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Affiliated to VTU Belgaum.

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Name	Calculus and Linear Algebra	Semester	1
Course code	18MAT11	Batch	2018 - 2022

Course Outcomes

C101.1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
C101.2	Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and jacobians.
C101.3	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
C101.4	Solve first order linear /nonlinear differential equation analytically using standard methods.
C101.5	Make use of matrix theory for solving system of linear equations and compute eigenvalues and eigenvectors required for matrix diagonalization process.



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Course Name	Engineering Physics	Semester	2
Course code	18PHY12/22	Batch	2018 - 2022

Course Outcomes

C102.1	Understand various types of oscillations and their implications, the role of shock waves in various fields.
C102.2	Recognize the elastic properties of materials for engineering applications.
C102.3	Realize the magnetic interrelation between time varying electric field and field, the transverse nature of electromagnetic waves and their role in optical fibre communication.
C102.4	Compute Eigen values, Eigen functions, and momentum of atomic and subatomic particles using time independent Schrodinger wave one-dimensional applications equation and extended to the design of lasers and its
C102.5	Apprehend and materials such as conductors, semiconductors and dielectrics using different theoretical models.



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Course Name	Engineering Chemistry	Semester	1
Course code	18CHE12/22	Batch	2018 - 2022

Course Outcomes

C103.1	Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy systems.
C103.2	Causes & effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating and electroless plating.
C103.3	Production and consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.
C103.4	Environmental pollution, waste management and water chemistry.
C103.5	Different techniques of instrumental methods of analysis. Fundamental principles of nano materials.



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Course Name	Basic Electrical Engineering	Semester	1
Course code	18ELE13/23	Batch	2018 - 2022

Course Outcomes

C104.1	Analyse D.C and A.C circuits.
C104.2	Explain the principle of operation and construction of single-phase transformers.
C104.3	Explain the principle of operation and construction of DC machines and synchronous machines.
C104.4	Explain the principle of operation and construction of three phase induction motors.
C104.5	Discuss concepts of electrical wiring, circuit protecting devices and earthing.



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Course Name	C Programming for Problem	Semester	2
Course code	18CPS13/23	Batch	2018 - 2022

Course Outcomes

C105.1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc.
C105.2	Construct a programming solution to the given problem using C.
C105.3	Identify and correct the syntax and logical errors in C programs.
C105.4	Modularize the given problem using functions and structures.



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Course Name	Elements of Civil Engineering	Semester	1
Course code	18CIV14/24	Batch	2018 - 2022

Course Outcomes

C106.1	Understand the Various Fields of Civil Engineering.
C106.2	Compute the resultant of force system & resolution of forces.
C106.3	Locate the centroid and compute the moment of inertia of regular & built-up sections.
C106.4	Comprehend the action of forces, moments and other types of loads on rigid bodies and compute the reactive forces.
C106.5	Analyse the Bodies In Motion.



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Course Name	Basic Electronics	Semester	1
Course code	18ELN14/24	Batch	2018 - 2022

Course Outcomes

C107.1	Understand the characteristics of diode, zener diode, rectifiers, capacitor filter circuits, photo diode, LED, photo coupler.
C107.2	Understand the construction & operation of FETs, CMOS, SCR operation and characteristics.
C107.3	Understand the op-amp operation, input modes, Ideal characteristics, applications and comparator.
C107.4	Understand the BJT operation, feedback amplifiers-principles, gain stability with feedback, oscillators, IC 555 Timer, astable oscillator using IC 555.
C107.5	Understand the basics of digital electronics using logic gates, Boolean algebra and realization of Boolean functions using universal gates, half and full adder designing, MUX, Decoder, shift register, ring counter, communication system, principle of mobile phone.



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Course Name	Engineering Physics Lab	Semester	1
Course code	18PHYL16/26	Batch	2018 - 2022

Course Outcomes

C110.1	Apprehend the concepts of interference of light, diffraction of light and total internal reflection of light.
C110.2	Understand the principles of operation of semiconductor devices photodiode and transistor using simple circuits.
C110.3	Determine spring constant, elastic moduli and moment of inertia of rigid bodies with the help of suggested procedure.
C110.4	Recognize the concept of resonance and practical applications.
C110.5	Understand the magnetic effect of electric current, thermal, electrical and dielectric properties of materials.



