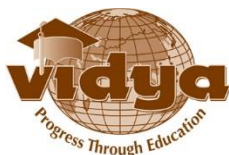| COURSE OUTCOMES				
Branch: DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING				
2019 SCHEME				
After the completion of the course the Students will be able to				
S. No.	**SEM**	**Subject**	**CO Number**	**CO Statement**
1	S1	MAT 101 LINEAR ALGEBRA AND CALCULUS	MAT101.1	solve systems of linear equations, diagonalize matrices and characterise quadratic forms
			MAT101.2	compute the partial and total derivatives and maxima and minima of multivariable functions
			MAT101.3	compute multiple integrals and apply them to find areas and volumes of geometrical shapes,mass and centre of gravity of plane laminas
			MAT101.4	perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
			MAT101.5	determine the Taylor and Fourier series expansion of functions and learn their applications.
2	S1	PHT 100 ENGINEERING PHYSICS	PHT100.1	compute the quantitative aspects of waves and oscillations in engineering systems.
			PHT100.2	apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural

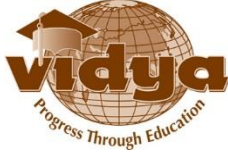|				
				optical processes and optical instruments.
			PHT100.3	analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			PHT100.4	classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problem
			PHT100.5	analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
3	S1	EST 100 ENGINEERING MECHANICS	EST100.1	recall principles and theorems related to rigid body mechanics
			EST100.2	identify and describe the components of system of forces acting on the rigid body
			EST100.3	apply the conditions of equilibrium to various practical problems involving different force system.
			EST100.4	choose appropriate theorems, principles or formulae to solve problems of mechanics.

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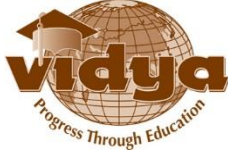|				
			EST100.5	solve problems involving rigid bodies, applying the properties of distributed areas and masses
4	S1	EST 120 BASICS OF CIVIL AND MECHANICAL ENGINEERING	EST120.1	recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering with special focus on Building construction and basics of Surveying
			EST120.2	summarize the basic infrastructure services MEP, HVAC, elevators, escalators and ramps and discuss the Materials, energy systems, water management and environment for green buildings.
			EST120.3	analyse thermodynamic cycles and their efficiency for illustrating working of IC Engines.
			EST120.4	explain the basic principles of refrigeration, air conditioning, hydraulic turbines and power transmission elements.
			EST120.5	describe the basic manufacturing, metal joining and machining processes.
5	S1	HUN 101 LIFE SKILLS	HUN101.1	define and identify different life skills required in personal and professional life
			HUN101.2	develop an awareness of the self and apply well-defined techniques to cope with emotions and stress

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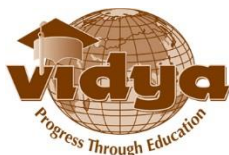|				
			HUN101.3	explain the basic mechanics of effective communication and demonstrate these through presentations and use appropriate thinking and problem solving techniques to solve new problems
			HUN101.4	take part in group discussions
			HUN101.5	understand the basics of teamwork and leadership
6	S1	PHL 120 ENGINEERING PHYSICS LAB	PHL120.1	develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
			PHL120.2	understand the need for precise measurement practices for data recording
			PHL120.3	understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
			PHL120.4	analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
			PHL120.5	develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
7	S1		ESL120.1	name different devices and tools used for civil engineering

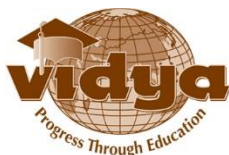|				
				measurements and Explain the use of various tools and devices for various field measurements
		ESL 120 CIVIL AND MECHANICAL WORKSHOP	ESL120.2	demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
			ESL120.3	choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing and Compare different techniques and devices used in civil engineering measurements
			ESL120.4	identify Basic Mechanical workshop operations with appropriate Tools and Instruments with respect to the mechanical workshop trades in accordance with the material and Objects.
			ESL120.5	apply appropriate safety measures with respect to the mechanical workshop trades.
8	S2	MAT 102 VECTOR CALCULUS, DIFFERENTAIL EQUATIONS AND TRASNFORM	MAT102.1	compute the derivatives and line integrals of vector functions and learn their applications
			MAT102.2	evaluate surface and volume integrals and learn their inter-relations and applications.

