



SREE VENKATESWARA COLLEGE OF ENGINEERING

An ISO 9001:: 2015 Certified Institution (Approved

by AICTE, New Delhi and Affiliated to

JNTU, Anantapur) Northrajupalem (Vi), Kodavaluru(M), S.P.S.R

Nellore (Dt)-524316

Department of Electrical and Electronics Engineering

R15 Regulation

Course Outcomes (COs)

I B. Tech - I Semester

S.No	Subject Name	Subject Code	Course Outcomes	
1	Functional English	15A52101	C111.1	Describe the communication and writing skills in general communication.
			C111.2	Develop the writing and life skills in structural manner of real time scenarios.
			C111.3	Apply the knowledge of writing and speaking skills to enhance the career opportunities.
			C111.4	Illustrate the concepts of writing and speaking skills to develop the skills in job opportunities.
			C111.5	Analyze the concepts of various real time scenarios to represent in an effective model.
2	Mathematics - I	15A54101	C112.1	Analyze the ordinary differential equations to provide solutions of various engineering applications.
			C112.2	Apply the mathematical knowledge of higher order differential equations to solve various engineering problems.
			C112.3	Describe the knowledge of Mean Value theorems, functions of several variables and Radius of Curvature for engineering applications.
			C112.4	Evaluate the Multiple integrals to determine areas and volumes of engineering applications.
			C112.5	Apply the techniques of vector calculus to solve various engineering problems.
3	Computer Programming	15A05101	C113.1	Describe computer programming concepts to solve a problem.
			C113.2	Choose appropriate control structure to solve the real world problems.
			C113.3	Apply the knowledge of pointers for dynamic memory management of an application.
			C113.4	Apply the concepts of Arrays, pointers and structures to develop programs.
			C113.5	Demonstrate the knowledge of Files to organize the data in a disk.

4	Engineering Physics	15A56101	C114.1	Describe the concepts of physical optics, lasers and fibre optics in various engineering applications.
			C114.2	Illustrate the X-Ray diffraction techniques for determination of crystal structures & production and detection of ultrasonic waves for non-destructive testing of materials.
			C114.3	Analyze the knowledge of basic quantum mechanics and free electron theory of metals to describe the properties of metals.
			C114.4	Demonstrate the physics of semiconductors for electronic devices & properties of various magnetic materials for engineering applications.
			C114.5	Illustrate the concepts of super conducting materials and nano-materials for scientific and engineering applications.
5	Engineering Drawing	15A03101	C115.1	Demonstrate the Principles of Engineering Drawing, BIS conventions and importance of various curves in engineering for solving engineering problems.
			C115.2	Apply the concepts of Engineering scales for drawing view of projection points of a problem.
			C115.3	Analyze the procedure of projection of lines and regular plane surfaces for development of engineering models.
			C115.4	Construct the development of surfaces by understanding the projection of solids concept.
			C115.5	Demonstrate the strategies of projections and visualization skills for conversion of Isometric views into orthographic projections.
6	English Language Communication Skills Lab	15A52102	C116.1	Apply knowledge in seeking right pronunciation with better accent through stress, intonation and rhythm.
			C116.2	Develop speaking skills and active participation in the learning process and become expertise lifelong learningSkills.
			C116.3	Demonstrate the learning skills through participate in Group Discussions, Debates, placement Interviews and in Public Speaking.
7	Engineering Physics Lab	15A56102	C117.1	Identify the importance of optical phenomenon like Interference and diffraction and illustrate he knowledge about diffraction phenomenon and applications of lasers.
			C117.2	Apply practical application knowledge of optical fiber and lasers by the study of their relative parameters.
			C117.3	Apply the knowledge of semiconductor and magnetic materials in day to day science applications.
8	Computer Programming Lab	15A05102	C118.1	Design programs by selecting the right identifiers, data types & operators, control statements, arrays andstrings for effective Computation.
			C118.2	Develop the solution of a given problem by applying functions, pointers, structures &unions.
			C118.3	Develop the solution of a given problem through files and Debug erroneous programs related to the problem.

