Annexure – I

CREDIT FRAMEWORK STRUCTURE

Semester	I	II	III	IV	V	VI	VII	VIII	Total Credits
Basic Science Course (BSC)	7	7	-	-	-	-	-	-	14
Engineering Science Course (ESC)	6	6	-	-	-	-	-	-	12
Program Core Course (PCC)					11	9	9	-	72
Program Elective Course (PEC)					3	3	3	3	
Multidisciplinary Minor (MDM)	-	-	2	3	3	3	3	-	14
Open Elective (OE)	-	-	-	-	-	2	3	3	08
Vocations Skill Courses (VSC)	-	-	-	2	2	-	-	-	04
Ability Enhancement Course (AEC)	1	1	-	-	-	-	-	-	02
Indian Knowledge System (IKS)	2	-	-	-	-	-	-	- -	02
Value Education Course (VEC)	-		3	3	-	-		-	06
Skill Enhancement Courses (SEC)	1	3	1	1	1	1	-	-	08
Co-curricular Courses (CC)	2	2	-	-	-	-	--	--	04
Project work, seminar and internship in industry (ELC)	-	-	1	1	-	2	2	12	18
Research Methodology	-	-	-	-	-	-	-	2	02
Total Credits (Major)	22	22	22	20	20	20	20	20	166

ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2024-25

Electrical Engineering

SEMESTER V

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min passing marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1.	PCC	**24EE501T**	Power Electronics	3	-	-	3	**20**	**20**	**60**	**100**	**45**	**3**
2.	PCC	**24EE501P**	Power Electronics Lab	-	-	2	1	-	**25**	**25**	**50**	**25**	-
3.	PCC	**24EE502P**	Electrical Engineering Drawing and Simulation Lab	-	-	2	1	-	**25**	**25**	**50**	**25**	-
4.	PCC	**24EE503T**	Electrical Machine Design	3	-	-	3	**20**	**20**	**60**	**100**	**45**	**3**
5.	PCC	**24EE504T**	Utilization of Electrical Energy	3	-	-	3	**20**	**20**	**60**	**100**	**45**	**3**
6.	PEC	**24EE505T**	Program Elective – I (Refer PE basket)	3	-	-	3	**20**	**20**	**60**	**100**	**45**	**3**
7.	VSC	**24EE506P**	Technical Skill Development – II	-	-	4	2	-	**50**	-	**50**	**25**	-
8.	SEC	**24EE541P**	Career Development – V	-	-	2	1	-	**50**	-	**50**	**25**	-
9.	MDM	**24EE531M**	MDM – III (Refer MDM basket)	3	-	-	3	**20**	**20**	**60**	**100**	**45**	**3**
			Total	**15**	-	**10**	**20**	**100**	**250**	**350**	**700**	-	-

Multidisciplinary Minor – III	
24EE531M	Electrical Power system

Program Elective - I	
24EE505T(i)	Electric Vehicle Architecture
24EE505T(ii)	PLC and Industrial Automation

		July 2026	**NEP 2.1**	**Applicable for 2026-27**
Chairman - BoS	**Dean – Academics**	**Date of Release**	**Version**	

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24EE501T	Power Electronics	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
1. To introduce students, the basic theory of power semiconductor devices and their practical application in power electronics 2. To familiarize the operation principle of AC-DC, DC- DC, DC-AC conversion circuits and their applications 3. To provide the basis for further study of power electronics circuits and systems.	Students will be able to 1. Interpret operation of SCR and its characteristics 2. Interpret principle of switching circuits, AC regulators and its applications. 3. Analyze and design 1-phase and 3-phase Line commutated converters Circuit. 4. Describe operation of basic inverter circuits. Analyze single phase and three phase bridge type inverter circuits, it's output voltage control, PWM techniques. 5. Analyze, design DC/DC converter circuits.

