1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
016	B.Tech(EE)	BS-PH101	Physics-I (Gr-A)	**Course Outcomes**
				1. Basic concepts of mechanics
				2. Bragg's Law and introduction to the principles of lasers, types of lasers and applications.
				3. Various terms related to properties of materials such as, permeability, polarization,etc.
				4. Some of the basic laws related to quantum mechanics as well as magnetic and dielectric properties of materials.
				5. Simple quantum mechanics calculations.
016	B.Tech(EE)	BS-CH101	Chemistry-1	**Course Outcomes**
				1. Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				2. Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				3. Rationalise bulk properties and processes using thermodynamic considerations.
				4.Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.
				5. Evaluate structure, colour and magnetic properties of coordination complexes.
				6. List major chemical reactions that are used in the synthesis of molecules and explain isomerism considering the stereochemical aspect.
016	B.Tech(EE)	BS-M102	Mathematics –IB	**Course Outcomes:**

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				Apply the concept and techniques of differential and integral calculus to determine curvature and evaluation of different types of improper integrals.
				Understand the domain of applications of mean value theorems to engineering problems.
				Learn the tools of power series and Fourier series to analyze engineering problems and apply the concept of convergence of infinite series in many approximation techniques in engineering disciplines.
				Apply the knowledge for addressing the real life problems which comprises of several variables or attributes and identify extremum points of different surfaces of higher dimensions.
				Understand different types of matrices, their eigen values, eigen vectors, rank and also their orthogonal transformations which are essential for understanding physical and engineering problems.
016	B.Tech(EE)	ES-EE101	Basic Electrical Engineering	**Course Outcomes**
				To understand and analyze basic electric and magnetic circuits
				To study the working principles of electrical machines and power converters.
				To introduce the components of low voltage electrical installations
016	B.Tech(EE)	ES-ME191	Engineering Graphics & Design(Gr-A)	**Course Outcomes**
				Introduction to engineering design and its place in society

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				Exposure to the visual aspects of engineering design
				Exposure to engineering graphics standards
				Exposure to solid modelling
016	B.Tech(EE)	ES-ME192	Workshop/Manufacturing Practices(Gr-B)	**Laboratory Outcomes**
				Upon completion of this laboratory course, students will be able to fabricate components with their own hands.
				They will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.
				By assembling different components, they will be able to produce small devices of their interest.
016	B.Tech(EE)	BS-PH201	Physics - 1(Gr-B)	**Course Outcomes**
				1. Basic concepts of mechanics
				2. Bragg's Law and introduction to the principles of lasers, types of lasers and applications.
				3. Various terms related to properties of materials such as, permeability, polarization,etc.
				4. Some of the basic laws related to quantum mechanics as well as magnetic and dielectric properties of materials.
				5. Simple quantum mechanics calculations.
016	B.Tech(EE)	BS-M202	Mathematics-II	**Course Outcomes:**
				Learn the methods for evaluating multiple integrals and their applications to different physical problems.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				Understand different techniques to solve first and second order ordinary differential equations with its formulation to address the modelling of systems and problems of engineering sciences.
				Learn different tools of differentiation and integration of functions of a complex variable that are used with various other techniques for solving engineering problems.
				Apply different types of transformations between two 2- dimensional planes for analysis of physical or engineering problems.
016	B.Tech(EE)	ES-CS201	Programming for problem solving	**Course Outcomes**
				To formulate simple algorithms for arithmetic and logical problems.
				To translate the algorithms to programs (in C language).
				To test and execute the programs and correct syntax and logical errors.
				To implement conditional branching, iteration and recursion.
				To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
				To use arrays, pointers and structures to formulate algorithms and programs.
				To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				To apply programming to solve simple numerical method problems, namely rot finding of function, differentiation of function and simple integration.
016	B.Tech(EE)	BS-CH201	Chemistry-1(Gr-A)	**Course Outcomes**
				1. Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				2. Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				3. Rationalise bulk properties and processes using thermodynamic considerations.
				4.Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.
				5. Evaluate structure, colour and magnetic properties of coordination complexes.
				6. List major chemical reactions that are used in the synthesis of molecules and explain isomerism considering the stereochemical aspect.
016	B.Tech(EE)	ES-CS291	Programming for problem solving	**Laboratory Outcomes**
				To formulate the algorithms for simple problem
				To translate given algorithms to a working and correct program
				To be able to correct syntax errors as reported by the compilers
				To be able to identify and correct logical errors encountered at run time

