

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

I YEAR - I SEM

C101	ENGLISH	C101.1	Understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
		C101.2	Ask and answer general questions on familiar topics and introduce oneself/others
		C101.3	Employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
		C101.4	Recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
		C101.5	Form sentences using proper grammatical structures and correct word forms
C102	MATHEMATIC-1	C102.1	Utilize mean value theorems to real life problems
		C102.2	Solve the differential equations related to various engineering fields
		C102.3	Familiarize with functions of several variables which is useful in optimization
		C102.4	Apply double integration techniques in evaluating areas bounded by region
		C102.5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems
C103	APPLIED CHEMISTRY	C103.1	Outline the properties of polymers and various additives added and different methods of forming plastic materials.
		C103.2	Explain the preparation, properties and applications of some plastic materials.
		C103.3	Interpret the mechanism of conduction in conducting polymers .
		C103.4	Discuss natural and synthetic rubbers and their applications.
C104	PROGRAMMING FOR PROBLEM SOLVING USING C	C104.1	To write algorithms and to draw flowcharts for solving problems
		C104.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
		C104.3	To use different operators, data types and write programs that use two-way/ multi-way selection
		C104.4	To select the best loop construct for a given problem
		C104.5	To design and implement programs to analyze the different pointer applications
		C104.6	To decompose a problem into functions and to develop modular reusable code
		C104.7	To apply File I/O operations

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

C107	A C LAB	C107.1	The students entering into the professional course have practically very little exposure to lab classes.
		C107.2	The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis.
		C107.3	Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments.
		C107.4	They thus acquire some experimental skills.
C108	PPSU C LAB	C108.1	Gains Knowledge on various concepts of a C language.
		C108.2	Able to draw flowcharts and write algorithms.
		C108.3	Able design and development of C problem solving skills.
		C108.4	Able to design and develop modular programming skills.
		C108.5	Able to trace and debug a program

I YEAR - II SEM

C111	MATHEMATICS II	C111.1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications
		C111.2	Solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
		C111.3	Evaluate approximating the roots of polynomial and transcendental equations by different algorithms
		C111.4	Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
		C111.5	Apply different algorithms for approximating the solutions of ordinary differential Equations to its analytical computations
C112	MATHEMATICS III	C112.1	Interpret the physical meaning of different operators such as gradient, curl and divergence
		C112.2	Interpret the physical meaning of different operators such as gradient, curl and divergence
		C112.3	Apply the Laplace transform for solving differential equations
		C112.4	Find or compute the Fourier series of periodic signals
		C112.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
		C112.6	Identify solution methods for partial differential equations that model physical processes

**VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

R 19 - Course Outcomes

C113	APPLIED PHYSICS	C113.1	explain the need of coherent sources and the conditions for sustained interference.
		C113.2	analyze the differences between interference and diffraction with applications.
		C113.3	illustrate the resolving power of various optical instruments.
C114	FUNDAMENTALS OF COMPUTER	C114.1	Explain the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
		C114.2	Recognize the Computer networks, types of networks and topologies.
		C114.3	Summarize the concepts of Operating Systems and Databases.
		C114.4	Recite the Advanced Computer Technologies like Distributed Computing & Wireless Networks.
C115	ECA-I	C115.1	Various electrical networks in presence of active and passive elements.
		C115.2	Electrical networks with network topology concepts.
		C115.3	Any magnetic circuit with various dot conventions.
		C115.4	Any R, L, C network with sinusoidal excitation.
		C115.5	Any R, L, network with variation of any one of the parameters i.e R, L, C and f.
		C115.6	Electrical networks by using principles of network theorems.
C116	EEE WORKSHOP	C116.1	To demonstrate the usage of measuring equipment
		C116.2	To train the students in setting up simple wiring circuits
		C116.3	To impart methods in electrical machine wiring

