

Course Outcomes

Course Outcomes of I Year B. Tech. Electrical and Electronics Engineering

Course Code	Course Title	Course Outcomes
BSC-101	Calculus & Linear Algebra	1. To recall and generalize fundamentals of differentiations and apply to engineering problems.
		2. To explain the concept of partial derivatives and apply to engineering problems.
		3. To explain the basics of integration and its applications to calculate surface, area and volume.
		4. To explain and apply the basic concepts of matrices in engineering problems.
		5. To explain and apply the basic concepts of Eigen values and Eigen vectors in engineering problems.
BSC-102	Optics & Modern Physics	1. To explain fundamentals of quantum mechanics
		2. To analyze the intensity variation of light due to polarization
		3. To explain theory of semiconductors and superconductors and apply to solar cells
		4. To derive relation between Einstein's A's and B's coefficients
		5. To state the principle of optical fiber and calculate acceptance angle
ESC-101	Engineering Graphics & Visualization	1. To know about Basics of dimensioning ,Lettering& representation of lines, different types of lines & use of different types of pencils in an Engineering Drawing
		2. To know about different types of projection & to know projection of points, straight lines.
		3. To know about projection of plane & solids.
		4. To know section & development of lateral surface of different solids.
		5. To know about isometric projection. To learn Auto CAD.
ESC-102	Basic Electrical & Electronics Engineering	1. Understand the basic concepts of DC and magnetic circuits.
		2. Explain single and three phase AC Circuits.
		3. Understand the principle of operation and then analyze the working of electrical machines.
		4. Impart the knowledge of electrical measuring instruments and circuit protection devices.
		5. Explain the operating principle of semiconductors
ESC-103	Programming for Problem Solving	1. Recognize Programming Concepts.
		2. To Decompose a Problem into functions and using Array.
		3. Use pointers and memory allocation to write C programs.
		4. Implement Structures and Unions for data organization.
		5. Use files to perform read and write operations.
BSC-201	Differential Equation and Vector	1. To recognize and solve the first order and first degree ordinary differential equations.
		2. To identify and solve the second order linear differential

	Calculus	<p>equations with variable coefficients.</p> <p>3. To demonstrate and solve the linear and nonlinear partial differential equations.</p> <p>4. To recognize and apply the concept of vector differentiation in engineering problems</p> <p>5. To identify and apply the concept of vector integration in different engineering problems.</p>
BSC-202	Applied Chemistry	<p>1. Understand the principles of hardness and identify suitable water and waste water treatment techniques.</p> <p>2. Acquire knowledge about fundamentals of lubricants and their physiochemical properties.</p> <p>3. Acquire knowledge about fundamentals of lubricants and their physiochemical properties.</p> <p>4. Gain the knowledge of polymers, bio-degradable polymers and engineering applications of polymers.</p> <p>5. Demonstrate and apply basic concepts of nanotechnology, corrosion and its prevention.</p>
ESC-201	Basic Civil Engineering & Engineering Mechanics	<p>1. Understand the basic construction materials and their properties.</p> <p>2. Understand the basic concept of surveying.</p> <p>3. Apply concepts of forces, their resolution and applications in engineering practice.</p> <p>4. Analyze various types of beams under different loading condition also the concept of shear force and bending moment diagram.</p> <p>5. Compute centroid, Centre of gravity and moment of inertia of various symmetrical sections.</p>
ESC-202	Basic Mechanical Engineering & Manufacturing Practices	<p>1. Define the Engineering Material, Properties and applications and list the various test on materials by UTM.</p> <p>2. Demonstrate the working of different measuring instruments and to introduce various manufacturing processes.</p> <p>3. Identify the Fluid properties, its laws and understand the basic concept of first and second Law of Thermodynamics.</p> <p>4. Evaluate and analyze performance characteristics of Boilers.</p> <p>5. Identify product design and significance of Ergonomics and able to perform break even analysis; understand significance of automation in manufacturing.</p>
ESC-203	Electronics and Computer Workshop	<p>1. Identify various electronic components and use of electronic devices and instruments.</p> <p>2. Design and test simple electronic circuit on PCB.</p> <p>3. Know hardware components of computer systems, various software and hardware terms and their uses.</p> <p>4. Build dual boot machine with two different OS.</p> <p>5. Creating a LAN network for PCs and learn to solve various problems with computer.</p>
HSMC-101	English	<p>1. To apply functional grammar and use grammatically accurate English to form correct sentences.</p> <p>2. To enrich students' vocabulary and illustrate the formation of</p>