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				To be able to write iterative as well as recursive programs
				To be able to represent data in arrays, strings and structures and manipulate them through a program
				To be able to declare pointers of different types and use them in defining self-referential structures.
				To be able to create, read and write to and from simple text files.
016	B.Tech(EE)	HM-HU 201	English	**Course Outcomes**
				The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
016	B.Tech(EE)	HM-HU 291	Language Laboratory	**Course Outcomes**
				The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
016	B.Tech(EE)	BS-CH291	Chemistry-1 (Gr-A) Lab	Determine the strength of an acid using conductometric method.
				Determine the strength of an acid using pH-metric methods.
				Evaluate partition coefficient of a substance between two immiscible liquids and evaluate the amount of acetic acid absorbed by charcoal.
				Measure some physical property like surface tension and viscosity of different solutions at room temperature

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				Estimate the amount of an ion present in a given solution using argentometric methods and amount of dissolved oxygen (in mg/l) present in a given water sample using volumetric method.
				Determine the cell constant and conductance of different solutions
016	B.Tech(EE)	ES-ME291	Engineering Graphics & Design(Gr-A)	**Course Outcomes**
				Introduction to engineering design and its place in society
				Exposure to the visual aspects of engineering design
				Exposure to engineering graphics standards
				Exposure to solid modelling
016	B.Tech(EE)	ES-ME292	Workshop/Manufacturing Practices(Gr-B)	**Laboratory Outcomes**
				Upon completion of this laboratory course, students will be able to fabricate components with their own hands.
				They will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.
				By assembling different components, they will be able to produce small devices of their interest.
016	B.Tech(EE)	PC-EE301	Electric Circuit Theory	**Course Outcome:**
				describe different type of networks, sources and signals with examples.
				explain different network theorems, coupled circuit and tools for solution of networks.
				apply network theorems and different tools to solve network problems.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				select suitable techniques of network analysis for efficient solution.
				estimate parameters of two-port networks.
				design filter circuits.
016	B.Tech(EE)	PC-EE302	Analog Electronics	**Course Outcome:**
				describe analog electronic components and analog electronics circuits
				explain principle of operation of analog electronic components, filters, regulators and analog electronic circuits.
				compute parameters and operating points of analog electronic circuits.
				determine response of analog electronic circuits.
				distinguish different types amplifier and different types oscillators based on application.
				construct operational amplifier based circuits for different applications.
016	B.Tech(EE)	PC-EE303	Electromagnetic field theory	**Course Outcome:**
				relate different coordinate systems for efficient solution of electromagnetic problems.
				describe mathematical s tools to solve electromagnetic problems.
				explain laws applied to electromagnetic field.
				apply mathematical tools and laws to solve electromagnetic problems.
				analyze electromagnetic wave propagation
				estimate transmission line parameters
016	B.Tech(EE)	ES-ME301	Engineering Mechanics	**Course Outcome:**

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				explain the co-ordinate system, principle of three dimensional rotation, kinematics and kinetics of rigid bodies.
				elaborate the theory of general motion, bending moment, torsional motion and friction.
				develop free body diagram of different arrangements.
				solve problems with the application of theories and principle of motion , friction and rigid bodies.
				analyze torsional motion and bending moment.
016	B.Tech(EE)	BS-M301	Mathematics-III	**Course Outcome:**
				explain basics of probability theories, rules, distribution and properties of Z transform
				describe different methods of numerical analysis.
				solve numerical problems based on probability theories , numerical analysis and Z transform
				apply numerical methods to solve engineering problems.
				solve engineering problems using z transform and probability theory
016	B.Tech(EE)	BS-EE301	Biology for Engineers	**Course Outcome:**
				1. describe with examples the biological observations lead to major discoveries.
				2. explain
				the classification of kingdom of life
				the building blocks of life
				different techniques of bio physics used to study biological phenomena.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				the role of imaging in the screening, diagnosis, staging, and treatments of cancer.
				3. identify DNA as a genetic material in the molecular basis of information transfer
				4. analyze biological processes at the reductionistic level.
				5. apply thermodynamic principles to biological systems.
				6. identify microorganisms.
016	B.Tech(EE)	MC-EE301	Indian Constitution	**Course Outcome:**
				1. describe
				different features of Indian constitution..
				power and functioning of Union, state and local self-government.
				structure, jurisdiction and function of Indian Judiciary.
				basics of PIL and guideline for admission of PIL.
				Functioning of local administration starting from block to Municipal Corporation.
				2. identify authority to redress a problem in the profession and in the society.
016	B.Tech(EE)	PC-CS391	Numerical Methods laboratory	**Course Outcome**
				1. solve
				problems with Newton forward /backward, Lagrange's interpolation
				problems of numerical integration using Trapezoidal rule, Simpson's 1/3 rule, Weddle's rule
				problems to find numerical solution of a system of linear equations using Gauss elimination and Gauss-Seidel iterations.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				problems to find numerical solution of Algebraic Equation by Regularfalsi and Newton Raphson methods.
				ordinary differential equation by Euler's and Runga-Kutta methods.
				2. find appropriate numerical methods to solve engineering problems.
				3. use software package to solve numerical problems.
016	B.Tech(EE)	PC-EE391	Electric Circuit Theory Laboratory	**Course Outcome:**
				determine
				(i) transient response of different electrical circuit
				(ii)parameters of two port network
				(iii)frequency response of filters.
				(iv)Laplace transform and inverse Laplace transform
				generate different signals in both discrete and analog form
				analyze amplitude and phase spectrum of different signals.
				verify network theorems.
				construct circuits with appropriate instruments and safety precautions.
				Simulate electrical circuit experiments using suitable software.
016	B.Tech(EE)	PC-EE392	Analog Electronics laboratory	**Course Outcome:**
				1. determine
				characteristics of full wave rectifier with filter and without filter
				characteristics of BJT and FET