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Course Name	Engineering Chemistry Lab	Semester	1
Course code	18CHEL16/26	Batch	2018 - 2022

Course Outcomes

C111.1	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
C111.2	Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.



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Course Name	Basic Electrical Engineering Lab	Semester	1
Course code	18ELEL17/27	Batch	2018 - 2022

Course Outcomes

C112.1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory.
C112.2	Compare power factor of lamps.
C112.3	Determine impedance of an electrical circuit and power consumed in a 3-phase load.
C112.4	Determine earth resistance and understand two way and three-way control of lamps.



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Course Name	C Programming Lab	Semester	1
Course code	18CPL17/27	Batch	2018 - 2022

Course Outcomes

C113.1	Write algorithms, flowcharts and program for simple problems.
C113.2	Correct syntax and logical errors to execute a program.
C113.3	Write iterative and wherever possible recursive programs.
C113.4	Demonstrate use of functions, arrays, strings, structures and pointers in problem solving



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Course Name	Technical English I	Semester	1
Course code	18EGH18	Batch	2018 - 2022

Course Outcomes

C114.1	Use grammatical English and essentials of language skills and identify the nuances of phonetics, intonation and flawless pronunciation.
C114.2	Implement English vocabulary at command and language proficiency.
C114.3	Identify common errors in spoken and written communication.
C114.4	Understand and improve the non-verbal communication and kinesics.
C114.5	Perform well in campus recruitment, engineering and all other general competitive examinations.



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Course Name	Advance Calculus and Numerical Methods	Semester	2
Course code	18MAT21	Batch	2018 - 2022

Course Outcomes

C115.1	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.
C115.2	Demonstrate various physical models through higher order differential equations and solve such linear ordinary differential equations.
C115.3	Construct a variety of partial differential equations and solution by exact methods/method of separation of variables.
C115.4	Explain the applications of infinite series and obtain series solution of ordinary differential equations.
C115.5	Apply the knowledge of numerical methods in the modelling of various physical and engineering phenomena.



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Course Name	Technical English II	Semester	2
Course code	18EGH28	Batch	2018 - 2022

Course Outcomes

C116.1	Identify common errors in spoken and written communication.
C116.2	Get familiarized with English vocabulary and language proficiency.
C116.3	Improve nature and style of sensible writing and acquire employment and workplace communication skills.
C116.4	Improve their technical communication skills through technical reading and writing practices.
C116.5	Perform well in campus recruitment, engineering and all other general competitive examinations.



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Course code	18MAT31	Semester	3
Course Name	Transform Calculus, Fourier Series and Numerical Techniques	Batch	2018 - 2022

Course Outcomes

C301.1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.
C301.2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
C301.3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.
C301.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
C301.5	Determine the external of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.



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Course code	18EE32	Semester	3
Course Name	Electric Circuit Analysis	Batch	2018 - 2022

Course Outcomes

C302.1	Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using source shifting, source transformation and network reduction using transformations.
C302.2	Solve complex electric circuits using network theorems.
C302.3	Discuss resonance in series and parallel circuits and also the importance of initial conditions and their evaluation.
C302.4	Synthesize typical waveforms using Laplace transformation.
C302.5	Solve unbalanced three phase systems and also evaluate the performance of two port networks.



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Course code	18EE33	Semester	3
Course Name	Transformers and Generators	Batch	2018 - 2022

Course Outcomes

C303.1	Explain weerrfconstruction and operation and performance of single phase and three deesi rarrs.
C303.2	Explain the use of auto transformer, tap changing and tertiary winding transformer and need of operating transformers in parallel.
C303.3	Explain the armature reaction and commutation and their effects in a DC generators.
C303.4	Explain the construction, operation and performance of Synchronous machines.



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Course code	18EE34	Semester	3
Course Name	Analog Electronic Circuits	Batch	2018 - 2022

Course Outcomes

C304.1	Predict the output response of clipper and clamper circuits.
C304.2	Design and compare biasing circuits for transistor amplifier.
C304.3	Explain the transistor biasing.
C304.4	Explain the concept of feedback, its types and design of feedback circuits.
C304.5	Design and analyze the power amplifier circuits and oscillations for different frequencies.
C304.6	Perform design and analysis of FET and MOSFET amplifiers in the common source with fixed bias.