Unit I	**[09Hrs]**
SCR and Its characteristics: V-I, turn on & turn off characteristics, rating, gate characteristics, over voltage and over current protection, snubber circuit design. **Commutation techniques of SCR**: Natural commutation and forced commutation methods.(numerical on class B commutation)	
Unit II	**[09Hrs]**
Static controllable switches: Characteristics & working of MOSFET, Gate turn off thyristor and Insulated gate bipolar transistor, TRIAC, UJT , AC regulator and working principle of UJT as relaxation oscillator. Introduction to advanced Power Devices.	
Unit III	**[09Hrs]**
Line commutated converters: **Single Phase line commutated converters:** Working of single pulse converter, two pulse (mid-point & bridge) converter, effect of source inductance on 1-phase bridge converter, effect of freewheeling diode, single phase semi converter. **Three phase line commutated converters:** Working of three pulse converter and six pulse bridge converter, effect of freewheeling diode.	
Unit IV	**[09Hrs]**
Inverter: Working of basic series inverter, modified series inverter, bridge inverter, three phase inverter in 120° & 180° Modes, output voltage control, harmonic reduction by pulse width modulation techniques.	
Unit V	**[09Hrs]**
DC-DC Converters (Chopper): Principles of step down chopper, step up chopper, impulse commutated chopper, multi-phase chopper, jones chopper. **Cycloconverters :** Working of single phase midpoint cycloconverter, single phase bridge type cycloconverter	

Text Books

S. N.	Title	Authors	Edition	Publisher
1	Power Electronics Circuits Devices and Applications	M. H. Rashid	Third	Pearson
2	Power Electronics	M. D. Singh & K. B. Khanchandani	Second	Tata McGraw Hill
3	Power Electronics	P. C. Sen.		Tata McGraw Hill

Reference Books

S. N.	Title	Authors	Edition	Publisher
1	Power Electronics	Ned Mohan, Tora M. Udeland, William P. Riobbins		John Wiley & sons

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24EE501P	Power Electronics Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
1. To introduce students to understand construction, operation and various characteristics of SCR. 2. To familiarize students to the different types of power semiconductor devices and their switching Operation, characteristics and performance parameters. 3. To understand basic operation of AC to DC conversion system. 4. To understand operation and application of DC to AC power conversion system with harmonic reduction methods. 5. Operation, switching, techniques and basics topologies of DC-DC switching	1. To obtain and analyze the characteristics of power semiconductor devices to plot the characteristics and present the results with findings. 2. To observe and analyze the switching circuits, AC regulators and its applications. 3. To demonstrate the working of controlled AC to DC converters with various types of loads and verify the characteristic equations. Develop ability to modify the circuit conditions according to the application requirements. 4. To demonstrate the working of controlled DC to AC converters with various types of loads and verify the characteristic equations. Develop ability to modify the circuit conditions according to the application requirements. 5. To demonstrate the working of controlled DC to DC and AC to AC converters with various types of loads and verify the characteristic equations. Develop ability to modify the circuit conditions according to the application requirements.

Experiment No.	Title of the Experiment
1	To Study V-I Characteristics of SCR and Measure Latching and Holding Currents.
2	To Plot waveform for AC Phase Control using DIAC-TRIAC.
3	To Determine Intrinsic Stand-off ratio of UJT and study UJT as Relaxation Oscillator.
4	Single Phase Half-controlled Converter with R & RL load.
5	Single Phase Fully Controlled Bridge Converter with R & RL loads.
6	Single-Phase Cyclo Converter with R& RL loads.
7	Forced Commutation Circuits (Class A, Class B, Class C, Class D, Class E and Class F).
8	Single Phase Series Inverter with R & RL Loads.
9	To Plot Output Waveform of Jones Chopper.
10	Simulation of Single Phase Converter.

Text Books

S. N.	Title	Authors	Edition	Publisher
1	Power Electronics circuits Devices and Applications	M. H. Rashid	Third	Pearson
2	Power Electronics	M. D. Singh & K. B. Khanchandani	Second	Tata McGraw Hill
3	Power Electronics	P. C. Sen		Tata McGraw Hill

Reference Books

S. N.	Title	Authors	Edition	Publisher
1	Power Electronics	Ned Mohan, Tora M. Udeland, William P. Riobbins		John Wiley & Sons

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24EE502P	Electrical Engineering Drawing and Simulation Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
1. To Simulate and analyze electrical layouts / circuits in software's like MATLAB and PSIM software. 2. To design and draw electrical control circuits and control panels layout.	Students will be able to: 1. To identify and draw the standard Electrical equipment symbols. 2. To simulate and analyze electrical circuits using MATLAB-Simulink software. 3. To model, simulate and analyze electrical power system components using PSIM software and virtual lab. 4. To design motor control panels and motor control circuit using AUTOCAD Electrical software.