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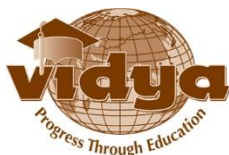|				
			MAT102.3	solve homogeneous and non-homogeneous linear differential equation with constant coefficients
			MAT102.4	compute Laplace transform and apply them to solve ODEs arising in engineering
			MAT102.5	determine the Fourier transforms of functions and apply them to solve problems arising in engineering
9	S2	CYT 100 ENGINEERING CHEMISTRY	CYT100.1	apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
			CYT100.2	understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
			CYT100.3	apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
			CYT100.4	learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
			CYT100.5	study various types of water treatment methods to develop skills for treating wastewater.

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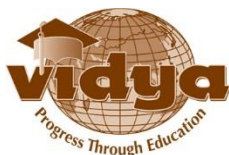|				
10	S2	EST 110 ENGINEERING GRAPHICS	EST110.1	draw the projection of points and lines located in different quadrants
			EST110.2	prepare multi-view orthographic projections of objects by visualizing them in different positions
			EST110.3	draw sectional views and develop surfaces of a given object
			EST110.4	prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions
			EST110.5	convert 3D views to orthographic views and vice versa using CAD tools
11	S2	EST 130 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	EST130.1	apply fundamental concepts and circuit laws to solve simple DC electric circuits.
			EST130.2	develop and solve models of magnetic circuits.
			EST130.3	apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state.
			EST130.4	describe the working of a voltage amplifier and to outline the principle of an electronic instrumentation system.
			EST130.5	explain the principle of radio and cellular communication.
12	S2	HUN 102 PROFESSIONAL COMMUNICATION	HUN102.1	develop vocabulary and language skills relevant to engineering as a profession.

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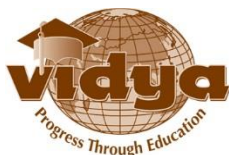|				
			HUN102.2	get the capability to analyze, interpret and effectively summarize a variety of textual content.
			HUN102.3	create effective technical presentations.
			HUN102.4	discuss a topic in a group setting and arrive at generalizations/ conclusions.
			HUN102.5	create professional and technical documents with required relevance and clarity.
13	S2	EST 102 PROGRAMING IN C	EST102.1	analyze a computational problem and develop an algorithm/flowchart to find its solution.
			EST102.2	develop readable C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
			EST102.3	write readable C programs with arrays,structure or union for storing the data to be processed.
			EST102.4	divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem.
			EST102.5	write readable C programs which use pointers for array processing

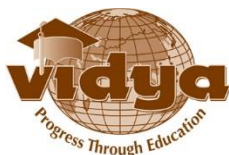|				
				and parameter passing. Develop readable C programs with files for reading input and storing output.
14	S2	CYL 120 ENGINEERING CHEMISTRY LAB	CYL120.1	understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
			CYL120.2	develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
			CYL120.3	develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
			CYL120.4	acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			CYL120.5	learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
15	S2	ESL 130 ELECTRICAL AND ELECTRONICS WORKSHOP	ESL130.1	demonstrate safety measures against electric shocks.
			ESL130.2	identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.