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

II YEAR – I SEM

C201	ECA-II	C201.1	Solve three- phase circuits under balanced and unbalanced condition.
		C201.2	Find the transient response of electrical networks for different types of excitations.
		C201.3	Find parameters for different types of network.
		C201.4	Realize electrical equivalent network for a given network transfer function.
		C201.5	Extract different harmonics components from the response of an electrical network.
C202	ELECTRICAL MACHINES I	C202.1	Assimilate the concepts of electromechanical energy conversion.
		C202.2	Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
		C202.3	Understand the torque production mechanism and control the speed of dc motors.
		C202.4	Analyze the performance of single phase transformers.
		C202.5	Predetermine regulation, losses and efficiency of single phase transformers.
		C202.6	Parallel transformers, control voltages with tap changing methods and achieve threephase to two-phase transformation.
C203	ELECTRONIC DEVICES AND	C203.1	Understand the concepts of Semiconductor Technology.
		C203.2	Appraise the construction & operation of electronic devices.
		C203.3	Develop the biasing circuits using the electronic devices.
		C203.4	Model the amplifier circuits.
		C203.5	Analyse the characteristics of the devices.
C204	EMF	C204.1	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.
		C204.2	Calculate and design capacitance, energy stored in dielectrics.
		C204.3	Calculate the magnetic field intensity due to current, the application of Ampere's law and the Maxwell's second and third equations.
		C204.4	Determine the magnetic forces and torque produced by currents in magnetic field
		C204.5	Determine self and mutual inductances and the energy stored in the magnetic field.
		C204.6	Calculate induced EMF, understand the concepts of displacement current and Poynting vector.

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

C205	MEFA	C205.1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
		C205.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
		C205.3	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units
		C205.4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
		C205.5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
C206	EC LAB	C206.1	The Student should be able to apply various theorems, determination of self and mutual inductances, two port parameters of a given electric circuits.
		C206.2	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks.
C207	PP LAB	C207.1	Develop python programs using control flow statements.
		C207.2	Examine the proficiency in handling of strings and Lists
		C207.3	Develop programs using data structures like dictionaries, tuples and sets using built-in functions, modules and packages
		C207.4	Analyze the operation and characteristics of Rectifiers
C208	EITK	C208.1	Understand the concept of Traditional knowledge and its importance
		C208.2	Know the need and importance of protecting traditional knowledge
		C208.3	Know the various enactments related to the protection of traditional knowledge
		C208.4	Understand the concepts of Intellectual property to protect the traditional knowledge

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

II YEAR – II SEM

C211	EM & I	C211.1	To study the principle of operation and working of different types of instruments for measurement of Electrical Quantities.
		C211.2	To study the working principle of operation of different types of instruments for measurement of power and power factor.
		C211.3	To understand the principle of operation and working of various types of bridges for measurement of parameters resistance, inductance, capacitance and frequency.
		C211.4	To understand the principle of operation and working of transducers.
		C211.5	To study the principle of operation and working of DVMS, Power analyser and applications of CRO.
C212	ELECTRICAL MACHINES II	C212.1	Explain the operation and performance of three phase induction motor.
		C212.2	Analyze the torque-speed relation, performance of induction motor and induction generator.
		C212.3	Explain design procedure for transformers and three phase induction motors.
		C212.4	Implement the starting of single phase induction motors.
		C212.5	Perform winding design and predetermine the regulation of synchronous generators.
		C212.6	Avoid hunting phenomenon, implement methods of starting and correction of power factor with synchronous motor.
C213	DIGITAL ELECTRONICS	C213.1	Classify different number systems and apply to generate various codes.
		C213.2	Use the concept of Boolean algebra in minimization of switching functions
		C213.3	Design different types of combinational logic circuits.
		C213.4	Apply knowledge of flip-flops in designing of Registers and counters
		C213.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
		C213.6	Produce innovative designs by modifying the traditional design techniques.
C214	CONTROL SYSTEMS	C214.1	Derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
		C214.2	Determine time response specifications of second order systems and to determine error constants.
		C214.3	Analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method.
		C214.4	Analyze the stability of LTI systems using frequency response methods.
		C214.5	Design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
		C214.6	Represent physical systems as state models and determine the response. Understanding the concepts of controllability and observability.

