, limitations, modern trends in design, manufacturing of electrical machines and properties of materials used in the electrical machines.
CEE305.2	Derive the output equation of DC machine, discuss selection of specific loadings and magnetic circuits of DC machines, design the field windings of DC machine, and design stator and rotor circuits of a DC machine.
CEE305.3	Derive the output equations of transformer, discuss selection of specific loadings, estimate the number of cooling tubes, no load current and leakage reactance of core type transformer.
CEE305.4	Develop the output equation of induction motor, discuss selection of specific loadings and magnetic circuits of induction motor, design stator and rotor circuits of a induction motor.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE305.5	Formulate the output equation of alternator, design the field windings of Synchronous machine, discuss short circuit ratio and its effects on performance of synchronous machines, design salient pole and non-salient pole alternators for given specifications
Course Name: CEE306(18EE56)HIGH VOLTAGE ENGINEERING	
CEE306.1	Explain conduction and breakdown phenomenon in gases, liquid dielectrics and breakdown phenomenon in solid dielectrics.
CEE306.2	Summarize generation of high voltages and currents
CEE306.3	Outline measurement techniques for high voltages and currents.
CEE306.4	Summarize overvoltage phenomenon and insulation coordination in electric power systems.
CEE306.5	Explain non-destructive testing of materials and electric apparatus, high-voltage testing of electric apparatus
Course Name: CEE307(18EEL57) MICROCONTROLLER LABORATORY	
CEE307.1	Write assembly language programs for data transfer, arithmetic, Boolean and logical instructions and code conversions.
CEE307.2	Write ALP using subroutines for generation of delays, counters, configuration of SFRs for serial communication and timers
CEE307.3	Perform interfacing of stepper motor and dc motor for controlling the speed, elevator, LCD, external ADC and temperature control.
CEE307.4	Generate different waveforms using DAC interface.
CEE307.5	Work with a small team to carryout experiments using microcontroller concepts and prepare reports that present lab work
Course Name: CEE308(18EEL58) POWER ELECTRONICS LABORATORY	
CEE308.1	Obtain static characteristics of semiconductor devices to discuss their performance.
CEE308.2	Trigger the SCR by different methods
CEE308.3	Verify the performance of single phase controlled full wave rectifier and AC voltage controller with R and RL loads.
CEE308.4	Control the speed of a DC motor, universal motor and stepper motors.
CEE308.5	Verify the performance of single phase full bridge inverter connected to resistive load.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

Course Name: CEE311(118EE61) CONTROL SYSTEMS

CEE311.1	Analyze and model electrical and mechanical system using analogues.
CEE311.2	Formulate transfer functions using block diagram and signal flow graphs.
CEE311.3	Analyze the stability of control system, ability to determine transient and steady state time response.
CEE311.4	Illustrate the performance of a given system in time and frequency domains, stability analysis using Root locus and Bode plots.
CEE311.5	Discuss stability analysis using Nyquist plots, Design controller and compensator for a given specification.

Course Name: CEE312 (18EE62) POWER SYSTEM ANALYSIS – 1

CEE312.1	Model the power system components & construct per unit impedance diagram of power system.
CEE312.2	Analyze three phase symmetrical faults on power system.
CEE312.3	Compute unbalanced phasors in terms of sequence components and vice versa, also develop sequence networks.
CEE312.4	Analyze various unsymmetrical faults on power system.
CEE312.5	Examine dynamics of synchronous machine and determine the power system stability

Course Name: CEE313(18EE63) DIGITAL SIGNAL PROCESSING

CEE313.1	Apply DFT and IDFT to perform linear filtering techniques on given sequences to determine the output.
CEE313.2	Apply fast and efficient algorithms for computing DFT and inverse DFT of a given sequence
CEE313.3	Design and realize infinite impulse response Butterworth and Chebyshev digital filters using impulse invariant and bilinear transformation techniques.
CEE313.4	Develop a digital IIR filter by direct, cascade, parallel, ladder and FIR filter by direct, cascade and linear phase methods of realization.
CEE313.5	Design and realize FIR filters by use of window function and frequency sampling method.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