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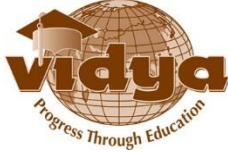|				
			ESL130.3	develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings
			ESL130.4	identify and test various electronic components
			ESL130.5	make use of BIS/IEEE symbols to draw circuit schematics and experiment with and test electronic circuits on board
16	S3	MAT 201 PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	MAT201.1	understand the concept and the solution of partial differential equation.
			MAT201.2	analyse and solve one dimensional wave equation and heat equation.
			MAT201.3	understand complex functions, its continuity differentiability with the use of Cauchy-Riemann equations.
			MAT201.4	evaluate complex integrals using Cauchy's integral theorem and Cauchy's integralformula, understand the series expansion of analytic function
			MAT201.5	understand the series expansion of complex functions about a singularity and apply residue theorem to compute several kinds of real integrals.
17	S3	EET201 Circuits and Networks	EET201.1	apply circuit theorems to simplify and solve complex DC and AC electric networks.

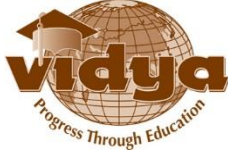|				
			EET201.2	analyse dynamic DC and AC circuits and develop the complete response to excitation using Laplace transform.
			EET201.3	analyse three-phase unbalanced networks
			EET201.4	solve series /parallel resonant circuits.
			EET201.5	develop the representation of two-port networks using network parameters and analyse.
18	S3	EET203 MEASUREMENTS AND INSTRUMENTATION	EET203.1	identify and analyze the factors affecting performance of measuring system.
			EET203.2	choose appropriate instruments for the measurement of voltage, current in ac and dc measurements
			EET203.3	understand the operating principle of power and energy measurement & students can describe the operating principle of DC and AC bridges
			EET203.4	understand the principles of operation of Magnetic measurement systems
			EET203.5	Understand the operating principles of basic building blocks of digital systems, recording and display units
19	S3	EET205 ANALOG ELECTRONICS	EET205.1	design biasing scheme for transistor circuits.

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			EET205.2	model BJT and FET amplifier circuits.
			EET205.3	identify a power amplifier with appropriate specifications for electronic circuit and applications.
			EET205.4	describe the operation of oscillator circuits using BJT
			EET205.5	explain the basic concepts of Operational amplifier(OPAMP) an its applications
20	S3	EST 200 DESIGN AND ENGINEERING	EST200.1	explain different concepts and principles involved in design engineering.
			EST200.2	discuss and demonstrate the workability of solutions for design problems and Apply design thinking while learning and practicing engineering.
			EST200.3	compare designs covering function, cost, environmental sensitivity, safety factors along with engineering analysis.
			EST200.4	develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.
			EST200.5	judge the optimal solution from the available choice.
21	S3	MCN 201 SUSTAINABLE ENGINEERING	MCN201.1	understand the relevance and the concept of sustainability and the global initiatives in this direction

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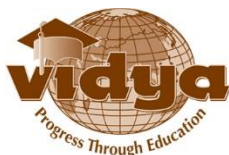|				
			MCN201.2	explain the different types of environmental pollution problems and their sustainable solutions
			MCN201.3	discuss the environmental regulations and standards
			MCN201.4	outline the concepts related to conventional and non-conventional energy
			MCN201.5	demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles
22	S3	EEL201 CIRCUITS AND MEASUREMENTS LAB	EEL201.1	analyze and verify network theorems in various electric circuits .
			EEL201.2	calibrate energy meters and measure three phase and single phase power .
			EEL201.3	analyze and understand various transducer circuits and bridges
			EEL201.4	understand the magnetic principles of working of various electrical and electronic devices
			EEL201.5	analyse the performance of various electronic devices for an instrumentation systems and, to develop the team management and documentation capabilities.
23	S3	EEL203 ANALOG ELECTRONICS LAB	EEL203.1	use various electronic instruments for conducting experiments

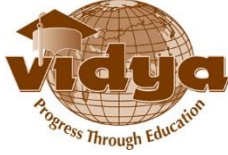|				
			EEL203.2	design and develop various circuits using diodes and Zener diodes
			EEL203.3	design and implement amplifier and oscillator circuit using BJT and JFET
			EEL203.4	design and implement various basic circuits using OPAMP.
			EEL203.5	design and implement various basic circuits using 555 Timer.
24	S4	MAT204 PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS	MAT204.1	understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.
			MAT204.2	understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.
			MAT204.3	Analyse random processes using autocorrelation, power spectrum and Poisson process model as appropriate.
			MAT204.4	Compute roots of equations, evaluate definite integrals and perform interpolation on
			MAT204.5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.