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

C215	POWER SYSTEMS-I	C215.1	Identify the different components of thermal power plants.
		C215.2	Identify the different components of nuclear Power plants.
		C215.3	Identify the different components of air and gas insulated substations.
		C215.4	Identify single core and three core cables with different insulating materials.
		C215.5	Analyse the different economic factors of power generation and tariffs.
C216	SIGNALS AND SYSTEMS	C216.1	Characterize the signals and systems and principles of vector spaces, Concept of orthogonality.
		C216.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform.
		C216.3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back.
		C216.4	Understand the relationships among the various representations of LTI systems
		C216.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships.
		C216.6	Apply z-transform to analyze discrete-time signals and systems.
C217	EM-I Lab	C217.1	Determine and predetermine the performance of DC machines and Transformers.
		C217.2	Control the speed of DC motor.
		C217.3	Obtain three phase to two phase transformation.
C218	PROFESSIONAL ETHICS AND HUMAN VALUES	C218.1	Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field
		C218.2	Identify the multiple ethical interests at stake in a real-world situation or practice
		C218.3	Articulate what makes a particular course of action ethically defensible
		C218.4	Assess their own ethical values and the social context of problems
		C218.5	Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
		C218.6	Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work
		C218.7	Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

III YEAR – I SEM

C301	POWER SYSTEMS II	C301.1	To compute inductance/capacitance of transmission lines and to understand the concepts of GMD/GMR.
		C301.2	To study the short and medium length transmission lines, their models and performance.
		C301.3	To study the performance and modeling of long transmission lines.
		C301.4	To study the effect of travelling waves on transmission lines.
		C301.5	To study the factors affecting the performance of transmission lines and power factor improvement methods.
		C301.6	To discuss sag and tension computation of transmission lines as well as to study the performance of overhead insulators.
C302	POWER ELECTRONICS	C302.1	Explain the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of SCR'S
		C302.2	Design firing circuits for SCR.
		C302.3	Explain the operation of single phase full wave converters and analyze harmonics in the input current.
		C302.4	Explain the operation of three phase full wave converters.
		C302.5	Analyze the operation of different types of DC-DC converters.
		C302.6	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation.
		C302.7	Analyze the operation of AC-AC regulators.
C303	LINEAR IC APPLICATIONS	C303.1	Design circuits using operational amplifiers for various applications.
		C303.2	Analyze and design amplifiers and active filters using Op-amp.
		C303.3	Diagnose and trouble-shoot linear electronic circuits.
		C303.4	Understand the gain-bandwidth concept and frequency response of the amplifier configurations.
		C303.5	Understand thoroughly the operational amplifiers with linear integrated circuits.
C304	DIGITAL SIGNAL	C304.1	Understand the concepts of signal processing & transforms.
		C304.2	Appraise the Fast Fourier algorithm.
		C304.3	Appraise the Fast Fourier algorithm.
		C304.4	Appreciate the concepts of multirate signal processing.

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

C305	MPMC	C305.1	Understand the Microprocessor capability in general and explore the evaluation of microprocessors.
		C305.2	Understand the addressing modes of Microprocessors
		C305.3	Program Microprocessors and Microcontrollers.
		C305.4	Interface Microprocessors and Microcontrollers with other electronic devices
		C305.5	Develop cyber physical systems
C306	EM-II LAB	C306.1	Assess the performance of single phase and three phase induction motors.
		C306.2	Control the speed of three phase induction motor.
		C306.3	Predetermine the regulation of three phase alternator by various methods.
		C306.4	Find the X_d / X motor. Q ratio of alternator and asses the performance of three phase synchronous
		C306.5	Determine the performance single phase AC series motor.
C307	CS LAB	C307.1	Analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchros.
		C307.2	Design P,PI,PD and PID controllers
		C307.3	Design lag, lead and lag lead compensators
		C307.4	Control the temperature using PID controller
		C307.5	Determine the transfer function of D.C Motor
		C307.6	Control the performance of D.C and A.C Servo Motor.
		C307.7	Control the performance of D.C and A.C Servo Motor.
		C307.8	Judge the stability in time and frequency domain.
C308	EM & I LAB	C308.1	Measure the electrical parameters voltage, current, power, energy and electrical characteristics of resistance, inductance and capacitance.
		C308.2	Measure the electrical parameters voltage, current, power, energy and electrical characteristics of resistance, inductance and capacitance.
		C308.3	Measure the strains, frequency and phase difference.