Course Name: CEE314(18EE641) INTRODUCTION TO NUCLEAR POWER

CEE314.1	Explain the fission process in nuclear materials, basic components of nuclear reactors, types of nuclear reactors and their working.
CEE314.2	List different types of coolants, their features, and cooling of reactors,
CEE314.3	Summarize loss of cooling accidents in different reactors.
CEE314.4	Discuss postulated severe accidents in reactors and cooling of reactor during removal of spent fuel.
CEE314.5	Discuss cooling and disposing the nuclear waste and prospect of fusion energy in the future.

Course Name: CEE315(18EE642) ELECTRICAL ENGINEERING MATERIALS

CEE315.1	Discuss electrical and electronics materials, their importance, classification and operational requirement
CEE315.2	Discuss conducting, dielectric, insulating and magnetic materials used in engineering, their properties and classification.
CEE315.3	Explain the phenomenon superconductivity, super conducting materials and their application in engineering.
CEE315.4	Explain the plastic and its properties and applications.

Course Name: CEE316(18EE644) EMBEDDED SYSTEMS

CEE316.1	Identify the Embedded system components.
CEE316.2	Apply technological aspects to various interfacing with devices.
CEE316.3	Elaborate various design trade-offs.
CEE316.4	Apply software aspects and programming concepts to the design of Embedded System.
CEE316.5	Explain how to interface subsystems with external systems.

Course Name: CEE317(18EE646) ELECTRIC VEHICLE TECHNOLOGIES

CEE317.1	Explain the working of electric vehicles and recent trends.vehicles.
CEE317.2	Analyze different power converter topology used for electric vehicle application.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE317.3	Develop the electric propulsion unit and its control for application of electric
CEE317.4	Design converters for battery charging and explain transformer less topology.
Course Name: CEE318(18EEL66) CONTROL SYSTEM LABORATORY	
CEE318.1	Utilize software package and discrete components in assessing the time and frequency domain response of a given second order system.
CEE318.2	Design, analyze and simulate Lead, Lag and Lag – Lead compensators for given specifications.
CEE318.3	Determine the performance characteristics of ac and DC servomotors and synchro-transmitter receiver pair used in control systems.
CEE318.4	Simulate the DC position and feedback control system to study the effect of P, PI, PD and PID controller and Lead compensator on the step response of the system.
CEE318.4	Develop a script files to plot Root locus, Bode plot and Nyquist plot to study the stability criteria
Course Name: CEE319(18EEL67) DIGITAL SIGNAL PROCESSING LABORATORY	
CEE319.1	Explain physical interpretation of sampling theorem in time and frequency domains.
CEE319.2	Evaluate the impulse response of a system.
CEE319.3	Perform convolution of given sequences to evaluate the response of a system.
CEE319.4	Compute DFT and IDFT of a given sequence using the basic definition and/or fast methods.
CEE319.5	Provide a solution for a given difference equation.
CEE319.6	Design and implement IIR and FIR filters