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25	S4	EET202 DC MACHINES AND TRANSFORMERS	EET202.1	acquire knowledge about constructional details of DC machines
			EET202.2	describe the performance characteristics of DC generators
			EET202.3	describe the principle of operation of DC motors and acquire knowledge in testing of DC machines to assess its performance
			EET202.4	describe the constructional details and modes of operation of single phase and three phase transformers
			EET202.5	analyse the performance of transformers under various conditions
26	S4	EET204 ELECTROMAGNETIC THEORY	EET204.1	apply vector analysis and coordinate systems to solve static electric and magneticfield problems.
			EET204.2	apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters
			EET204.3	Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law.
			EET204.4	Apply Maxwell Equations for the solution of timevarying fields
			EET204.5	Analyse electromagnetic wave propagation in different media.

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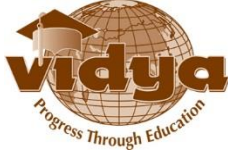
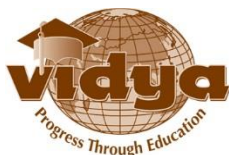|				
27	S4	EET206 DIGITAL ELECTRONICS	EET206.1	identify various number systems, binary codes and formulate digital functions using Boolean algebra.
			EET206.2	design and implement combinational logiccircuits.
			EET206.3	design and implement sequential logic circuits
			EET206.4	compare the operation of various analog to digital and digital to analog conversion circuits.
			EET206.5	explain the basic concepts of programmable logic devices and VHDL.
28	S4	HUT200 PROFESSIONAL ETHICS	HUT200.1	understand the core values that shape the ethical behaviour of a professional.
			HUT200.2	adopt a good character and follow an ethical life.
			HUT200.3	explain the role and responsibility in technological development by keeping personal ethics and legal ethics
			HUT200.4	solve moral and ethical problems through exploration and assessment by established experiments.
			HUT200.5	apply the knowledge of human values and social values to contemporary ethical values and global issues

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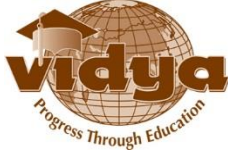|				
29	S4	MCN202 CONSTITUTION OF INDIA	MCN202.1	explain the background of the present constitution of India and features
			MCN202.2	utilize the fundamental rights and duties.
			MCN202.3	understand the working of the union executive, parliament, state executive, legislature and judiciary.
			MCN202.4	utilize the special provisions and statutory institutions.
			MCN202.5	show national and patriotic spirit as responsible citizens of the country
30	S4	EEL202 ELECTRICAL MACHINES LAB I	EEL202.1	Analyse the performance of DC motors and DC generators by performing load test.
			EEL202.2	Sketch the Open Circuit Characteristics of a self excited DC shunt generator and check conditions of voltage build up by performing suitable experiment.
			EEL202.3	Develop equivalent circuit and predetermine their regulation and efficiency by performing OC & SC tests on transformer.
			EEL202.4	Analyse the efficiency and regulation of the transformer by performing load test and examine the efficiency by performing Sumpner's test on two similar transformers.