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Course code	18EE35	Semester	3
Course Name	Digital System Design	Batch	2018 - 2022

Course Outcomes

C305.1	Develop simplified switching equation using Karnaugh Maps and QuineMcClusky techniques.
C305.2	Design Multiplexer, Encoder, Decoder, Adder, Subtractors and Comparator as digital combinational control circuits.
C305.3	Design flip flops, counters, shift registers as sequential control circuits.
C305.4	Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits.
C305.5	Explain the functioning of Read only and Read/Write Memories, Programmable ROM, EPROM and Flash memory.



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Course code	18EE36	Semester	3
Course Name	Electrical and Electronic Measurements	Batch	2018 - 2022

Course Outcomes

C306.1	Measure resistance, inductance and capacitance using bridges and determine earth resistance.
C306.2	Explain the working of various meters used for measurement of Power, Energy & understand the adjustments, calibration & errors in energy meters.
C306.3	Understand methods of extending the range of instruments & instrument transformers.
C306.4	Explain the working of different electronic instruments.
C306.5	Explain the working of different display and recording devices.



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Course code	18EEL37	Semester	3
Course Name	Electrical Machines Lab-1	Batch	2018 - 2022

Course Outcomes

C307.1	Evaluate the performance of transformers from the test data obtained.
C307.2	Connect and operate two single phase transformers of different KVA rating in parallel.
C307.3	Connect single phase transformers for three phase operation and phase conversion.
C307.4	Compute the voltage regulation of synchronous generator using the test data obtained in the laboratory.
C307.5	Evaluate the performance of synchronous generators from the test data and assess the performance of synchronous generator connected to infinite bus.



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Course code	18EEL38	Semester	3
Course Name	Electronics Laboratory	Batch	2018 - 2022

Course Outcomes

C308.1	Design and test rectifier circuits with and without capacitor filters. .
C308.2	Determine h-parameter models of transistor for all modes. .
C308.3	Design and test BJT and FET amplifier and oscillator circuits. .
C308.4	Realize Boolean expressions, adders and subtractors using gates. .
C308.5	Design and test Ring counter/Johnson counter, Sequence generator and 3-bit counters.



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Course code	18MAT41	Semester	4
Course Name	Complex analysis, probability and statistical methods	Batch	2018 - 2022

Course Outcomes

C401.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
C401.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
C401.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.
C401.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
C401.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.
C401.6	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.



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Course code	18EE42	Semester	4
Course Name	Power Generation and Economics	Batch	2018 - 2022

Course Outcomes

C402.1	Describe the working of hydroelectric, steam, nuclear power plants and state functions of major equipment of the power plants.
C402.2	Classify various substations and explain the functions of major equipments in substations.
C402.3	Explain the types of grounding and its importance.
C402.4	Infer the economic aspects of power system operation and its effects.
C402.5	Explain the importance of power factor improvement.



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Course code	18EE43	Semester	4
Course Name	Transmission and Distribution	Batch	2018 - 2022

Course Outcomes

C403.1	Explain the concepts of various methods of generation of power.
C403.2	Explain the importance of HVAC, EHVAC, UHVAC and HVDC transmission
C403.3	Design and analyze overhead transmission system for a given voltage level
C403.4	Calculate the parameters of the transmission line for different configurations and assess the performance of line



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Course code	18EE44	Semester	4
Course Name	Electric Motors	Batch	2018 - 2022

Course Outcomes

C404.1	Explain the construction, operation and classification of DC Motor, AC motor and Special purpose motors.
C404.2	Describe the performance characteristics & applications of Electric motors.
C404.3	Demonstrate and explain the methods of testing of DC machines and determine losses and efficiency.
C404.4	Control the speed of DC motor and induction motor.
C404.5	Explain the starting methods, equivalent circuit and phasor diagrams, torque angle, effect of change.