Course Name: CEE401(18EE71) POWER SYSTEM ANALYSIS – 2	
CEE401.1	Formulate network matrices and models for solving load flow problems.
CEE401.2	Perform steady state power flow analysis of power systems using numerical iterative techniques.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE401.3	Solve issues of economic load dispatch and unit commitment problems.
CEE401.4	Analyze short circuit faults in power system networks using bus impedance matrix.
CEE401.5	Apply Point by Point method and Runge Kutta Method to solve Swing Equation.
Course Name: CEE402(18EE72) POWER SYSTEM PROTECTION	
CEE402.1	Discuss performance of protective relays, components of protection scheme and relay terminology over current protection.
CEE402.2	Explain the working of distance relays and the effects of arc resistance, power swings, line length and source impedance on performance of distance relays.
CEE402.3	Discuss pilot protection, construction, operating principles and performance of differential relays and discuss protection of generators, motors, transformer and Bus Zone Protection.
CEE402.4	Explain the construction and operation of different types of circuit breakers.
CEE402.5	Outline features of fuse, causes of overvoltages and its protection, also modern trends in Power System Protection.
Course Name: CEE403(18EE731) SOLAR AND WIND ENERGY	
CEE403.1	Discuss the importance of the role of renewable energy, the concept of energy storage and the principles of energy storage devices.
CEE403.2	Discuss the concept of solar radiation data and solar PV system fabrication, operation of solar cell, sizing and design of PV system.
CEE403.3	Describe the process of harnessing solar energy and its applications in heating and cooling.
CEE403.4	Explain basic Principles of Wind Energy Conversion, collection of wind data, energy estimation and site selection.
CEE403.5	Discuss the performance of Wind-machines, energy storage, applications of Wind Energy and environmental aspects.
Course Name: CEE404(18EE732) MICRO- AND NANO-SCALE SENSORS AND TRANSDUCERS	
CEE404.1	Understand the differences between the sensor and transducer technology based on nanotechnology and nanofabrication and the classical sensor technologies



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE404.2	Make an informed selection of a sensor or transducer for a particular application
CEE404.3	Become knowledgeable about the technologies that are available commercially at the present time.
Course Name: CEE405(18EE733) INTEGRATION OF DISTRIBUTION GENERATION	
CEE405.1	Explain energy generation by wind power and solar power.
CEE405.2	Discuss the variation in production capacity at different time scales, the size of individual units, and the flexibility in choosing locations with respect to wind and solar systems.
CEE405.3	Explain the performance of the system when distributed generation is integrated to the system.
CEE405.4	Discuss effects of the integration of DG: the increased risk of overload, increased losses, increased risk of overvoltages and increased levels of power quality disturbances.
CEE405.5	Discuss effects of the integration of DG: incorrect operation of the protection.
CEE405.6	Discuss the impact the integration of DG on power system stability and operation.
Course Name: CEE406(18EE734) ADVANCED CONTROL SYSTEMS	
CEE406.1	Discuss state variable approach for linear time invariant systems in both the continuous and discrete time systems.
CEE406.2	Develop of state models for linear continuous–time and discrete–time systems.
CEE406.3	Apply vector and matrix algebra to find the solution of state equations for linear continuous– time and discrete–time systems.
CEE406.4	Define controllability and observability of a system and test for controllability and observability of a given system.
CEE406.5	Design pole assignment and state observer using state feedback.
CEE406.6	Develop the describing function for the nonlinearity present to assess the stability of the system.
CEE406.7	Develop Lyapunov function for the stability analysis of nonlinear systems.
Course Name: CEE407(18EEL76) POWER SYSTEM SIMULATION LABORATORY	



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE407.1	Develop a program in suitable package to assess the performance of medium and long transmission lines.
CEE407.2	Develop a program in suitable package to obtain the power angle characteristics of salient and non-salient pole alternator.
CEE407.3	Develop a program in suitable package to assess the transient stability under three phase fault at different locations in a of radial power systems.
CEE407.4	Develop programs in suitable package to formulate bus admittance and bus impedance matrices of interconnected power systems
CEE407.5	Use suitable package to solve power flow problem for simple power systems.
CEE407.6	Use suitable package to study unsymmetrical faults at different locations in radial power systems
CEE407.7	Use of suitable package to study optimal generation scheduling problems for thermal power plants.
Course Name: CEE408(18EEL77) RELAY AND HIGH VOLTAGE LABORATORY	
CEE408.1	Verify the characteristics of over current, over voltage, under voltage and negative sequence relay both electromagnetic and static type.
CEE408.2	Verify the characteristics of microprocessor based over current, over voltage, under voltage relays and distance relay.
CEE408.3	Show knowledge of protecting generator, motor and feeders.
CEE408.4	Analyze the spark over characteristics for both uniform and non-uniform configurations using High A and DC voltages.
CEE408.5	Measure high AC and DC voltages and breakdown strength of transformer oil.
CEE408.6	Draw electric field and measure the capacitance of different electrode configuration models.
CEE408.7	Show knowledge of generating standard lightning impulse voltage to determine efficiency, energy of impulse generator and 50% probability flashover voltage for air insulation.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