I B. Tech - II Semester

S.No	Subject Name	Subject Code	Course Outcomes	
1	Mathematics - I	15A54201	C121.1	Analyze the techniques of Laplace transforms and determine the solutions of ODE in engineering problems.
			C121.2	Describe the mathematical knowledge of Fourier Series to solve various engineering problems.
			C121.3	Illustrate the concepts of Fourier transforms to solve various engineering problems.
			C121.4	Apply the Partial differential equations to generate mathematical models for engineering applications.
			C121.5	Apply the techniques of Z-Transforms to solve difference equations in engineering applications.
2	English for Professional Communication	15A52201	C122.1	Demonstrate listening, reading and writing skills of communication in general and obtain general awareness in science.
			C122.2	Develop the oral communication skills in real life scenarios.
			C122.3	Illustrate the life and presentational skills for competitive opportunities.
			C122.4	Apply the life skills to deliver presentation effectively in placements.
			C122.5	Develop employability skills to enhance career opportunities.
3	Engineering Chemistry	15A51101	C123.1	Describe the various water treatment techniques used for the softening and purification of water in industrial applications.
			C123.2	Demonstrate the various preparation mechanisms of different polymers in engineering applications.
			C123.3	Apply the concepts of electro chemistry and knowledge of protection of metals in engineering and scientific applications.
			C123.4	Analyze the fuels and their synthesis to understand working of Internal Combustion and Diesel engines.
			C123.5	Demonstrate the concepts of cement, refractories, lubricants & carbon clusters in various engineering applications.
4	Environmental Studies	15A01101	C124.1	Describe the knowledge of natural resources and their importance in our daily life to develop & apply various water conservation methods of natural resources.
			C124.2	Illustrate the importance of ecosystem and its functions in environmental education for protection of life cycles of various bio systems which are essential for biosphere.
			C124.3	Demonstrate the knowledge of different types of pollutions and their control & impact on global environment which may affect the human health.
			C124.4	Identify the various environmental impacts and the importance of various acts and policies towards environmental sustainability.

			C124.5	Analyze the effects of increasing human population as well as health associated problems and learns measures to be taken to protect human health.
5	Electrical Circuits -I	15A02201	C125.1	Summarize the basic characteristics of R,L,C parameters and analysis of Network reduction techniques-star to delta and delta to star transformations
			C125.2	Analyze the concepts of real power, reactive power, complex power, phase angle and phase difference
			C125.3	Analyze Series and parallel resonances, bandwidth, current locus diagrams
			C125.4	Analyze Network theorems and application
			C125.5	Computational Analysis of two port network parameters
6	Engineering Chemistry Laboratory	15A51102	C126.1	Develop skills in determining the effects of hard water and also importance of knowing effects of presence of excess oxygen, acids and bases in water.
			C126.2	Demonstrate the practical knowledge about flow of lubricant with varying temperatures.
			C126.3	Analyze the amount of iron &manganese through different techniques and applying the knowledge in control of corrosion.
7	Electrical Circuits Laboratory	15A02202	C127.1	Apply suitable theorems for circuit analysis and verify the results theoretically.
			C127.2	Determine experimentally the two port network parameters and verify the results theoretically.
			C127.3	Determine the active and reactive powers experimentally and verify the results theoretically.
8	Engineering & IT Workshop	15A99201	C128.1	Design and development of sheet metal objects by surface development and join the metals for obtaining desired shape.
			C128.2	Build a Personal Computer and Install operating systems and prepare the computer ready to use.
			C128.3	Develop presentation and documentation of a given tasks through Microsoft Windows and access the Internet & test Interconnect two or more computers for information sharing.

II B. Tech - I Semester

S.No	Subject Name	Subject Code	Course Outcomes	
1	Mathematics III	15A54301	C211.1	Analyze engineering problems using the concepts of Matrices.
			C211.2	Solve algebraic and transcendental equations using various numerical methods
			C211.3	Understand the concepts of interpolation.
			C211.4	Apply the concepts of curve fitting to find the equation of straight line, second degree curve , exponential curveand the concepts numerical differentiation and integration.
			C211.5	Use the techniques of Numerical solution of Ordinary Differential equation with boundary conditions.