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Course code	18EE45	Semester	4
Course Name	Electromagnetic Field Theory	Batch	2018 - 2022

Course Outcomes

C405.1	Use different conditions systems. Coulomb's Law and Gauss Law for the evaluation of electric field produced by different charge configuration
C405.2	Calculate the energy and potential due to a system of charges and explain the behaviour of electric field across a boundary conditions.
C405.3	Explain the Poisson's Laplace equations and behaviour of steady magnetic fields
C405.4	Explain the behaviour of magnetic fields and magnetic materials
C405.5	Asses time varying fields and propagation of waves in different media



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Course code	18EE46	Semester	4
Course Name	Operational Amplifiers and Linear Ics	Batch	2018 - 2022

Course Outcomes

C406.1	Describe the characteristics of ideal and practical operational amplifier.
C406.2	Design filters and signal generators using linear ICs. .
C406.3	Demonstrate the application of Linear ICs as comparators and rectifiers.
C406.4	Analyze voltage regulators for given specification using op-amp and IC voltage regulators.
C406.5	Summarize the basics of PLL and Timer.



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Course code	18EEL47	Semester	4
Course Name	Electrical Machines Laboratory -2	Batch	2018 - 2022

Course Outcomes

C407.1	Test DC machines to determine their characteristics and also to control the speed of DC motor.
C407.2	Pre-determine the performance characteristics of DC machines by conducting suitable tests.
C407.3	Perform load test on single phase and three phase induction motor to assess its performance
C407.4	Conduct test on induction motor to pre-determine the performance characteristics.
C407.5	Conduct test on synchronous motor to draw the performance curves.



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Course code	18EEL48	Semester	4
Course Name	Op- amp and Linear ICs Laboratory	Batch	2018 - 2022

Course Outcomes

C408.1	To conduct experiment to determine the characteristic parameters of OP-Amp.
C408.2	To design test the OP-Amp as Amplifier, Adder, Subtractor, Differentiator and Integrator.
C408.3	To design test the OP-Amp as Oscillators and Filters.
C408.4	Design and study of Linear IC's as Multivibrator power supplies.



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Course code	18EE51	Semester	5
Course Name	Management and Entrepreneurship	Batch	2018 - 2022

Course Outcomes

C501.1	Explain the field of management, task of the manager, planning and steps in decision making.
C501.2	Discuss the structure of organization, importance of staffing, leadership styles, modes of communication, techniques of coordination and importance of managerial control in business.
C501.3	Explain the concepts of entrepreneurship and a businessman's social responsibilities towards different groups.
C501.4	Show an understanding of role of SSI's in the development of country and state/central level institutions/agencies supporting business enterprises.
C501.5	Discuss the concepts of project management, capital budgeting, project feasibility studies, need for project report and new control techniques.



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Course code	18EE52	Semester	5
Course Name	Microcontroller	Batch	2018 - 2022

Course Outcomes

C502.1	Outline the 8051 architecture, registers, internal memory organization, addressing modes.
C502.2	Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming
C502.3	Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmetic operations, data conversion and timer/counter programming.
C502.4	Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial data communication and interrupt programming.
C502.5	Program 8051 to work with external devices for ADC, DAC, Stepper motor control, DC motor control, Elevator control



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Course code	18EE53	Semester	5
Course Name	Power Electronics	Batch	2018 - 2022

Course Outcomes

C503.1	Explain application area of power electronics, types of power electronic circuits and Switches, their characteristics, power diodes operation and analysis of Single-phase diode rectifier circuits with R and RL loads.
C503.2	Explain steady state, switching characteristics and gate control requirements of different power transistors and their limitations.
C503.3	Discuss different types of Thyristors, their operation, gate characteristics and gate triggering methods.
C503.4	Discuss the principle of operation of controlled Rectifiers and DC - DC converters.
C503.5	Discuss the principle of operation of DC -AC converters and AC voltage controllers.



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Course code	18EE54	Semester	5
Course Name	Signals and Systems	Batch	2018 - 2022

Course Outcomes

C504.1	Explain the generation of signals, behaviour of system and the basic operations that can be performed on signals and properties of systems.
C504.2	Apply convolution in both continuous and discrete domain for the analysis of systems given impulse response of a system.
C504.3	Solve the continuous time and discrete time systems by various methods and their representation by block diagram.
C504.4	Perform Fourier analysis for continuous and discrete time, linear time invariant systems.
C504.5	Apply Z-transform and properties of Z transform for the analysis of discrete time systems.