Expt. No.	Title of the experiment
1	To draw the symbols of Electrical equipment and machines using free access Kopperfield tool.
2	To design & simulate transmission line to nodal using MATLAB-Simulink.
3	To design & simulate series RLC circuit using MATLAB-Simulink.
4	To simulate the first quadrant chopper using P-Sim.
5	To simulate three-phase balanced & unbalanced load using PSIM software.
6	To design motor control circuit using Autocad Electrical software.
7	To design motor control panel using Autocad Electrical software.
8	To draw and simulate control of Bus voltage through on-load tap changer using virtual lab IITB.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Basic Electrical Engineering	V. K. Mehta	II	S. Chand
2	Getting started with MATLAB	Rudra Pratap	III	Oxford

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Electrical Technology	B. L. Theraja	II	S. Chand

ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY,NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2024-25

ELECTRICAL ENGINEERING

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24EE503T	Electrical Machine Design	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
This course is intended 1. To study the basic concepts and applications of Electrical Machine Design. 2. To design the main dimensions of Electrical Machines and study the effect of design on Electrical machines' performance characteristics.	**Students will be able to** 1. Design the overall dimensions of 1- phase and 3-phase core type transformer. 2. Estimate the performance characteristics of the transformer as per specified design requirements and constraints. 3. Design the overall dimensions of stator of 3 phase Induction Motor 4. Design the overall dimensions of rotor of 3 phase squirrel cage Induction Motor 5. Design the overall dimensions of alternator.

Unit I	**[10Hrs]**
Design of 1-phase and 3-phase core type transformer: - Classification of transformers based on construction and service conditions, Output equation, overall dimensions of 1-phase and 3-phase core type transformer, need of stepped core cross-section, selection of flux density and current density.	
Unit II	**[10Hrs]**
Performance characteristics of Transformer: - Calculations of per unit leakage reactance , regulation and Magnetising current for 1-phase and 3-phase core type transformer (Derivation of leakage reactance is not expected).	
Unit III	**[9Hrs]**
Stator Design of 3-phase Induction Motor: - Output equation of 3-phase Induction motor, selection of specific magnetic loading & specific electric loading, Selection of number and type of stator slots, overall dimensions of the stator core.	
Unit IV	**[9Hrs]**
Rotor Design of 3-phase Induction Motor: - Classification of 3-phase Induction motor based on rotor construction, selection of length of air gap and rotor slots, calculations of overall dimension and rotor speed of 3-phase squirrel cage rotor of 3-phase Induction motor.	
Unit V	**[7Hrs]**
Design of 3-phase alternator: - Classification of the alternators, peripheral speed and runaway speed, pitch factor and distribution factor . overall dimensions of 3 phase alternator, Calculations of the volume of coolant required per sec for the cooling of the alternator. Advantages of Hydrogen Cooling.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Electrical Machine Design	A. K. Sawhney	New	Dhanpat Rai & Sons
2	Electrical Machine Design	Balbir Singh	New	Brite
3	Principles of Electrical Machine Design	R. K. Agarwal	New	Katariya & Sons

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Performance and Design of A.C. Machines	M G Say	New	CBS
2	Design and Testing of Electrical Machines	M V Deshpande	New	PHI
3	Electrical Machine Design	V Rajini	2nd	New Age International

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24EE504T	Utilization of Electrical Energy	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
This course is intended to 1. Understand the concept of various Heating, Welding methodologies, Illumination methods and traction supply system. 2. Appreciative of the concepts of Electrolysis processes, DG system	A student who successfully fulfil the course requirements will be able to 1. Understand use of electric energy for industrial heating. 2. understand Study the use of electrical energy in electric welding 3. Learn basics of Illumination and design of lighting schemes for Various applications 4. Understand pumps and DG systems and evaluate their performance. 5. Understand Electric Traction system with its power supply structure.