		new words through suffixes-prefixes and synonyms-antonyms.
		3. To help comprehend, interpret and develop reading comprehension.
		4. To develop technical writing skills and report writing. Students will also learn to plan, draft and edit written documents.
		5. To analyse, interpret, summarise and paraphrase through selected literature (book review).

Course Outcomes of II Year B. Tech. Electrical and Electronics Engineering

Course Code	Course Title	Course Outcomes
BSC - EEE301	Numerical Method & Transform Calculus	1. To explain and illustrate numerical methods for the solutions of algebraic and transcendental equations.
		2. To define and solve numerical differentiation, Integration and numerical methods in evaluation of problems related with engineering.
		3. To explain and apply the Laplace transform for the analysis of engineering problems
		4. To explain and apply the basic concepts of Fourier series in engineering problems
		5. To interpret and apply the concepts of Fourier transformation.
PCC - EEE301	Electrical Circuit Analysis	1. Ability to i. Understand circuit elements R,L & C and various sources. ii. Apply various network theorems (Superposition, Thevenin's & Norton's Theorem etc). for the analysis of electrical networks
		2. Ability to i. write equilibrium equations for the transients and steady state analysis of a network. ii. Understand resonance in circuits.
		3. Ability to apply Laplace transforms for the solution for network with periodic /a periodic excitation
		4. Ability to apply Fourier series analysis for study of harmonics in voltage / current in a network.
		5. Ability to compute Z, Y, ABCD etc., parameters of a two port network and their applications.
PCC - EEE302	Analog Electronics	1. Apply the knowledge of semiconductors and PN junction diodes in various applications.
		2. Illustrate design and working of BJT and FET. Analyze and discuss BJT in different types of configurations such as CC, CE, CB.
		3. Design & analyze the transistor as an amplifier and oscillator.
		4. Design and analyze different types of wave shaping circuits.
		5. Design of operational amplifiers circuits and their applications.

PCC - EEE303	Instrumentation & Measurement	1. Acquire the knowledge of fundamental Instrumentation and Measurement and Classify errors in measurement
		2. Illustrate the construction details and principle of Galvanometer and different type of ammeter and voltmeter
		3. Explain about power measurement and Energy meter
		4. Describe A.C bridges for measurement of inductance, capacitance and resistance.
		5. Describe different types of transducers and its applications
HSMC - EEE301	Professional Communication Skills	1. Students will develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively professionally.
		2. Students will develop an ability to apply principles of effective nonverbal communication to both personal and professional communication and demonstrate an ability to better understand and adapt to others and their non verbal behaviors.
		3. Students will able to distinguish among various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization.
		4. Students will demonstrate to draft effective business correspondence with brevity and clarity.
		5. Students will learn to demonstrate their verbal and non-verbal communication ability through presentations.
PCC- EEE304	Electrical Workshop	1. Apply knowledge about skills in basic electrical engineering practice & instruments to acquire measuring skills.
		2. Apply knowledge about fundamental concepts of different protection devices of electrical wiring system.
		3. Illustrate the physical recognition of different electrical & Electronics components like Resistances, Inductances, Capacitances, diodes, transistors and their ratings.
		4. Discuss ratings of commonly used house hold electrical appliances
		5. Discuss different wiring schemes used around them like in their homes, shops, college, etc.
MC2	Energy and Environmental Engineering	1. Describe basic concepts and importance about various energy resources. Overview of renewable energy conservation techniques
		2. Recall the concept of ecosystem including various cycles in ecosystems. Concept of biodiversity along with threats and conservation
		3. Explain various pollutants in air. Emission and control of atmospheric air pollution.
		4. Discuss water pollution. Paraphrase recent available treatment technologies for water and wastewater in the field of wastewater engineering. Discuss causes and effects of e waste.
		5. Illustrate various environmental protection acts and concept of environmental impact assessment.
PCC - EEE401	Electrical Machine-I	1. Illustrate the working principle, construction, operation and testing of Single Phase Transformer.