2	Electrical Circuits – II	15A02301	C212.1	Analyze the transient response of R-L, R-C, R-L-C circuits for D.C. and A.C. excitation.
			C212.2	Solve the power consumed by the three phase balanced and unbalanced circuits.
			C212.3	Apply Fourier transforms to electrical circuits excited by non-sinusoidal sources.
			C212.4	Relate network topology for analyzing the circuit.
			C212.5	Demonstrate different types of filters to study their characteristics.
3	Electrical Machines – I	15A02302	C213.1	Summarize the Electromagnetic fields in single and multi excited systems.
			C213.2	Describe the construction, operating principle of DC Generators.
			C213.3	Clarify the characteristics and applications of DC Generators.
			C213.4	Describe the characteristics and applications of DC Motors.
			C213.5	Illustrate the testing methods of DC Motors.
4	control system engineering	15A02303	C214.1	Illustrate the concepts of operation and characteristics of PN junction diode, rectifiers for DC and AC circuits.
			C214.2	Discuss the Time-domain responses for first and second-order systems
			C214.3	Determine the stability analysis by using RH Criterion and Root Locus in a closed-loop control systems
			C214.4	Summarize the frequency responses methods for stability in a closed or open loop control system
			C214.5	Outline the concepts of state, state variables and state model in a control system
5	Electronic Devices & Circuits	15A04301	C215.1	Illustrate the operating principles of P-N Diode & special purpose electronic devices.
			C215.2	Demonstrate the working principle of rectifiers & filters
			C215.3	Interpret the working principle and characteristics of transistors.
			C215.4	Analyze the biasing techniques of BJT and FET
			C215.5	Analyze the BJT & FET amplifier circuits using small signal model.
6	Data Structures	15A05201	C216.1	Apply the knowledge of arrays and linked lists for various applications.
			C216.2	Apply the knowledge of stacks and queues for various applications.
			C216.3	Develop the tree and graph models of the given problem through tree and graph concepts
			C216.4	Analyze the sorting algorithms to evaluate the time & space complexities.
			C216.5	Analyze the searching algorithms to evaluate the time & space complexities.
7	Electric Circuits Simulation Laboratory	15A02305	C217.1	Design the electrical circuit concepts by interpreting the simulation results.
			C217.2	Evaluate three phase active and reactive power of connected balanced loads using NI multisim software.
			C217.3	Analyze the RL, RC and RLC series circuits for a specified transient response using NI multisim software

8	Electronic Devices & Circuits Laboratory	15A04305	C218.1	Explain the characteristics and Applications of Diodes, BJT and FET under different configurations
			C218.2	Analyze the performance of various rectifiers with filters.
			C218.3	Analyze the performance of various amplifiers with BJT and FET.

II B. Tech - II Semester

S.No	Subject Name	Subject Code	Course Outcomes	
1	Mathematics – IV	15A54402	C221.1	Analyze the engineering problems through the methods of special functions.
			C221.2	Demonstrate the concepts of Bessel’s functions and Legendre polynomials to solve various engineering problems.
			C221.3	Apply the concepts of complex differentiation methods to solve various engineering problems
			C221.4	Evaluate the various engineering problems through the knowledge of complex integration.
			C221.5	Evaluate the improper real integrals of various engineering applications through the concepts ofresidue theorem.
2	Managerial Economics and Financial Analysis	15A52301	C222.1	Summarize the role and responsibilities of a managerial economist in modern business scenario.
			C222.2	Apply the demand of a product by using demand forecasting methods.
			C222.3	Apply the Break Even Point (BEP) with the help of production and cost analysis.
			C222.4	Illustrate the learning's about competitive markets and business economic environment.
			C222.5	Analyze the process of preparing financial statements to know financial position of the firm.
3	Electrical Machines – II	15A02401	C223.1	Describe the construction, operation, types and equivalent circuit of a single phase transformer.
			C223.2	Compute the Voltage regulation and Efficiency of a transformer.
			C223.3	Outline the load shared by each transformer when several transformers operate in parallel.
			C223.4	Illustrate the performance characteristics of a three phase Induction motor.
			C223.5	Summarize the different speed control methods used in three phase induction motors.
4	Electrical Power Generating Systems	15A02402	C224.1	Illustrate the concepts and operation thermal power station to generate power.
			C224.2	Describe the working principles of hydro and nuclear power plants to generate power
			C224.3	Summarize the concepts of Non-renewable energy sources for solar and wind power generation.
			C224.4	Illustrate the Bio gas, geo and Ocean thermal basic operating principles for power generation.
			C224.5	Analyze the various costing and tariff techniques for economic thermal power generation.