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Course code	18EE55	Semester	5
Course Name	Electrical Machine Design	Batch	2018 - 2022

Course Outcomes

C505.1	Identify and list, limitations, modern trends in design, manufacturing of electrical machines and properties of materials used in the electrical machines.
C505.2	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.
C505.3	Derive the output equations of transformer, discuss selection of specific loadings, and estimate the number of cooling tubes, no load current and leakage reactance of core type transformer.
C505.4	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.
C505.5	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.



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Course code	18EE56	Semester	5
Course Name	High Voltage Engineering	Batch	2018 - 2022

Course Outcomes

C506.1	Explain conduction and breakdown phenomenon in gases, liquid dielectrics and in solid dielectrics.
C506.2	Explain generation of high voltages and currents and Discuss measurement techniques for high voltages and currents.
C506.3	Discuss overvoltage phenomenon and insulation coordination in electric power systems.
C506.4	Discuss non-destructive testing of materials and electric apparatus and high-voltage testing of electric apparatus.



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Course code	18EEL57	Semester	5
Course Name	Microcontroller Laboratory	Batch	2018 - 2022

Course Outcomes

C507.1	Write assembly language programs for data transfer, arithmetic, Boolean and logical instructions and code conversions.
C507.2	Write ALP using subroutines for generation of delays, counters, configuration of SFRs for serial communication and timers.
C507.3	Perform interfacing of stepper motor and dc motor for controlling the speed, elevator, LCD, external ADC and temperature control.
C507.4	Generate different waveforms using DAC interface.
C507.5	Work with a small team to carry out experiments using microcontroller concepts and prepare reports that present lab work.



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Course code	18EEL58	Semester	5
Course Name	Power Electronics Laboratory	Batch	2018 - 2022

Course Outcomes

C508.1	Obtain static characteristics of semiconductor devices to discuss their performance.
C508.2	Trigger the SCR by different methods.
C508.3	Verify the performance of single phase controlled full wave rectifier and AC voltagecontroller with R and RL loads.
C508.4	Control the speed of a dc motor, universal motor and stepper motors.
C508.5	Verify the performance of single phase full bridge inverter connected to resistive load.



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Course code	18EE61	Semester	6
Course Name	Control Systems	Batch	2018 - 2022

Course Outcomes

C601.1	Analyze and model electrical and mechanical system using analogous.
C601.2	Formulate transfer functions using block diagram and signal flow graphs.
C601.3	Determine transient and steady state time response.
C601.4	Analyze the stability of control system RH Criterion.
C601.5	Illustrate the performance of a given system in time and frequency domains, stability analysis using Root locus and Bode plot.
C601.6	Discuss stability analysis using Nyquist plots, Design controller and compensator for a given Specification.



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Course code	18EE62	Semester	6
Course Name	Power System Analysis – 1	Batch	2018 - 2022

Course Outcomes

C602.1	Show understanding of per unit system, its advantages and computation.
C602.2	Show the concept of one line diagram and its implementation in problems
C602.3	Evaluate symmetrical components of voltages and currents in un-balanced three phase circuits
C602.4	Explain the concept of sequence impedance and sequence networks of power system components and power system
C602.5	Analyse three phase synchronous machine and simple power systems for different unsymmetrical faults using symmetrical components.



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Course code	18EE63	Semester	6
Course Name	Digital Signal Processing	Batch	2018 - 2022

Course Outcomes

C603.1	Apply DFT and IDFT to perform linear filtering techniques on given sequences to determine the output.
C603.2	Apply fast and efficient algorithms for computing DFT and inverse DFT of a given sequence.
C603.3	Design IIR Butterworth and Chebyshev digital filters using impulse invariant and bilinear transformation.
C603.4	Develop a digital IIR filter by direct, cascade, parallel, ladder, and FIR filter by direct, cascade and linear phase methods of realization.
C603.5	Design and realize FIR filters by use of window function and frequency sampling method.



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Course code	18EE643	Semester	6
Course Name	CAED	Batch	2018 - 2022

Course Outcomes

C604.1	Develop armature winding diagram for DC and AC machines.
C604.2	Develop a Single Line Diagram of Generating Stations and substation using the standard symbols.
C604.3	Construct sectional views of core and shell types transformers using the design data.
C604.4	Construct sectional views of assembled DC machine and their parts using the design data or the sketches.
C604.5	Construct sectional views of AC machine and their parts using the design data or the sketches.