		2. Illustrate the working principle, construction, operation and testing of Three Phase Transformer.
		3. Illustrate the working principle, construction, operation and testing of Three Phase Induction Motor.
		4. Discuss the starting and control of Induction Motor.
		5. Illustrate the working principle, construction, operation and testing of Single Phase Induction Motor.
PCC - EEE402	Digital Electronics & Logic Design	1. Ability to understand solve the number system, logic gates.& reduction of logical expressions using Boolean algebra
		2. Design and Implementation of combinational logic circuit.
		3. Ability to understand, design and analyze various sequential circuits.
		4. Explain synchronous and asynchronous counters using flip flop
		5. Define semiconductor memories and programmable logic design
PCC - EEE403	Power System	1. To impart the knowledge of general structure of power systems and power plant economics factors.
		2. To discuss of transmission line parameters & their impact, and the significance of underground cables.
		3. To analyze the performance parameters for overhead transmission line and voltage control methods.
		4. To capable of mechanical and electrical design of transmission system.
		5. To impart the knowledge Voltage control & Distribution system.
PCC - EEE404	Power Electronics	1. Explain the basics of power electronic devices.
		2. Analyze and design ac-to-dc circuits (Rectifier).
		3. Analyze and design dc-to-ac inverters (Inverter).
		4. Analyze and design dc-to-dc converters (Chopper).
		5. Analyze and design AC voltage controller and Cyclo Converter.
PCC - EEE405	Signals & Systems	1. Classify different types of commonly used signals & systems and describe how to perform mathematical operations on signals.
		2. Analyze continuous time signals in time domain and frequency domain.
		3. Analyze linear time invariant continuous time systems using differential equation, block diagram and state variable representations.
		4. Analyze discrete time signal using Z transform and convolution.
		5. Analyze DT LTI systems using DTFT and Z-Transform.
MC4	NSS/ Indian Constitution	1. Understand the society and their social and civic responsibilities towards their society
		2. Identify the needs and problems of the society and develop ability for problem-solving.
		3. Utilize knowledge in finding practical solutions to individual and society as a whole. Also, develop capability to meet

		emergencies and natural disasters in need time.
		4. Develop competence required for group-living and sharing of responsibilities.
		5. Acquire democratic attitude and practice national integration and social harmony.

Course Outcomes of III Year B. Tech. Electrical and Electronics Engineering

Course Code	Course Title	Course Outcomes
PCC - EEE 501	Microprocessor & Microcontroller	1. Ability to explain about 8086 microprocessor and its application.
		2. Ability to discuss various controllers like DMA, USART and interface with 8086 microprocessor.
		3. Ability to explain about 8051 microcontroller and its application.
		4. Ability to discuss and interface with various controllers like ADC & DAC with 8051 microcontroller.
		5. Ability to explain about the embedded system using Arduino.
PCC - EEE 502	Control system	1. Ability to develop block diagrams and obtain model of a given physical systems, such as, voltage control, speed control of motor, etc. and obtain input-output relationship through block diagram reduction/SFG techniques.
		2. Ability to analyze control systems in time domain by applications of classical control and modern control theory (State Space Technique).
		3. Ability to investigate stability of control system using root loci.
		4. Ability to obtain frequency response and investigate stability using Bode/Nyquist plots.
		5. Ability to design lag/lead/lag-lead compensator in frequency domain for improvement in system performance.
PCC - EEE 503	Electrical Machine -II	1. Explain working principle, Construction and characteristics of DC Machine
		2. Analyze starting methods & sketch the speed control Characteristics DC Motor
		3. Analyze Synchronous generator, evaluate voltage regulation of alternators using synchronous impedance methods, parallel operation & load sharing.
		4. Analyze Synchronous motor, describe operation, starting and stopping of synchronous motor
		5. Appraise knowledge about the fundamental principles and classification of special machines
PEC - EEE 501	Utilization of Electrical Engineering	1. Define and Identify the different Illumination Scheme
		2. Explain the methods of Heating, Welding & electrolysis and its application