5	Electromagnetic Fields	15A02403	C225.1	Demonstrate the laws and the equations concerned with static electric fields for design of Electrostatic models.
			C225.2	Choose the behavior of conductors and dielectrics in electric fields for selecting suitable material for various applications.
			C225.3	Analyze the equations concerned with static magnetic fields for the design of Magneto static models
			C225.4	Evaluate the inductance of various configurations to choose suitable inductor for applications.
			C225.5	Apply Maxwell's equations to solve the problems related to transmission lines & uniform plane wave propagation.
6	Analog Electronic Circuits	15A04409	C226.1	Analyze the parameters of multi stage amplifiers using BJT and FET at low and high frequencies.
			C226.2	Illustrate the concept of negative feedback on amplifier characteristics.
			C226.3	Compare the condition for oscillations in different oscillators.
			C226.4	Compute the parameters of various large signal amplifiers.
			C226.5	Design various linear & non-linear circuits and analyze their response and generate various types of non- sinusoidal waveforms using multivibrators.
7	Electrical Machines Laboratory – I	15A02404	C227.1	Determine the magnetization and load characteristics of a DC shunt generator.
			C227.2	Analyze the performance characteristics of different types of dc motors by conducting brake test.
			C227.3	Determine the efficiency of a dc shunt machine when running as a motor and as a generator by conducting Swinburne's test.
8	Control Systems & Simulation Laboratory	15A02405	C228.1	Evaluate the characteristics of AC servomotors, DC servo motors, magnetic amplifier and synchros.
			C228.2	Determine the error obtained in control system with the effect of P, PI, PID controllers.
			C228.3	Calculate the stability of a Bode plot, Root locus, Nyquist of Linear time invariant systems using MATLAB.
9	Comprehensive Online Examination – I	15A02406	C229.1	Summarize the fundamental engineering knowledge of science and engineering domain
			C229.2	Demonstrate the knowledge of basic science and engineering applications.
			C229.3	Analyze the critical problem solving ability of a given application.

III B. Tech - I Semester

S.No	Subject Name	Subject Code	Course Outcomes	
1	Electrical Measurements	15A02501	C311.1	Describe the concepts and principles of Measuring Instruments to measure voltage and current.
			C311.2	Analyze the concepts and principles of AC and DC bridges to evaluate resistance, inductance and Capacitance for AC and DC Circuits.
			C311.3	Analyze the working principles of single and three phase watt meters & energy meter to measure power and energy in circuits.
			C311.4	Demonstrate the operating principles of instrument transformers and potentiometer to measure unknown voltage, Current & Resistance in circuits
			C311.5	Analyze the magnetic measurement devices to measure flux in magnetic circuits.
2	Linear & Digital IC Applications	15A04509	C312.1	Explain the applications of operational Amplifier.
			C312.2	Explain the operation and applications of 555 timer ,PLL and Convertors
			C312.3	Design the active filters and Oscillators using operational amplifiers
			C312.4	Explain the operation of logic families
			C312.5	Explain the operation of Different digital Circuits
3	Electrical Power Transmission Systems	15A02502	C313.1	Compute the transmission line parameters using GMD and GMR.
			C313.2	Summarize the performance of short, medium and long transmission lines.
			C313.3	Describe the sag /corona of transmission lines and performance of line insulators.
			C313.4	Analyze travelling waves on transmission lines
			C313.5	Analyze different types and characteristics of cables
4	Power Electronics	15A02503	C314.1	Apply basic semiconductor physics to properties of power devices to design more power electronic devices
			C314.2	Demonstrate the AC to DC power conversion and controlling of power converters to develop electronic consumer devices.
			C314.3	Illustrate the DC-to-DC power conversion, controlling and designing of power converters for automobiles
			C314.4	Demonstrate the DC to AC power conversion and controlling of power converters in designing of DC transmission lines
			C314.5	Apply the concept of AC-to-AC power conversion and controlling to domestic, industrial, and utility systems.