Unit I	**[08 Hrs]**
Electric Heating: Types and methods of electrical heating, advantages of electrically produced heat, types & application of electric heating equipment, transfer of heat. Resistance Ovens: General constructions, design of heating elements, efficiency & losses, radiant heating. Induction heating: Core type & core less induction furnace & application Dielectric heating: Principle and application. Arc furnace: Direct & indirect arc furnace, power supply, characteristics & control.	
Unit II	**[10 Hrs]**
Electric Welding: Importance, Advantages & Disadvantages of welding, classification of welding processes. Resistance welding, Butt welding, Spot welding, Seam welding, Electric arc welding, ultrasonic welding, laser beam welding.	
Unit III	**[10 Hrs]**
Illumination: Nature of light, terms used in illumination, solid angle, laws of illumination, Colour Rendering Index(CRI), Design of illumination systems, indoor lighting systems, factory lighting, outdoor lighting design, floodlighting, street lighting, energy saving in lighting systems	
Unit IV	**[10 Hrs]**
Pump types, system characteristics. Pump curves, factors affecting pump performance, efficient pumping system operation, energy conservation opportunities in pumping system. Diesel Generating Systems: Introduction, selection and installation factors, operational factors, energy performance assessment in DG sets, energy saving measures for DG sets	
Unit V	**[08 Hrs]**
Traction system, requirement of an ideal traction system, different systems for traction, system of railway electrification, comparison between AC and DC systems, power supply for electric traction system, overhead equipment (collector gear for overhead equipment, conductor-rail equipment), Speed- Time curve for train movement, crest speed, average speed and schedule speed, simplified speed-time curve	

Text Books

S. N.	Title	Authors	Edition	Publisher
1	Utilization of Electric Power & Electric	J. B. Gupta	10th Edition 2012, Reprint 2021	Pearson
2	Art and Science of Utilization of Electrical	H Partap	Second	Tata McGraw Hill

Reference Books

S. N.	Title	Authors	Link
1	Guide book for National Certification Examination for Energy Managers and Energy Auditors, BEE	Bureau of Energy Efficiency	https://aipnpc.org/Guidebook s.aspx

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24EE505T(i)	PE – I Electric Vehicle Architecture	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
1. The course will enable students to compare and analyze different types of EVs. 2. The course will enable students to evaluate the impact of various parameters on the performance of EVs.	**Students will be able to** 1. Quantify economic and environmental impact of EVs compared to IC engines. 2. Analyze the mathematical models of EVs and justify impact of various parameters 3. Compare various types of EV propulsion drive motors and be able to choose best for given application 4. Enlist various types of EV storage systems and analyze characteristics 5. Analyze various Power electronic circuit topologies for EVs

Unit I	**[10 Hrs]**
Introduction: History of EVs – Economic and Environmental impact; Architecture of EV. Basics of vehicle performance, vehicle power source characterization, transmission characteristics. Electric Drivetrains- Basic concept of electric traction, introduction to various electric drive-train topologies.	
Unit II	**[10 Hrs]**
Electric Vehicle Modelling: Consideration of Rolling Resistance – Transmission Efficiency – Consideration of Vehicle Mass – Tractive Effort – Modelling Vehicle Acceleration – Modelling Electric Vehicle Range -Aerodynamic Considerations –EV Motor Sizing	
Unit III	**[9 Hrs]**
Electric Propulsion: Introduction to electric components used in electric vehicles, Configuration and control of DC Motor drives, Configuration and control of Induction Motor drives, configuration and control of Permanent Magnet Motor drives, Configuration and control of Switch Reluctance Motor drives	
Unit IV	**[8 Hrs]**
Energy Storage: Introduction to Energy Storage Requirements in Electric Vehicles, Battery based energy storage and its analysis, Super Capacitor based energy storage and its analysis, Flywheel based energy storage and its analysis, Hybridization of different energy storage devices.	
Unit V	**[8 Hrs]**
Power Converters: DC-DC converters for EVs, Buck and Buck-Boost Converters, Multi-quadrant DC-DC converters, DC-DC converter applications, DC-AC converters for EVs, Three-phase DC-AC converters, Voltage control of DC-AC inverters using PWM	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Electric and Hybrid Vehicles: Design Fundamentals	Iqbal Hussein	1st	CRC Press, 2003
2	Modern Electric, Hybrid Electric and Fuel Cell Vehicles: Fundamentals, Theory and Design	Mehrdad Ehsani, Yimi Gao, Sebastian E. Gay, Ali Emadi	1st	CRC Press, 2004
3	Electric Vehicle Technology Explained	James Larminie, John Lowry	1st	Wiley, 2003

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits		Evaluation		
						MSE	CA	ESE	Total
24EE505T(iv)	PE – I PLC and Industrial Automation	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
The objective of this course is to impart knowledge on the following topics- 1. To have the basic concept, components and programming of PLC for Automation. 2. To implement ladder logics for various applications. 3. To understand SCADA displays and its applications.	After successful completion of this course students will be able to 1. Identify and understand components of PLCs for Automation 2. Select appropriate module as per application. 3. Develop PLC Programming for given application. 4. Understand SCADA System. 5. Develop SCADA system for various applications.