		3. Describe the traction system
		4. Describe the electric drives and its application in traction
		5. Illustrate the various types of Hybrid and Electric Vehicles
OEC- EEE 501	Business Communication	1. To develop knowledge, skills, and judgment around human communication that facilitates their ability to work collaboratively professionally.
		2. To develop an ability to understand the different types of communication and demonstrate an ability to better understand and adapt to others and their behaviors
		3. To apply changes to distinguish mass communication and media in the digital era.
		4. To apply to draft effective business correspondence with brevity and clarity to maintain healthy business relationship.
		5. To learn to demonstrate students verbal and non-verbal communication ability through presentations.
PCC - EEE 504	Simulation Lab - II	1. Summarize the basic knowledge about MATLAB & PSIM
		2. Illustrate the Basic features of MATLAB
		3. Make use of programming for various electrical networks
-	Seminar & GD	1. Make use of literature survey on selected topic
		2. Formulate ,analyze, design and develop model/ simulation of project
		3. Developed innovative and creative concepts.
PCC- EEE - 601	Power System-II	1. Ability to explain the Problems associated with modern interconnected power System.
		2. Ability to analyze Power flow studies.
		3. Ability to analyze MW Frequency control.
		4. Ability to analyze MVAR Voltage control.
		5. Ability to analyze Power System Stability.
PCC- EEE - 602	Electrical Drives	1. Explain the operation of dc motor drives to satisfy four-quadrant operation to meet mechanical load requirements.
		2. Describe Starting and braking of d.c. drive and review of power converters used in drives.
		3. Illustrate the chopper control of d.c. motor.
		4. Explain industrial aspects of induction motor and synchronous Motors drives in an energy efficient manner using power electronics.
		5. Describe various types of special drives and Energy efficient drives.
PCC- EEE - 603	Analog & Digital Communication	1. Ability to compute Fourier Transform and analyze different types of signals and systems.
		2. Ability to understand the need of modulation and different types of Analog modulation schemes.
		3. Able to analyze different aspects of PCM techniques.
		4. Ability to identify and describe different types of digital modulations
		5. Ability to understand and analyze the source and channel coding.
PEC-	Computer	1. Build an understanding of the fundamental concepts of

EEE - 601	Network	computer networking.
		2. To apply knowledge of different techniques of error detection and correction to detect and solve error bit during data transmission.
		3. To determine proper usage of the IP address, subnet masks and default gateway in a routed network.
		4. Students will understand the concepts of some Modern topics (like ISDN services & ATM)
		5. Ability to discuss about network management, mobile networking and also familiar with contemporary issues in networking Equipments and Tools.
OEC-EEE - 601	Entrepreneurship	1. To develop entrepreneurship skills in students.
		2. To interpret about industry structure and how to start up a company.
		3. To interpret about types of enterprises.
		4. To understand E-Commerce practices.
		5. To understand and practice digital marketing.
PCC-EEE - 604	Department Simulation Lab	1. Illustrate the student in introducing and exploring MATLAB software
		2. Develop programming for various electrical networks
		3. Design the Simulink model for the various field of Electrical Engineering.

Course Outcomes of IV Year B. Tech. Electrical and Electronics Engineering

Course Code	Course Title	Course Outcomes
EX-701	Power system protection	1. Understand the different types of Fault in Power System
		2. Understand the relaying principles and it's Working.
		3. Identify, formulate and solve problems in protection of transformer, generator, transmission lines, bus bar, motors etc.
		4. Understand the switchgear theory of current interruption, Principle and working of various circuit breaker.
		5. Discuss the modern protection trends used in power system
EX-702	HVDC& FACTS	1. Understand the principle of reactive power compensation, importance of controllable parameters, need and benefits of FACTS controllers and its classification.
		2. Understanding of series (SVC, STATCOM) and shunt compensator (TCSC, SSSC).
		3. Understand the principles, operation and control of (Combined compensator) UPFC and IPFC.
		4. Develop the knowledge of HVDC transmission system, layout, comparison of AC and DC system, and HVDC converters.
		5. To acquire the knowledge of control of HVDC system , series and parallel MTDC
EX- 703	Hybrid Electrical	1. Describe about working principle and importance of hybrid