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				characteristics of Zener diode as voltage regulator
				characteristics of class A, C and push pull amplifiers
				2. verify function of DAC and ADC
				3. construct
				function generator using IC
				R-C coupled amplifier
				linear voltage regulator using regulator IC chip.
				timer circuit using 555 for monostable, astable and multistable multivibrator.
				V to I and I to V converter with Op amps.
				phase locked loop using Voltage Controlled Oscillator (VCO)
				4. work in a team
				5. validate theoretical learning with practical
016	B.Tech(EE)	PC-EE 401	Electric Machine -I	**Course Outcome:**
				describe the function of different components of magnetic circuit, DC machines and transformers
				explain the principle of operation of different types of DC machines and transformers
				solve numerical problems of DC machines and transformers.
				estimate the parameters and efficiency of transformer.
				determine the characteristics of DC machines
				recommend methods to control output of DC machines.
016	B.Tech(EE)	PC-EE 402	Digital Electronics	**Course Outcome:**

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				describe the function of different building blocks of digital electronics, semiconductor memories and programmable logic devices.
				explain the principle of operation of combinational and sequential digital circuits, A/D and D/A converter
				solve numerical problems of Boolean algebra, number system, combinational & sequential digital circuits and A/D and D/A converter.
				specify applications of combinational and sequential digital circuits.
				determine specifications of different digital circuits.
				design combinational and sequential digital circuits
016	B.Tech(EE)	PC-EE 403	Electrical & Electronics Measurement	**Course Outcome:**
				explain the terms accuracy, precision, resolution, speed of response, errors in measurement,loading effect
				describe methods of measurement of power, energy by instruments and resistance,capacitance and inductance by bridges and potentiometer
				explain the principle of operation of analog meters, instrument transformer, digital multimeter, digital voltmeter, digital frequency meter, signal generator, strain gauge, LVDTand temperature transducers
				explain the different building block, principle of operation of oscilloscope and measurement techniques of voltage, current, frequency and phase by oscilloscope