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes
III YEAR – II SEM

C311	ELECTRIC DRIVES	C311.1	Explain the fundamentals of electric drive and different electric braking methods.
		C311.2	Analyze the operation of three phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
		C311.3	Describe the converter control of dc motors in various quadrants of operation
		C311.4	Know the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters.
		C311.5	Differentiate the stator side control and rotor side control of three phase induction motor, explain the speed control mechanism of synchronous motors.
C312	POWER SYSTEM ANALYSIS	C312.1	To development the impedance diagram (p.u) and formation of Y
		C312.2	To development the impedance diagram (p.u) and formation of Y
		C312.3	To study the concept of the Z building algorithm.
		C312.4	To study short circuit calculation for symmetrical faults
		C312.5	To study the effect of unsymmetrical faults and their effects.
		C312.6	To study the rotor angle stability of power systems.
C313	DIGITAL CONTROL SYSTEMS	C313.1	Learn the advantages of discrete time control systems and the “know how” of various associated accessories.
		C313.2	Understand z transformations and their role in the mathematical analysis of different systems(like Laplace transforms in analog systems).
		C313.3	Learn the stability criterion for digital systems and methods adopted for testing the same are explained.
		C313.4	Understand the conventional and state space methods of design are also introduced.
C314	PE Lab	C314.1	Study the characteristics of various power electronic devices.
		C314.2	Analyze the performance of single phase and three phase fullwave bridge converters with both resistive and inductive loads.
		C314.3	Understand the operation of single phase AC voltage regulator with resistive and inductive loads.
		C314.4	Understand the working of Buck converter, Boost converter, single phase square wave inverter and PWM inverter.

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

C315	MPMC Lab	C315.1	Write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
		C315.2	Interface 8086 with I/O and other devices.
		C315.3	Do parallel and serial communication using 8051 & PIC 18 micro controllers.
C316	ES	C316.1	Solve aptitude and reasoning problems
		C316.2	Apply the soft skills in dealing the issues related to employability
		C316.3	Successful in getting employment in campus placement interview

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

IV YEAR – I SEM

C401	SWITCHGEAR AND PROTECTION	C401.1	Understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, SF 6 gas type.
		C401.2	Understand the working principle and operation of different types of electromagnetic protective relays.
		C401.3	Students acquire knowledge of faults and protective schemes for high power generator and transformers.
		C401.4	Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.
		C401.5	Understand different types of static relays and their applications.
		C401.6	Understand different types of over voltages and protective schemes required for insulation coordination.
C402	OOPS THROUGH JAVA	C402.1	Understand Java programming concepts and utilize Java Graphical User Interface in Program writing.
		C402.2	Write, compile, execute and troubleshoot Java programming for networking concepts.
		C402.3	Build Java Application for distributed environment.
		C402.4	Design and Develop multi-tier applications.
		C402.5	Identify and Analyze Enterprise applications.
C403	RENEWABLE ENERGY SYSTEMS	C403.1	To study the solar radiation data, extraterrestrial radiation, radiation on earth's surface.
		C403.2	To study solar photo voltaic systems.
		C403.3	To study maximum power point techniques in solar pv and wind energy
		C403.4	To study wind energy conversion systems, Betz coefficient, tip speed ratio.
		C403.5	To study basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems.
C404	LINEAR & DIGITAL IC APPLICATIONS	C404.1	Understand the characteristics of ics-741, 555, 565, 566.
		C404.2	Apply the concepts of IC 741 for different applications.
		C404.3	Analyse the data connection circuits.
		C404.4	Develop the digital circuits.
		C404.5	Model the counters & Registers using IC's
C405	PS & S Lab	C405.1	Determine the parameters of various power system components which are frequently occur in power system studies and he can execute energy management systems functions at load dispatch center

VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
R 19 - Course Outcomes

IV YEAR – II SEM

C411	PSOC	C411.1	Compute optimal scheduling of Generators.
		C411.2	Understand hydrothermal scheduling.
		C411.3	Understand the unit commitment problem.
		C411.4	Understand importance of the frequency.
		C411.5	Understand importance of PID controllers in single area and two area systems.
		C411.6	Understand importance of PID controllers in single area and two area systems.