Unit I	**[10Hrs]**
Introduction to PLC: Need and tools of Automation, Evolution of PLC, Architecture-PLC Block diagram and working, Selection of PLC, Types of PLCs, Advantage, limitations and applications of PLCs, Networking of PLCs.	
Unit II	**[10Hrs]**
PLC Hardware: Input and Output Modules for PLC- working, description, wiring details, specifications, interfacing; Types of Sensors, Instruction sets for given operation, Ladder Programming: Terminologies & Rules, Ladder logics for some applications, Boolean Expression to Ladder Diagram.	
Unit III	**[10Hrs]**
PLC Programming and Applications: Programming Languages for PLCs, PLC programming standard IEC61131, Relay type Instructions- Timer, Counter, Arithmetic operation, Data handling instructions. PLC based applications as motor control, traffic light, etc.	
Unit IV	**[10Hrs]**
Introduction to SCADA: Application area of SCADA; Architecture-Elements, block diagram of SCADA; Types of SCADA; Features of SCADA, MTU, RTU Functions, Communications in SCADA, Applications of SCADA.	
Unit V	**[8Hrs]**
SCADA Interfacing and Applications: Interfacing of SCADA with PLC, Creating SCADA display, Application of SCADA for ON-OFF Lamp, Traffic light control, water level control, motor control, etc.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Programmable Logic controllers and Industrial Automation,	Madhuchhanda Mitra, SamarjitSen Gupta		Penram International Publishing India Pvt. Ltd
2	Supervisory Control and Data Acquisition	S.A. Boyar		, ISA Publication

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Programmable Logic controllers	V.R. Jadhav,		Khanna Publications

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24EE506P	Technical Skill Development - II	-	-	4	2	50	-	50

Course Objectives	Course Outcomes
The objective of this course is to impart knowledge on the following topics- 1. To learn the basic concept, components and programming of PLC & SCADA for Automation. 2. To study the basic of C –Programming through Code Tantra 3. To learn general tests on transformer and transformer oil.	After successful completion of this course students will be able to 1. Identify and understand components of PLCs for Automation 2. Develop PLC Programming for given application. 3. Develop SCADA system for various applications. 4. Develop C Program for given application 5. To perform Type, Routine and Special Tests of transformer 6. To perform tests of transformer oil.

Sr. No.	Topic Covered
1.	Basic Instructions, a simple ladder logic program to study and verify logic gates using digital inputs and outputs for PLC. (OR,AND,NOT,NOR,NAND,EXOR,EXNOR)
2	simple ladder logic program to Execute Boolean expressions that uses digital inputs and outputs for a PLC., implementation of simple ladder logic program using timer (ON Delay Timer, OFF Delay Timer, Retentive Timer)
3	ladder logic program using counter (Up Counter, Down), using Math instruction, Traffic Light Control System, Pump ON/OFF System
4	C –Programming through Code Tantra
5	General Requirements for Type, Routine and Special Tests
6	Testing of properties of transformer oil

Text Books

S.N	Title	Authors	Edition	Publisher
1	Programmable Logic controllers and Industrial Automation,	Madhuchhanda Mitra, SamarjitSen Gupta		Penram International Publishing India Pvt. Ltd
2	Supervisory Control and Data Acquisition	S.A. Boyar		, ISA Publication
3	Testing, commissioning, operation and maintenance of electrical equipment	S. Rao	6th	Khanna Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Programmable Logic controllers	V.R. Jadhav,		Khanna Publications
2	Electrical power equipment maintenance and testing	Paul Grill		CRC Press

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24EE541P	Career Development – V	-	-	2	1	50	-	50