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				solve numerical problems related to analog meters, instrument transformer, measurement of power, energy, resistance, inductance and capacitance
				specify applications of analog and digital measuring instruments, sensors and transducers
016	B.Tech(EE)	ES-EE 401	Thermal Power Engineering	**Course Outcome:**
				describe the function of different components of boilers. Engines and turbines
				explain the principle of operation of different types of boilers, turbines, IC engines and Gas turbines.
				solve numerical problems of boilers, turbines, IC engines and Gas turbines.
				analyze the performance of boilers, engines and turbines.
				determine efficiency of boilers, engines and turbines.
				explain methods to control boiler, engines and turbines parameters.
016	B.Tech(EE)	HM-EE401	Values & Ethics in Profession	**Course Outcome:**
				illustrate different aspects of human values, ethics, engineers' responsibility and duties
				explain different principles, different theories and laws of engineering ethics and social experimentation
				identify different factors in the light of Engineers' responsibility towards safety and risk
				correlate ethics of different work environment.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				explain the need for intellectual property rights.
016	B.Tech(EE)	MC-EE401	Environmental Science	**Course Outcome:**
				understand the natural environment and its relationships with human activities
				apply the fundamental knowledge of science and engineering to assess environmental and health risk
				develop guidelines and procedures for health and safety issues obeying the environmental laws and regulations
				acquire skills for scientific problem-solving related to air, water, noise& land pollution.
016	B.Tech(EE)	PC-EE491	Electric Machine -I Lab	**Course Outcome:**
				identify appropriate equipment and instruments for the experiment.
				test the instrument for application to the experiment.
				construct circuits with appropriate instruments and safety precautions
				validate different characteristics of DC machine , methods of speed control of DC motor and parallel operation of the transformer
				work effectively in a team
016	B.Tech(EE)	PC-EE492	Digital Electronics Lab	**Course Outcome:**
				identify appropriate equipment and instruments for the experiment
				test the instruments for application to the experiment

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				construct decoder , multiplexer, adder and subtractor circuits with appropriate instruments and precaution
				realize RS-JK and D flip flop, universal register with gates, multiplexer and flip-flops and asynchronous and synchronous up down counters
				validate the operation of code conversion circuit –BCD to Excess 3 & vice versa, 4 bit parity generator & comparator circuits,
				work effectively in a team
016	B.Tech(EE)	PC-EE493	Electrical & Electronics Measurement Lab	**Course Outcome:**
				identify appropriate equipment and instruments for the experiment
				test the instrument for application to the experiment
				construct circuits with appropriate instruments and safety precautions
				evaluate and adjust the precision and accuracy of AC energy meter, moving iron and dynamometer type ammeter, voltmeter and wattmeter by potentiometer
				measure voltage, current, power, energy, phase , frequency, resistance, inductance, capacitance
				work effectively in a team
016	B.Tech(EE)	ES-ME491	Thermal Power Engineering Lab	**Course Outcome:**
				identify appropriate equipment and instruments for the experiment
				construct experimental setup with appropriate instruments and safety precautions

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				indentify different parts of Lanchashire Boiler, Bahcock & Willcox Boiler, Cochran Boiler, Vertical Tubular Boiler, Locomotive Boiler, 4S Diesel Engine, 4S Petrol Engine, 2S Petrolengine
				test 4 stroke petrol engine by electrical load box and diesel engine by electrical load box and rope brake dynamometer
				find calorific value, flash point, fire point, cloud point, pour point of fuel.
				work effectively in a team
016	B.Tech(EE)	PC-EE501	Electric machine-II	**Course Outcome:**
				describe the arrangement of winding of AC machines.
				explain the principle of operation of Induction machines, Synchronous machines and special machines.
				solve numerical problems of Induction machines, Synchronous machines and Special machines.
				estimate the parameters and efficiency of Induction machines and Synchronous machines.
				determine the characteristics of Induction machines and Synchronous machines.
				select appropriate methods for starting , braking and speed control of Induction machines.
016	B.Tech(EE)	PC-EE502	Power System-I	**Course Outcome:**
				explain the principle of generation of Electric power from different sources

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				determine parameters of transmission lines and its performance
				explain the principle of formation of corona and methods of its reduction
				conduct electrical tests on insulators
				solve numerical problems related to overhead transmission line, cable, insulators and tariff
				analyze overhead transmission line based on short medium and long lines.
016	B.Tech(EE)	PC-EE503	Control system	**Course Outcome:**
				Develop mathematical model of mechanical, electrical, thermal, fluid system and different control system components like servomotors, synchros, potentiometer, tacho-generators etc.
				analyse stability of LTI system using routh-hurtwitz (RH) criteria, root locus techniques in time domain and bode plot and nyquist technique in frequency domain.
				design different control law or algorithms like proportional control, proportional plus derivative(PD) control, proportional plus integration(PI) control, and proportional plus integration plus derivative (PID) control and compensators like lag, lead, lag-lead for LTIsystems.
				apply state variable techniques for analysis of linear systems.
				analyze the stability of linear discrete system.
				solve numerical problems on LTI system modelling, responses, error dynamics and stability .