5	Electrical Machines – III	15A02504	C315.1	Summarize the principle of operation, types and also the classification of windings in SynchronousGenerator
			C315.2	Describe the regulation of synchronous generators using different methods.
			C315.3	Analyze the Parallel Operation and Performance characteristics of synchronous generators.
			C315.4	Summarize the principle of operation of synchronous motor, power factor improvement and its hunting methods of synchronous motors.
			C315.5	Choose specific 1-phase motor and special motors for a given application.
6	Digital Circuitsand Systems	15A04510	C316.1	Be able to manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray, and BCD.
			C316.2	Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.
			C316.3	Be able to design and analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits.
			C316.4	Be able to design and analyze small sequential circuits and devices
			C316.5	Be able to use standard sequential functions/building blocks to build larger more complex circuits.
7	Electrical Machines Laboratory – II	15A02506	C317.1	Analyze the characteristics of transformers with different load.
			C317.2	Determine the efficiency of the single phase and three phase squirrel cage induction motor with no load and blocked rotor test.
			C317.3	Determine the voltage regulation of an synchronous generator.
8	Electrical Measurements Laboratory	15A02507	C318.1	Calibrate single phase Energy meter, Power Factor meter, Ammeter and Voltmeter.
			C318.2	Determine the values of Resistance, Inductance and Capacitance using Kelvin's , Anderson's and Schering Bridges
			C318.3	Determine the values of Choke coil Parameters using 3 voltmeter and 3 Ammeter methods.
9	Social Values and ethics	15A99501	C319.1	Understand the basic concepts of society, family and channels of youth moments for National Building.
			C319.2	Analyze the sociological, psychological factors influencing the youth crime, social harmony and national integration.
			C319.3	Discuss the environmental issues and objectives of Civil and Self-defense.
			C319.4	Understand the gender sensitization and initiatives of Government schemes for prevention.
			C319.5	Describe the importance and benefits of physical activities.

III B. Tech - II Semester

S.No	Subject Name	Subject Code	Course Outcomes(COs)	
1	Management Sciences	15A52601	C321.1	Demonstrate the meaning of Management
			C321.2	Describe the various operations in a manufacturing concern.
			C321.3	Illustrate the importance of human resources for an organization.
			C321.4	Identify the strategy formulation and implementation in the management.
			C321.5	Summarizing the contemporary developments in the management.
2	Power Semiconductor Drives	15A02601	C322.1	Choose the phase-controlled rectifier fed DC motor drives based on their applications and operation of steady-state and transient dynamics of a motor-load system
			C322.2	Demonstrate the operation of multi quadrant DC drives
			C322.3	Differentiate chopper fed DC motor drives based on their applications
			C322.4	Apply the speed control methods for AC-AC & DC-AC converters fed to Induction motors with closed loop, and open loop operations
			C322.5	Analyze the speed control methods of AC-AC converters fed to Synchronous motors with closed loop, and open loop operations.
3	Power System Protection	15A02602	C323.1	Illustrate the operation of electromagnetic, Static and Microprocessor based relays for sensing the faults. Identify the right process model to develop a software system and analyze them scientifically in order to develop the right product.
			C323.2	Summarize the various protection methods for generators and transformers.
			C323.3	Interpret the protective schemes for feeders & lines .
			C323.4	Demonstrate the concepts and principle of Circuit Breakers for power system protection.
			C323.5	Describe the generation and protection of over voltages in power systems.
4	MicroProcessor & Micro Controllers	15A04601	C324.1	Interpret the working principles of 8086 micro processor .
			C324.2	Analyze the Instruction formats and addressing modes of 8086 processor.
			C324.3	Demonstrate the features, architecture & addressing modes and instruction set of MSP 430.
			C324.4	Analyze the modes of MSP 430.
			C324.5	Illustrate the principles of serial communication interfaces used with MSP 430.