	Vehicles	and electric vehicles. 2. Explain the construction and working principle of various electric drive trains used in electric vehicles 3. Describe the different types and working principle of hybrid vehicles. 4. Describe the different types of Energy Storage Requirements in Hybrid and Electric Vehicles 5. Illustrate the Management various types Energy Strategies in Hybrid and Electric Vehicles.
EX-704	Electrical CAD lab	1. Formulate Design calculations for DC machine 2. Formulate Design calculations for Power Transformer 3. Formulate Design calculations for Three Phase alternator 4. Formulate Design calculations for Three Phase Induction machine (Cage rotor) 5. Formulate Design calculations for Three Phase Induction machine (Slip Ring)
EX-705	Energy audit Lab	1. Acquire the knowledge of basic principles of energy auditing, types and objectives 2. Acquire the knowledge of basic principles of instruments used for energy auditing 3. Acquire the knowledge of Energy consumption and lumen measurement of lights and ballasts 4. Students can understand different lighting systems 5. Acquire the knowledge of different techniques for power factor improvement, selection of energy efficient motors and comparison between standard and energy efficient motors..
EX-706	Major Project	1. List topics related to project and select a particular topic of interest 2. Make use of literature survey on selected topic 3. Formulate ,analyze, design and develop model/ simulation of project 4. Developed innovative and creative concepts.
EX-707	EOI-III	1. Ability to acquire capability and enthusiasm for self-improvement through continuous professional development and life-long learning 2. Awareness to build social, cultural, global and environmental responsibility as an engineer. 3. Ability to acquire capability and enthusiasm for self-improvement through continuous professional development and life-long learning 4. Awareness to build social, cultural, global and environmental responsibility as an engineer. 5. Ability to acquire capability and enthusiasm for self-improvement through continuous professional development and life-long learning
EX-801	Electrical Drives	1. Describe the structure of Electric Drive systems and their role in various applications such as flexible production systems, transportation. Making Electric Drives an enabling technology.

		2. Discuss the operation of dc motor drives to satisfy four-quadrant operation to meet mechanical load requirements using their torque and speed expression.
		3. Explain industrial aspects of induction motor drives in an energy efficient manner using power electronics. And its speed control through stator side.
		4. Describe speed control of Induction motor drive using rotor resistance control & slip power recovery methods
		5. Define industrial application & control of Synchronous Motors by Separate & Self control.
EX-802	Special Machine	1. Explain the fundamental principles and classification of Stepper motor.
		2. Explain the fundamental principles and classification of Switched reluctance motor.
		3. Explain the fundamental principles and classification of BLDC motor.
		4. Analyze permanent magnet materials and circuits of PM motors & DC brushed motors
		5. Explain the fundamental principles and classification of PM Synchronous motor.
EX-803	Power Electronics Converters for Renewable Energy	1. Understanding renewable energy sources and optimization of Solar Energy tapping in PV systems
		2. Understanding of different power converter for Solar (PV Systems)
		3. Application of single phase and three phase controller with different controlling techniques.
		4. Understanding of wind energy generators and their synchronization with grid network
		5. Understanding of different topology of wind generators.
EX-804	Simulation Lab	1. Explain the working of MATLAB & Various Libraries of SIMULINK.
		2. Explain the SIMULINK model for the various Rectifier Circuits.
		3. Explain the working & design of three phase inverter circuit using the SIMULINK.
		4. Explain the working of PSIM software and perform Simulation.
		5. Explain the SIMULINK model for advanced power electronics devices.
EX-805	Major Project -II	1. Students can prepare a working system or select some real life problem.
		2. Students will learn to solve technical problems through concept evaluation, need analysis, market analysis and data.
		3. Students can select practical industrial problems and prepare suitable solutions.
		4. Students will formulate innovative and creative concepts.
		5. Students will improve their Practical problem solving skills.