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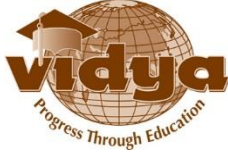|				
			EEL202.5	Analyse the efficiency of a DC machine when working as motor and generator by conducting suitable test.
31	S4	EEL204 DIGITAL ELECTRONICS LAB	EEL204.1	formulate digital functions using boolean algebra and verify experimentally.
			EEL204.2	design and implement combinational logic circuits.
			EEL204.3	design and implement sequential logic circuits.
			EEL204.4	design and fabricate a digital circuit using the knowledge acquired from laboratory
			EEL204.5	implement any given logic function using multiplexer.
32	S5	EET301 POWER SYSTEMS I	EET301.1	identify the power generating system appropriate for a given area.
			EET301.2	evaluate the electrical performance of any transmission line
			EET301.3	compute the various characteristics Underground cables and transmission systems
			EET301.4	select appropriate switchgear for protection schemes.
			EET301.5	design a simple electrical distribution system as per the standards
33	S5	EET303 MICROPROCESSORS	EET303.1	describe the architecture and timing diagram of 8085 microprocessor

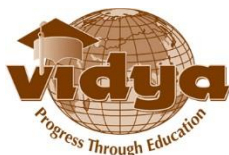|				
		AND MICROCONTROLLERS	EET303.2	develop assembly language programs in 8085 microprocessor
			EET303.3	identify the different ways of interfacing memory and I/O with 8085 microprocessor
			EET303.4	understand the architecture of 8051 microcontroller and embedded systems
			EET303.5	develop assembly level and embedded C programs in 8051 microcontroller
34	S5	EET305 SIGNALS AND SYSTEMS	EET305.1	explain the basic operations on signals and systems
			EET305.2	apply Fourier Series and Fourier Transform concepts for continuous time signals
			EET305.3	analyse the continuous time systems with Laplace Transform
			EET305.4	analyse the discrete time system using Z Transform.
			EET305.5	apply Fourier Series and Fourier Transform concepts for Discrete time domain
35	S5	EET307 SYNCHRONOUS AND INDUCTION MACHINES	EET307.1	identify alternator types, and appreciate their performance
			EET307.2	determine the voltage regulation and analyse the performance of alternators
			EET307.3	describe the principle of operation of synchronous motor and different applications

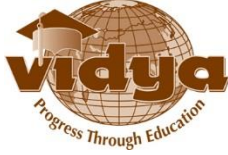|				
			EET307.4	describe the principle of operation of 3-phase induction motors and select appropriate motor types for different applications.
			EET307.5	familiarize with principle of operation and application of 1 - phase induction motors
36	S5	HUT310 MANAGEMENT FOR ENGINEERS	HUT310.1	critically analyse and evaluate a variety of management practices in the contemporary context
			HUT310.2	understand and apply a variety of management and organisational theories in practice
			HUT310.3	mirror existing practices or to generate their own innovative management competencies, required for today's complex and global workplace
			HUT310.4	critically reflect on ethical theories and social responsibility ideologies to create sustainable organizations
			HUT310.5	know about the role of managers in an organisation
37	S5	MCN301 DISASTER MANAGEMENT	MCN301.1	define disaster and will acquire knowledge on basic terms in disaster management such as Hazard, Risk, crisis, vulnerability, exposure etc.
			MCN301.2	get general ideas about the processes involved in natural and anthropogenic disasters

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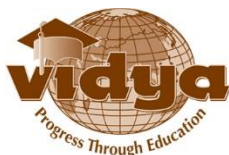|			MCN301.3	gain the skills and abilities to analyse potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.
			MCN301.4	understand the concepts of disaster management and measures to mitigate and contain common episodes of disasters.
			MCN301.5	propose, implement and evaluate research on disasters.
38	S5	EEL331 MICROPROCESSORS AND MICROCONTROLLERS LAB	EEL331.1	develop and execute assembly language programs for solving arithmetic and logical problems using 8085
			EEL331.2	develop and execute assembly language programs for solving arithmetic and logical problems using 8086
			EEL331.3	design and Implement systems with interfacing circuits for various applications
			EEL331.4	acquire basic knowledge on Arduino
			EEL331.5	execute projects as a team using Arduino for real life applications.
39	S5	EEL333 ELECTRICAL MACHINES LAB II	EEL333.1	analyse the performance of single phase induction motors by conducting suitable tests
			EEL333.2	analyse the performance of three phase induction motors by conducting suitable tests