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
016	B.Tech(EE)	PC-EE504	Power Electronics	**Course Outcome:**
				understand the differences between signal level and power level devices.
				construct triggering and commutation circuits of SCR.
				explain the principle of operation of AC-DC, DC-DC and DC-AC converters.
				analysethe performance of AC-DC, DC-DC and DC-AC converters.
				apply methods of voltage control and harmonic reduction to inverters.
				solve numerical problems of switching devices, AC-DC, DC-DC and DC-AC converters.
016	B.Tech(EE)	PC-EE591	Electric Machine-II laboratory	Course outcome:
				identify appropriate equipment and instruments for the experiment.
				test the instrument for application to the experiment.
				construct circuits with appropriate instruments and safety precautions.
				validate different characteristics of single phase Induction motor, three phase Induction motor, Induction generator and synchronous motor , methods of speed control of Induction motors and parallel operation of the 3 phase Synchronous generator.
				work effectively in a team
016	B.Tech(EE)	PC-EE593	Control system laboratory	**Course outcome:**
				identify appropriate equipment and instruments for the experiment.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				test the instrument for application to the experiment.
				construct circuits with appropriate instruments and safety precautions.
				use MAT-Lab control system tool box, MAT-Lab-simulink tool box & PSPICE for simulation of systems.
				determinecontrol system specifications of first and second order systems
				validate step response & impulse response for type-0, type-1 & Type-2 system with unity feedback using MATLAB & PSPICE.
				work effectively in a team
016	B.Tech(EE)	PC-EE594	Power Electronics laboratory	**Course outcome:**
				identify appropriate equipment and instruments for the experiment.
				test the instrument for application to the experiment.
				construct circuits with appropriate instruments and safety precautions.
				Validate characteristics of SCR, Triac, and performance of phase controlled converter, DC-DC converter and inverters.
				work effectively in a team
016	B.Tech(EE)	OE-EE-501A	DATA STRUCTURE & ALGORITHM	**Course Outcome:**
				differentiate how the choices of data structure & algorithm methods impact the performance of program.
				solve problems based upon different data structure & also write programs.
				write programs based on different data structure

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				identify appropriate data structure & algorithmic methods in solving problem.
				discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing
				comparethe benefits of dynamic and static data structures implementations.
016	B.Tech(EE)	OE-EE-501B	OBJECT ORIENTED PROGRAMMING	**Course Outcome:**
				specify simple abstract data types.
				recognise features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity.
				apply common object-oriented design patterns
				specify uses of common object oriented design patterns with examples.
				design applications with an event-driven graphical user interface.
016	B.Tech(EE)	OE-EE-501C	COMPUTER ORGANISATION	**Course Outcome:**
				explain basic structure of digital computer, stored program concept and different arithmetic and control unit operations.
				understand basic structure of different combinational circuits, multiplexer, decoder, encoder etc.
				perform different operations with sequential circuits.
				understand memory and I/O operations.
				design adder, memory unit and control unit.
016	B.Tech(EE)	PE-EE-501A	HIGH VOLTAGE ENGINEERING	**Course Outcome:**
				explain breakdown phenomenon of gas, liquid and solid and vacuum

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				suggest methods for generation and measurement of high voltage and currents.
				determine the basic insulation level of substation equipment.
				apply methods for protection of electrical apparatus against over voltage
				test insulators,bushings, isolators, circuit breakers, cables and power transformers.
				solve numerical problems of breakdown phenomena, generation and measurement of high voltage and currents, over voltage phenomena and high voltage testing.
016	B.Tech(EE)	PE-EE-501B	POWER PLANT ENGINEERING	**Course Outcome:**
				explain the principle of operational of Steam, Hydroelectric, Diesel, Gas turbine, Nuclear power and non-conventional power plant.
				identifythe cause of pollution for power generation and its remedy.
				suggest location to set up Steam, Hydroelectric, Diesel, Gas turbine and Nuclear power plant.
				make comparative study of Steam, Hydroelectric, Diesel, Gas turbine, Nuclear power and non-conventional power plant.
				understand the method of maintenance of Steam, Gas and Hydroelectric power plants
				solve numerical problems of load estimation and economics of power plants.
016	B.Tech(EE)	PE-EE-501C	RENEWABLE & NON CONVENTIONAL ENERGY	**Course Outcome:**