Course Objectives	Course Outcomes
To enhance students' aptitude, analytical reasoning, communication, teamwork, and professional presentation skills required for competitive examinations, higher education, and workplace success.	**CO1.** Students will be able to solve problems related to time and work, pipe and cisterns, geometry, mensuration, and analytical puzzles using logical and quantitative reasoning skills. **CO2.** Students will be able to apply concepts of time, speed, and distance and solve coding-decoding and direction sense problems accurately using analytical thinking. **CO3.** Students will be able to perform SWOC analysis, set SMART goals, and deliver effective self-introductions with confidence and professional communication skills. **CO4** Students will be able to conduct company profile presentations and participate effectively in table topic group discussions demonstrating teamwork, critical thinking, and spontaneous speaking skills. **CO5.** Students will be able to demonstrate improved verbal ability, grammar, vocabulary, reading comprehension, and active classroom participation for professional communication.

Unit I (15marks)	**[7Hrs]**
Time and Work, Chain Rule, Pipe and Cistern, Geometry and mensuration **Puzzles:-** Analytical puzzle, Tabular Puzzle, Box or Floor based Puzzle, Rank based Puzzle	
Unit II (10marks)	**[7Hrs]**
Time Speed and Distance:- Basic Problems, Average Speed, Relative Speed, Problems on Trains, Boats and Streams, Escalators, Directions sense Problems Coding and Decoding	
Unit III (5marks)	**[5Hrs]**
SWOC Analysis and SMART Goal Setting - for Personal and Professional Development **Self-Elevator Pitch –** Self Introduction, Confidence Building, and Professional Communication Skills (5marks)	
Unit IV (10marks)	**[6Hrs]**
Company Profile Group Presentation – Research, Team Coordination, and Presentation Techniques (5marks) **Table Topic Group Discussion –** Critical Thinking, Spontaneous Speaking, and Team Interaction	
Unit V (10marks)	**[3Hrs]**
Verbal Ability Quiz – Grammar, Vocabulary Building, and Reading Comprehension for Professional Communication **Continuous Assessment -** Attendance, Individual Engagement & Team Dynamics	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude By R. S. Aggarwal	R.S. Aggarwal		
2	Quantitative Aptitude	Shripad Deo		Allied Publication
3	A Modern Approach to Verbal & Non-Verbal Reasoning	R.S. Aggarwal		

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude for CAT by Arun Sharma	Arun Sharma		
2	Developing Communication Skills	Krishna Mohan & Meera Banerji	2002	
3	Professional Communication Skills	Alok Jain	2006	S Chand & Company Ltd.
4	Personality Development & Soft Skills	Barun Mitra	2019	Cambridge University Oress

		July 2026	NEP 2.1	Applicable for 2026-27
Chairman - BoS	Dean – Academics	Date of Release	Version	

=

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24EE531M	MDM – III Electrical Power System	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
Students will develop the ability to: 1. model & represent the power system components, 2. represent & calculate the transmission line parameters.	**Students will be able to:** 1. Explain the generation, transmission, and distribution of power. 2. Calculate transmission line parameters of a power system. 3. Classify various distribution schemes, LT & HT cables. 4. Evaluate performance of transmission lines by interpretation of equations and analytical solutions in system design. 5. Describe basic concepts of Insulators.

Unit I	**[9Hrs]**
Structure of electrical power systems: - Brief exposure of generation, transmission & distribution aspects; Concept of real, reactive, and complex power; Power Transfer in AC circuits and Reactive Power. Load and their characteristics; Voltage & Frequency dependence of loads.	
Unit II	**[9Hrs]**
Representation of power system components, Inductance & Capacitance of transmission lines.	
Unit III	**[9Hrs]**
Elementary distribution schemes & Cables: - Feeders and Distributors; LT & HT cables.	
Unit IV	**[9Hrs]**
Performance of transmission lines: - Voltage regulation & efficiency of short and medium transmission line using simple series equivalent representation, T- representation, pi- representation.	
Unit V	**[9Hrs]**
Insulators: - Concept of insulator, types of insulators, String efficiency.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Power System Analysis	C. L. Wadhawa	6	New Age International
2	Power System Analysis	Ashfaq Hussain	5	CBS

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Elements of Power System Analysis	W. D. Stevenson	4	Mc-Graw Hill
2	Electric Energy System Theory	O. E. Elgerd	2	Mc-Graw Hill
3	Modern Power System Analysis	Nagrath & Kothari	3	Tata Mc-Graw Hill