5	Power System Analysis	15A02603	C325.1	Construct Z bus and Y bus matrix for the given power system network.
			C325.2	Demonstrate Short circuit analysis of a power system.
			C325.3	Interpret Power Flow solutions using Gauss Seidel Method for given power system network
			C325.4	Illustrate Power Flow solutions using Newton Rapson & Fast Decoupled Methods for given power system network.
			C325.5	Classify types of stabilities and its improvements of a given power system.
6	Neural Networks & Fuzzy Logic	15A02604	C326.1	Describe the concepts of Rule based System, Architecture and Expert Systems of Artificial Intelligence system
			C326.2	Illustrate the different models and techniques for desired output in Artificial Neural Networks
			C326.3	Summarize the application of Artificial Neural Networks for electrical system and Control system Problems
			C326.4	Analyze the basic concepts of fuzzy sets and membership Functions and Defuzzification for Fuzzy logic system
			C326.5	Summarize the applications of fuzzy logic to Electrical systems
7	Microprocessors & Microcontrollers Laboratory	15A04607	C327.1	Design and implement programs on 8086 microprocessor.
			C327.2	Demonstrate the concepts related to I/O and memory interfacing
			C327.3	Analyze interfacing and programming of GPIO ports in C using MSP430
8	Power Electronics & Simulation	15A02607	C328.1	Determine the turn on – turn off characteristics of various power electronic devices.
			C328.2	Sketch the characteristics of voltage controllers, converters and inverters with R and RL loads
			C328.3	Analyze the performance characteristics of SCR, single phase ac voltage controller, DC Jones chopper and series inverter using MATLAB
9	Advanced English Language Communication Skills (AELCS) Laboratory	15A02602	C329.1	Apply sound vocabulary and its proper use contextually
			C329.2	Build writing skills and felicity in written expression
			C329.3	build presentation skills through poster and oral
			C329.4	improve the communication skills
10	Comprehensive Online Examination – II	15A02608	C32AO.1	Summarize the fundamental engineering knowledge of science and engineering domain
			C32AO.2	Demonstrate the knowledge of basic science and engineering applications.
			C32AO.3	Analyze the critical problem solving ability of a given application.

IV B. Tech - I Semester

S.No	Subject Name	Subject Code	Course Outcomes(COs)	
1	Electrical Distribution Systems	15A02701	C411.1	Describe the concepts of load modeling and characteristics of distribution system.
			C411.2	Classify the concepts and configurations of distribution system to evaluate voltage drop and power loss in distribution systems.
			C411.3	Summarize the principles and configurations of distribution substation for supplying power to the consumers.
			C411.4	Analyze the various power factor correction techniques to improvement power factor in a distribution system.
			C411.5	Demonstrate the concepts of SCADA for implementation of automated distribution system.
2	Digital Signal Processing	15A04603	C412.1	Compute the time response and frequency response of Discrete Fourier Transforms.
			C412.2	Analyze the concepts of Fast Fourier Transform Algorithms.
			C412.3	Demonstrate the principles of realization techniques of FIR&IIR filters.
			C412.4	Design the FIR filters and IIR filters.
			C412.5	Illustrate the concepts of Multi rate Digital Signal Processing.
3	Power System Operation andControl	15A02702	C413.1	Illustrate the Economic Operations of a power system for optimization of power generation cost.
			C413.2	Demonstrate the mathematical models of turbines and governors.
			C413.3	Design the load frequency control of a power system for controlling real power generation.
			C413.4	Interpret the reactive power control for power system.
			C413.5	Describe the concepts of Deregulation and Restructuring for a power system.
4	Utilization of Electrical Energy	15A02703	C414.1	Summarize the concepts of illumination laws and types of lamps used in lighting system.
			C414.2	Apply the types of electric heating and welding methods for industry applications.
			C414.3	Choose the wheel arrangement, Riding qualities and characteristics of traction motor used in electric tractions.
			C414.4	Describe the speed time curves, tractive effort and specific energy Consumption of traction system.
			C414.5	Analyze the economic aspects of utilizing electrical energy for consumers.