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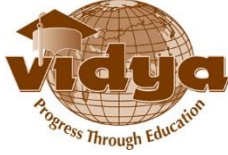|				
			EEL333.3	analyse the performance of three phase synchronous machine from V
			EEL333.4	analyse the performance of V from three phase synchronous machine
			EEL333.5	analyse the performance of a three phase alternator by conducting suitable tests.
40	S6	EET302 LINEAR CONTROL SYSTEMS	EET302.1	describe the role of various control blocks and components in feedback systems.
			EET302.2	analyse the time domain responses of the linear systems.
			EET302.3	apply Root locus technique to assess the performance of linear systems and analyse the stability of LTI systems
			EET302.4	analyse the frequency domain response of the given LTI systems.
			EET302.5	design compensators using time domain and frequency domain techniques
41	S6	EET304 POWER SYSTEMS II	EET304.1	analyze power systems using per unit analysis and single line diagrams.
			EET304.2	have a thorough knowledge about the different fault conditions in the power systems.
			EET304.3	carry out load flow studies under normal and abnormal conditions.
			EET304.4	analyze the requirement of generation control and load

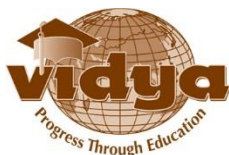|				
				frequency regulations in the system.
			EET304.5	get an idea of the possible stability issues in the system.
42	S6	EET306 POWER ELECTRONICS	EET306.1	explain the operation of modern power semiconductor devices and its characteristics
			EET306.2	analyze the working of controlled rectifiers
			EET306.3	explain the working of AC voltage controllers, inverters and PWM techniques
			EET306.4	compare the performance of different dc-dc converters
			EET306.5	describe basic drive schemes for ac and dc motors
43	S6	HUT300, INDUSTRIAL ECONOMICS & FOREIGN TRADE	HUT300.1	explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare
			HUT300.2	take appropriate decisions regarding volume of output and to evaluate the social cost of production.
			HUT300.3	determine the functional requirement of a firm under various competitive conditions.
			HUT300.4	examine the overall performance of the economy, and the regulation of economic fluctuations and its

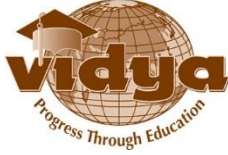|				
				impact on various sections in the society.
			HUT300.5	determine the impact of changes in global economic policies on the business opportunities of a firm.
45	S6	EET362 MATERIALS SCIENCE	EET362.1	describe the characteristics of conducting and semiconducting materials
			EET362.2	classify magnetic materials and describe different laws related to them
			EET362.3	classify and describe different insulators and to explain the behavior of dielectrics in static and alternating fields
			EET362.4	describe the mechanisms of breakdown in solids, liquids and gases
			EET362.5	classify and describe Solar energy materials and superconducting materials and modern techniques for material studies.
46	S6	EET322 RENEWABLE ENERGY SYSTEMS	EET322.1	recognize and understand the world and Indian energy scenario and necessity of sustainable development utilising Renewable Energy recourses.
			EET322.2	analyse and infer the potentials and design systems based on solar thermal systems and solar electric systems

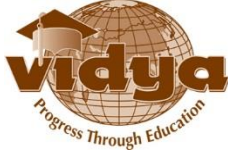|				
			EET322.3	understand the fundamentals and interpret basic components of energy from the ocean
			EET322.4	understand the fundamentals and interpret basic components of energy from the wind
			EET322.5	understand the fundamentals and interpret basic components of energy from the biomass and emerging technologies
47	S6	EET308 COMREHENSIVE COURSE WORK	EET308.1	apply the knowledge of circuit theorems to solve the problems in electrical networks
			EET308.2	evaluate the performance of DC machines and Transformers under different loading conditions
			EET308.3	identify appropriate digital components to realise any combinational or sequential logic.
			EET308.4	apply the knowledge of Power generation, transmission and distribution to select appropriate components for power system operation.
			EET308.5	apply appropriate mathematical concepts to analyse continuous time and discrete time signals and systems
48	S6	EEL332 POWER SYSTEMS LAB	EEL332.1	develop mathematical models and conduct steady state and transient analysis of power