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Course code	18EEL66	Semester	6
Course Name	Control System Laboratory	Batch	2018 - 2022

Course Outcomes

C606.1	Use software package or discrete components in assessing the time and frequency domain responses of a given second order system.
C606.2	Design and analyse Lead, Lag and Lead-Lag – Lead compensators for given specifications.
C606.3	Determine the performance characteristics of ac and dc servomotors and synchro-transmitter receiver pair used in control systems.
C606.4	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.
C606.5	Write a script files to plot root locus, bode plot, Nyquist plots to study the stability of the system using a software package.



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Course code	18EEL67	Semester	6
Course Name	Digital Signal Processing Laboratory	Batch	2018 - 2022

Course Outcomes

C607.1	Explain physical interpretation of sampling theorem in time and frequency domain.
C607.2	Evaluate the impulse response of a system.
C607.3	Perform convolution of a given sequence to evaluate the response of a system.
C607.4	Compare DFT & IDFT of a given sequence.
C607.5	Provide a solution for a given difference equation



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Course code	18EEMP68	Semester	6
Course Name	Mini-project	Batch	2018 - 2022

Course Outcomes

C608.1	Present the mini-project and be able to defend it.
C608.2	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.
C608.3	Habituated to critical thinking and use problem solving skills.
C608.4	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms.
C608.5	Work in a team to achieve common goal. Learn on their own, reflect on their learning and take appropriate actions to improve it.



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Course code	18EE71	Semester	7
Course Name	Power System Analysis – 2	Batch	2018 - 2022

Course Outcomes

C701.1	Formulate the network matrices and models for solving load flow problems.
C701.2	Perform steady state power flow analysis of power systems using G-S, N-R, FDLF techniques
C701.3	Solve issues of economic load dispatch and unit commitment problems.
C701.4	Analyze short circuit faults in power system networks, using bus impedance matrix.
C701.5	Apply point by point method and Runge-Kutta method to solve swing equation.



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Course code	18EE71	Semester	7
Course Name	Power System Analysis – 2	Batch	2018 - 2022

Course Outcomes

C701.1	Formulate the network matrices and models for solving load flow problems.
C701.2	Perform steady state power flow analysis of power systems using G-S, N-R, FDLF techniques
C701.3	Solve issues of economic load dispatch and unit commitment problems.
C701.4	Analyze short circuit faults in power system networks, using bus impedance matrix.
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Course code	18EE72	Semester	7
Course Name	Power System Protection	Batch	2018 - 2022

Course Outcomes

C702.1	Discuss performance of protective relays, components of protection scheme and relay terminology overcurrent protection.
C702.2	Explain the working of distance relays and the effects of arc resistance, power swings, line length and source impedance on performance of distance relays.
C702.3	Discuss pilot protection; wire pilot relaying and carrier pilot relaying.
C702.4	Discuss construction, operating principles and performance of differential relays for differential protection.
C702.5	Discuss protection of generators, motors, Transformer and Bus Zone Protection.



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Course code	18EE733	Semester	7
Course Name	Integrated of Distribution Generation	Batch	2018 - 2022

Course Outcomes

C703.1	Explain energy generation by wind power and solar power.
C703.2	Discuss the variation in production capacity at different timescales, the size of individual units.
C703.3	Explain the performance of the system when distributed generation is integrated to the system.
C703.4	Discuss effects of the integration of DG: the increased risk of overload and increased losses. Increased risk of over voltages, increased levels of power quality disturbances.
C703.5	Discuss effects of the integration of DG: Incorrect operation of the protection.
C703.6	Discuss the impact the integration of DG: On power system stability and operation.



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Course code	18EE742	Semester	7
Course Name	Utilization of Electrical Power	Batch	2018 - 2022

Course Outcomes

C704.1	Discuss different methods of electric heating & welding.
C704.2	Discuss the laws of electrolysis, extraction, refining of metals and electro deposition process.
C704.3	Discuss the laws of illumination different types of lamp, lighting schemes and design of lighting schemes.
C704.4	Analyze systems of electric traction, speed time curves and mechanics of train movement. Explain the motors used for electric traction, their control & braking and power supply system used for electric traction.
C704.5	Discuss the basic concepts of electric vehicles and hybrid vehicles.