5	Energy Auditing & Demand Side Management	15A02706	C415.1	Summarize the energy consumption and energy auditing for power system.
			C415.2	Demonstrate the motor energy audit and power factor improvement methods in power system.
			C415.3	Illustrate the energy efficient techniques for good lighting system and energy Measuring Instruments.
			C415.4	Describe the concepts and techniques of demand side management for power system.
			C415.5	Analyze the economic analysis and cost effective tests of DSM programs for effective demand side management.
6	Power Quality	15A02709	C416.1	Address power quality issues to ensure meeting of standards
			C416.2	Apply the concepts of compensation for sags and swells using voltage regulating devices
			C416.3	Assess harmonic distortion and its mitigation.
			C416.4	Explain the power measurement data according to standards
			C416.5	Describe the Power quality enhancement using custom power devices
7	Digital Signal Processing Laboratory	15A04608	C417.1	Analyze discrete time signals & systems using MATLAB
			C417.2	Design IIR & FIR filters, DSP based real time processing systems to meet desired needs of the society
			C417.3	Implement DSP algorithms using digital signal processors.
8	Power Systems & Simulation Laboratory	15A02710	C418.1	Calculate the sequence impedances, sub-transient reactance, symmetrical and unsymmetrical faults of synchronous machine
			C418.2	Determine the parameters of equivalent circuit of three winding transformer.
			C418.3	Develop a MATLAB program for formation of Ybus, Zbus and Gauss seidel, Fast decoupled load flow studies.

IV B. Tech - II Semester

S.No	Subject Name	Subject Code	Course Outcomes(COs)	
1	Instrumentation	15A02801	C421.1	Analyze the concepts of signals and errors for measuring devices.
			C421.2	Classify the data transmission and modulation techniques for instrumentation.
			C421.3	Analyze the signal analyzers and digital meters to measure voltage, frequency and speed.
			C421.4	Illustrate the concepts of transducers for various electrical and non electrical quantities.
			C421.5	Describe various transducers for measurement of non electrical quantities.

2	HVDC Transmission	15A02804	C422.1	Describe the concepts of HVDC Transmission System
			C422.2	Analyze the different types of converters in a HVDC Transmission System
			C422.3	Illustrate the control concepts of HVDC converters
			C422.4	Discuss the Power flow analysis in AC and DC Transmission systems
			C422.5	Classify the Converter faults, Harmonics and Protection of HVDC Transmission system
3	Comprehensive Viva Voce	15A02806	C423.1	Demonstrate knowledge in the Computer science and Information technology domain.
			C423.2	Demonstrate the domain knowledge of computer science & engineering to enhance their professional skills in practice.
			C423.3	Illustrate the overall knowledge in the relevant field of Engineering acquired over 4 years of study in the undergraduate program.
4	Technical Seminar	15A02807	C424.1	Survey in research oriented field and develop the literature documentation.
			C424.2	Develop the competency skills in the field of engineering interdisciplinary approaches for better understanding of technological advances.
			C424.3	Develop the lifelong learning skills on the recent trends & technologies to Communicate effectively on complex engineering activities.
5	Project Work	15A02808	C425.1	Identify the research problem and efficient tools for designing project modules thorough literature survey.
			C425.2	Develop executable project modules after considering the requirements specified in the design phase.
			C425.3	Demonstrate the completed project work with the project report.