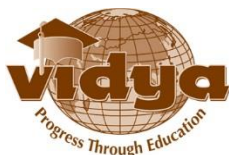|				
			EEL332.2	system networks using standard software.
			EEL332.3	develop a frequency domain model of power system networks and conduct the stability analysis
			EEL332.4	conduct appropriate tests for any power system component as per standards.
			EEL332.5	conduct site inspection and evaluate performance ratio of solar power plant.
49	S6	EEL334 POWER ELECTRONICS LAB	EEL334.1	determine the characteristics of SCR and design triggering circuits for SCR based circuits.
			EEL334.2	design, set up and analyse single phase AC voltage controllers.
			EEL334.3	design, set up and test suitable gate drives for MOSFET/IGBT.
			EEL334.4	design, set up and test basic inverter topologies & dc-dc converters.
			EEL334.5	develop simulation models of dc-dc converters, rectifiers and inverters using modern simulation tools.
50	S7	EET401 Advanced Control Systems	EET401.1	develop the state variable representation of physical systems and to analyse the performance of linear and nonlinear systems using state variable approach
			EET401.2	design state feedback controller for a given system

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			EET401.3	explain the characteristics of nonlinear systems
			EET401.4	apply the tools like describing function approach or phase plane approach for assessing the performance of nonlinear systems
			EET401.5	apply Lyapunov method for the stability analysis of physical systems
51	S7	EET413 Electric Drives	EET413.1	analyse a drive being applied in 4 different quadrants
			EET413.2	apply drives being used in real applications
			EET413.3	understand the various speed control techniques used in the control of the machine.
			EET413.4	understand the concept of speed control for DC drives
			EET413.5	understand the concept of speed control for AC drives
52	S7	EET463 Illumination Technology	EET463.1	explain the fundamental concepts of natural and artificial lighting schemes
			EET463.2	design efficient indoor lighting systems
			EET463.3	design efficient outdoor lighting systems
			EET463.4	describe aesthetic lighting systems
			EET463.5	describe emergency lighting systems

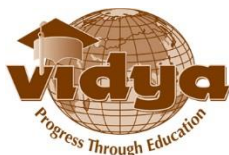|				
53	S7	MCN401, INDUSTRIAL SAFETY ENGINEERING	MCN401.1	describe the theories of accident causation and preventive measures of industrial accidents.
			MCN401.2	explain about personal protective equipment, its selection, safety performance &indicators and importance of housekeeping.
			MCN401.3	explain different issues in construction industries.
			MCN401.4	describe various hazards associated with different machines and mechanical material handling.
			MCN401.5	utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards.
54	S7	EEL411 Control Systems Lab	EEL411.1	demonstrate the knowledge of simulation tools for control system design.
			EEL411.2	develop the mathematical model of a given physical system by conducting appropriate experiments.
			EEL411.3	analyse the performance and stability of physical systems using classical and advanced control approaches.
			EEL411.4	design controllers for physical systems to meet the desired specifications.

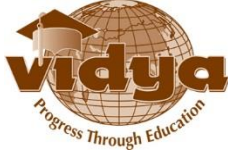|			EEL411.5	understand the working of typical process station.
55	S7	EEQ413 Seminar	EEQ413.1	identify academic documents from the literature which are related to her/his areas of interest
			EEQ413.2	read and apprehend an academic document from the literature which is related to her/ his areas of interest.
			EEQ413.3	prepare a presentation about an academic document.
			EEQ413.4	get an idea about the presentations and make an academic document
			EEQ413.5	get an idea about how to prepare a technical report
56	S7	EED415 Project Phase 1	EED415.1	model and solve real world problems by applying knowledge across domains.
			EED415.2	develop products, processes or technologies for sustainable and socially relevant applications.
			EED415.3	plan and execute tasks utilizing available resources within timelines, following ethical and professional norms.
			EED415.4	identify technology/research gaps and propose innovative/creative solutions.
			EED415.5	organize and communicate technical and scientific findings effectively in written and oral forms.