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Course code	18EEL76	Semester	7
Course Name	PSS laboratory	Batch	2018 - 2022

Course Outcomes

C706.1	Write a program in MATLAB to assess the performance of medium and long transmission lines.
C706.2	Write a program in MATLAB to obtain the power angle characteristics of salient and non-salient pole Alternator.
C706.3	Write a program in MATLAB for load flow Analysis using Gauss-Seidel and Newton-Raphson method for simple power systems.
C706.4	Write a program in MATLAB to obtain Ybus and Zbus matrices of interconnected power systems
C706.5	Write a program in MATLAB to obtain optimal generation scheduling problems for thermal power plants.



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Course code	18EEL77	Semester	7
Course Name	Relay & HV lab	Batch	2018 - 2022

Course Outcomes

C707.1	Experimentally verify the characteristics of over current, over voltage, undervoltage and negative sequence relays.
C707.2	Experimentally verify the characteristics of microprocessor based over current, over voltage relays relay.
C707.3	Show knowledge of protecting generator, motor.
C707.4	Analyse the spark over characteristics for both uniform and non-uniform configurations using High AC and DC voltages.
C707.5	Measure high AC and DC voltages and breakdown strength of transformer oil.
C707.6	Draw electric field and measure the capacitance of different electrode configuration models.



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Course code	18EEP78	Semester	7
Course Name	Project Work Phase - 1	Batch	2018 - 2022

Course Outcomes

C708.1	Demonstrate a sound technical knowledge of their selected project topic.
C708.2	Undertake problem identification, formulation and solution.
C708.3	Design engineering solutions to complex problems utilizing a systems approach.
C708.4	Communicate with engineers and the community at large in written and oral forms.



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Course code	18EE81	Semester	8
Course Name	Power System Operation and Control	Batch	2018 - 2022

Course Outcomes

C801.1	Describe various levels of controls in power systems, architecture and configuration of SCADA.
C801.2	Develop and analyze mathematical models of Automatic Load Frequency Control.
C801.3	Develop mathematical model of Automatic Generation Control in Interconnected Power System.
C801.4	Discuss the Control of Voltage, Reactive Power and Voltage collapse.
C801.5	Explain security, contingency analysis, state estimation of power systems.



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Course code	18EE822	Semester	8
Course Name	Electrical estimation & Costing	Batch	2018 - 2022

Course Outcomes

C802.1	Explain the purpose of estimation and costing.
C802.2	Discuss market survey, estimates, purchase enquiries, preparation of tenders, comparative statements and payment of bills.
C802.3	Discuss Indian Electricity act and Indian Electricity rules.
C802.4	Discuss distribution of energy in a building, wiring and methods of wiring, cables used in internal wiring, wiring accessories and fittings, fuses and types of fuses.
C802.5	Discuss design of lighting points and its number, total load, sub-circuits, size of conductor. Discuss types of service mains and estimation of service mains and power circuits.



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Course code	18EEP83	Semester	8
Course Name	Project Work Phase - 2	Batch	2018 - 2022

Course Outcomes

C803.1	Present the project and be able to defend it.
C803.2	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.
C803.3	Habituated to critical thinking and use problem solving skills.
C803.4	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms.
C803.5	Work in a team to achieve common goal. Learn on their own, reflect on their learning and take appropriate actions to improve it



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Course code	18EES84	Semester	8
Course Name	Technical Seminar	Batch	2018 - 2022

Course Outcomes

C804.1	Attain, use and develop knowledge in the field of engineering and other disciplines through independent learning and collaborative study.
C804.2	Identify, understand and discuss current, real-time issues.
C804.3	Improve oral and written communication skills.
C804.4	Explore an appreciation of the self in relation to its larger diverse social and academic contexts.
C804.5	Apply principles of ethics and respect in interaction with others.



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Course code	18EEI85	Semester	8
Course Name	Internship	Batch	2018 - 2022

Course Outcomes

C805.1	Gain practical experience within industry in which the internship is done. Acquire knowledge of the industry in which the internship is done. Apply knowledge and skills learnt to classroom work.
C805.2	Develop a greater understanding about career options while more clearly defining personal career goals. Experience the activities and functions of professionals.
C805.3	Develop and refine oral and written communication skills.
C805.4	Identify areas for future knowledge and skill development.
C805.5	Expand intellectual capacity, credibility, judgment, intuition.