Course Name: CEE411(18EE81) POWER SYSTEM OPERATION AND CONTROL	
CEE411.1	Describe various levels of controls in power systems, architecture and configuration of SCADA.
CEE411.2	Develop and analyze mathematical models of Automatic Load Frequency Control.
CEE411.3	Develop mathematical model of Automatic Generation Control in Interconnected Power system
CEE411.4	Discuss the Control of Voltage, Reactive Power and Voltage collapse.
CEE411.5	Explain security, contingency analysis, state estimation of power systems
Course Name: CEE412(18EE821) FACTS AND HVDC TRANSMISSION	
CEE412.1	Discuss transmission interconnections, flow of Power in an AC System, limits of the loading capability, dynamic stability considerations of a transmission interconnection and controllable parameters.
CEE412.2	Explain the basic concepts, definitions of flexible ac transmission systems and benefits from FACTS technology.
CEE412.3	Describe shunt controllers, Static Var Compensator and Static Compensator for injecting reactive power in the transmission system in enhancing the controllability and power transfer capability.
CEE412.4	Describe series Controllers Thyristor-Controlled Series Capacitor (TCSC) and the Static Synchronous Series Compensator (SSSC) for control of the transmission line current.
CEE412.5	Explain advantages of HVDC power transmission, overview and organization of HVDC system.
CEE412.6	Describe the basic components of a converter, the methods for compensating the reactive power demanded by the converter.
CEE412.7	Explain converter control for HVDC systems, commutation failure, control.
Course Name: CEE413 (18EE822) ELECTRICAL ESTIMATION AND COSTING	
CEE413.1	Discuss wiring methods, cables used, design of lighting points and sub-circuits, internal wiring, wiring accessories and fittings, fuses and types.
CEE413.2	Discuss estimation of service mains and power circuits.
CEE413.3	Discuss estimation of overhead transmission and distribution system its components.
CEE413.4	Discuss types of substation, main components and estimation of substation.
Course Name: CEE414(18EE825) ELECTRICAL POWER QUALITY	
CEE414.1	Define Power quality; evaluate power quality procedures and standards.



PKM Educational Trust ®

R. R. Institute of Technology

Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka

Accredited by NAAC with 'B+'

Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

CEE414.2	Estimate voltage sag performance; explain principles of protection and Sources of transient over voltages.
CEE414.3	Identify various sources of harmonics, explain effects of harmonic distortion
CEE414.4	Evaluate harmonic distortion, control harmonic distortion.
CEE414.5	Estimate power quality in distribution planning. Identify power quality issues in utility system.
Course Name: CEE415(18EEP83) PROJECT WORK PHASE -II	
CEE415.1	Present the project and be able to defend it.
CEE415.2	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
CEE415.3	Habituated to critical thinking and use problem solving skills
CEE415.4	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms.
CEE415.5	Work in a team to achieve common goal.
CEE415.6	Learn on their own, reflect on their learning and take appropriate actions to improve it.
Course Name: CEE416(18EES84) PROJECT WORK PHASE -II	
CEE416.1	Attain, use and develop knowledge in the field of engineering and other disciplines through independent learning and collaborative study.
CEE416.2	Identify, understand and discuss current, real-time issues.
CEE416.3	Improve oral and written communication skills.
CEE416.4	Explore an appreciation of the self in relation to its larger diverse social and academic contexts.
CEE416.5	Apply principles of ethics and respect in interaction with others.
Course Name: CEE417(18EEI85) INTERNSHIP	
CEE417.1	Gain practical experience within industry in which the internship is done.
CEE417.2	Acquire knowledge of the industry in which the internship is done.
CEE417.3	Apply knowledge and skills learned to classroom work.
CEE417.4	Develop a greater understanding about career options while more clearly defining personal career goals.
CEE417.5	Experience the activities and functions of professionals.
CEE417.6	Develop and refine oral and written communication skills.