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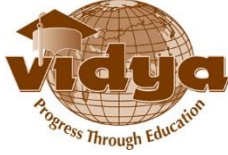|				
57	S8	EET402 ELECTRICAL SYSTEM DESIGN AND ESTIMATION	EET402.1	explain the rules and regulations in the design of components for medium and high voltage installations.
			EET402.2	design lighting schemes for indoor and outdoor applications.
			EET402.3	design low/medium voltage domestic and industrial electrical installations.
			EET402.4	design, testing and commissioning of 11 kV transformer substation.
			EET402.5	design electrical installations in high rise buildings.
58	S8	EET404 COMPREHENSIVE COURSE VIVA	EET404.1	apply the knowledge of circuit theorems to solve the problems in electrical networks
			EET404.2	evaluate the performance of DC machines and Transformers under different loading conditions
			EET404.3	identify appropriate digital components to realise any combinational or sequential logic.
			EET404.4	apply the knowledge of Power generation, transmission and distribution to select appropriate components for power system operation.
			EET404.5	apply appropriate mathematical concepts to analyse continuous time and discrete time signals and systems

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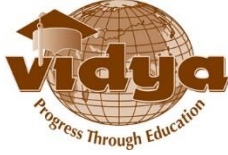|				
59	S8	EED416 PROJECT PHASE II	EED416.1	model and solve real world problems by applying knowledge across domains.
			EED416.2	develop products, processes or technologies for sustainable and socially relevant.
			EED416.3	function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks.
			EED416.4	plan and execute tasks utilizing available resources within timelines, following ethical and professional norms.
			EED416.5	identify technology/research gaps and propose innovative/creative solutions and communicate technical and scientific findings effectively in written and oral forms.
60	S8	EET424 ENERGY MANAGEMENT	EET424.1	analyse the significance of energy management and auditing.
			EET424.2	discuss the energy efficiency and management of electrical loads.
			EET424.3	apply demand side management techniques.
			EET424.4	explain the energy management opportunities in industries.
			EET424.5	compute the economic feasibility of the energy conservation measures.

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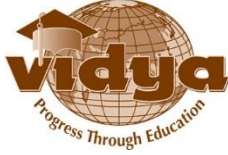|				
61	S8	EET434 SMART GRID TECHNOLOGIES	EET434.1	explain the basic concept of distributed energy resources, micro-grid and smart grid
			EET434.2	choose appropriate Information and Communication Technology (ICT) in smart grid
			EET434.3	select infrastructure and technologies for consumer domain of smart grid
			EET434.4	select infrastructure and technologies for smart substation and distribution automation
			EET434.5	formulate cloud computing infrastructure for smart grid considering cyber security and categorize power quality issues and appraise it in smart grid context
62	S8	EET426 SPECIAL ELECTRIC MACHINES	EET426.1	analyse the performance of different types of permanent magnet motors.
			EET426.2	analyse the performance of a stepper motor.
			EET426.3	analyse the performance of different types of reluctance motors.
			EET426.4	explain the construction and principle of operation of servo motors, single phase motors and linear motors.
			EET426.5	analyse the performance of linear induction motors.

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63	S8	EET468 INDUSTRIAL INSTRUMENTATION AND AUTOMATION	EET468.1	identify the sensors/transducers suitable for industrial applications.
			EET468.2	design the signal conditioning circuits for industrial instrumentation and automation.
			EET468.3	analyze the concepts of data transmission and virtual instrumentation related to automation
			EET468.4	develop the logic for the process control applications using PLC programming
			EET468.5	describe the fundamental concepts of DCS and SCADA systems

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