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				explain the principle of conversion of solar energy, wind energy , biomass, Geothermal energy, Ocean energy and Hydrogen energy to other form of energy.
				explain the principle of operation of magneto hydrodynamic power generation:
				useSolar energy, Wind energy , Biomass, Geothermal energy, Ocean energy, Hydrogen energy and fuel cell for different applications.
				suggest location to set up wind mill and biogas generation plant
				estimate conversion efficiency of fuel cell.
				solve numerical problems relating to conversion of Solar energy, Wind energy , Biomass, Ocean energy and Hydrogen energy to heat and electric energy.
016	B.Tech(EE)	PC-EE 601	Power System - II	**Course Outcome:**
				represent power system components in line diagrams.
				determine the location of distribution substation.
				determine the performance of power system with the help of load flow studies.
				analyse faults in Electrical systems.
				determine the stabilty of Power system.
				explain principle of operation of different power system protection equipments.
				solve numerical problems related to representation, load flow, faults, stabilty and protection of power system.
016	B.Tech(EE)	PC-EE 602	Microprocessor & Microcontroller	**Course Outcome:**
				explain the architecture of 8086 and 8051.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				do assembly language programming of 8086, 8051
				interface different peripheral with 8086 and 8051
				develop micro processor/ microcontroller based systems.
				compare microprocessor, microcontroller, PIC and ARM processors
016	B.Tech(EE)	PE-EE601	DIGITAL CONTROL SYSTEM	**Course Outcome:**
				1. explain the principle of sampling and reconstrction of analog signal.
				2. perform Z-transformation and inverse Z-tranaformation of systems.
				3. analyse and design digital control systems.
				4. design compensators for digital control system to achieve desired specifications.
				5. represent digital control systems using state space models.
				6. analyze the effect sampling on stability, controllability and observability
016	B.Tech(EE)	PE-EE602	POWER QUALITY AND FACTS	**Course Outcome:**
				analyse uncompensated AC transmission line.
				explain the working principles of FACTS devices and their operating characteristics.
				apply FACTS devices for power flow control and stabilty.
				identify different issues of power quality in distribution system.
				apply different compensation and control techniques for DSTATCOM

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				explain working principle of dynamic voltage restorer and UPFC
016	B.Tech(EE)	OE-601	DIGITAL SIGNAL PROCESSING	**Course Outcome:**
				represent signals mathematically in continuous and discrete-time and in the frequency domain.
				analyse discrete-time systems using z-transform.
				explain the Discrete-Fourier Transform (DFT) and the FFT algorithms.
				design digital filters for various applications.
				apply digital signal processing for the analysis of real-life signals.
016	B.Tech(EE)	HM-601	ECONOMICS FOR ENGINEERS	**Course Outcome:**
				evaluate the economic theories, cost concepts and pricing policies
				explain the market structures and integration concepts
				apply the concepts of financial management for project appraisal
				explain accounting systems , the impact of inflation, taxation, depreciation
				analyze financial statements using ratio analysis
				explain financial planning, economic basis for replacement, project scheduling, legal and regulatory issues applied to economic investment and project-management problems
016	B.Tech(EE)	PC-EE691	Power System - II Laboratory	**Course Outcome:**
				identify appropriate equipment and instruments for the experiment.

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				test the instrument for application to the experiment.
				construct circuits with appropriate instruments and safety precautions.
				validate the characteristics of under voltage relay, over current relay, earth fault relay, on load time delay relay, off load time delay relay, CT and PT.
				validate protection schemes of transformer, generator, motor and feeder.
				apply software tools to find bus voltage, currents and power flows throughout the electrical system.
				work effectively in a team
016	B.Tech(EE)	PC-EE692	Microprocessor & Microcontroller Laboratory	**Course Outcome:**
				identify appropriate equipment and instruments for the experiment
				test the instrument for application to the experiment
				construct circuits with appropriate instruments and safety precautions
				program 8086 for arithmatic operation, sorting of array, searching for a number in a string and string manipulation
				interface ADC/DAC, 8255, 8251 to 8086 and LCD, keyboard to 8051
				program 8051 using arithmatic, logical and bit manipulation instructions of 8051
				work effectively in a team
016	B.Tech(EE)	PC-EE693	Electrical & Electronic design Laboratory	**Course Outcome:**

1.1 List of courses offered across all programs during last five years				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
				explain basic concept of measurement, noise in electronic system, sensor and signal conditioning circuits
				implement PC based data acquisition systems
				construct circuits with appropriate instruments and safety precautions
				design heating elements, air core grounding reactor, power distribution system for small township, double circuit transmission line and Electric machines
				do wiring and installation design of a multistoried residential building with lift and pump
				design electronic hardware for controller of lift, speed of AC/DC motor, and for an application with analog, digital, mixed signal, microcontroller and PCB