Assistant Electrician in Iron and Steel Industry Course Curriculum

Week 1				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 1: Introduction to the Job Role)	**(Module 2: Health & Safety Practices — Theory)**	**(Module 2: Health & Safety Practices — Practical)**	**(Module 3: Effective Communication and Interpersonal Skills at Workplace)**	**(Module 4: Prepare for Machines/Electrical Panels Assembling Activities — Initial Theory)**
Course induction, Role of Assistant Electrician in industries, Overview of Iron & Steel industry, Employment opportunities, Organizational policies	Importance of workplace safety culture, Identification of hazards, Personal hygiene, Fundamentals of 5S methodology, Waste segregation	Demonstration and correct usage of PPE, Safe handling of tools, Fire safety awareness, First aid, Practical exercise	Importance of communication in industrial operations, Verbal vs non-verbal communication, Teamwork, cooperation, Gender sensitivity, equality, Communication protocols	Introduction to electricity, Ohm's Law, electrical power, Series and parallel circuits, Electrical components and symbols, Introduction to electrical tools and measuring instruments

Week 2				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 4: Prepare for Machines / Electrical Panels Assembling Activities - Advanced Electrical Fundamentals)	**(Module 4: Prepare for Machines / Electrical Panels Assembling Activities - Circuit Laws & Analysis)**	**(Module 4: Prepare for Machines / Electrical Panels Assembling Activities - Electrical Machines & Industrial Components)**	**(Module 4: Prepare for Machines / Electrical Panels Assembling Activities - Engineering Drawings & Documentation)**	**(Module 4: Prepare for Machines / Electrical Panels Assembling Activities - Tools, Instruments & Pre-Assembly Preparation (Practical Focus))**
Review of basic electrical concepts; introduction to AC vs DC supply, Three-phase system, Voltage, current, and power relationships, Practical calculations for load current, Load balancing concepts	Kirchhoff's Current Law (KCL) and Voltage Law (KVL), active, reactive, apparent power, Power factor, Industrial implications	Overview of electrical machines: motors, generators, transformers, Protective devices: MCB, MCCB, fuse, relay, overload protection, Control components	Introduction to engineering drawings and symbols used in electrical work, Single Line Diagrams (SLD), Wiring diagrams, schematic diagrams, and panel layout drawings, Identifying materials,	Identification and selection of tools for electrical assembly, Measuring instruments: multimeter, clamp meter, megger, Calibration concepts, Practical exercise

Week 3				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 5: Assemble, Wire and Test Electrical Machines and Control Panels - Assembly & Wiring Concepts (Theory))	**(Module 5: Assemble, Wire and Test Electrical Machines and Control Panels - Components, Standards & Mounting (Theory))**	**(Module 5: Assemble, Wire and Test Electrical Machines and Control Panels - Earthing, Safety & Testing Concepts (Theory))**	**(Module 5: Assemble, Wire and Test Electrical Machines and Control Panels - Panel Assembly & Wiring Practice (Practical))**	**(Module 5: Assemble, Wire and Test Electrical Machines and Control Panels - Testing & Verification Practice (Practical))**
Overview of electrical machines and industrial control panels, Cable types, insulation classes, current ratings and selection criteria, Routing standards, segregation of power and control wiring	Mounting techniques for panel components, Installation of push buttons, Cable color coding standards, Fastening methods, tightening torque requirements, Quality requirements	Earthing and grounding systems, lockout-tagout (LOTO), Common wiring defects, Testing methods, Phase sequence testing	Identification of panel components and tools required for assembly, Cable preparation: cutting, stripping, crimping, lugging, Wiring of control circuits, Application of ferrules, cable ties, routing within panel	Earthing and bonding connections, Continuity testing using multimeter, Insulation resistance testing using megger, Verification of wiring correctness, Preliminary functional testing of assembled panel/machine

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Week 4				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
Module 6: Assemble Electrical Equipment and Systems - Installation Planning & Safety (Theory))	**(Module 6: Assemble Electrical Equipment and Systems - Mechanical Foundations & Mounting (Theory))**	**(Module 6: Assemble Electrical Equipment and Systems - Alignment & Electrical Integration (Theory))**	**(Module 6: Assemble Electrical Equipment and Systems - Mechanical Installation Practice (Practical))**	**(Module 6: Assemble Electrical Equipment and Systems - Electrical Installation Practice (Practical))**
Introduction to installation activities in industrial electrical work, Roles of installation teams, Hazard identification during installation, Risk assessment and mitigation, PPE requirements and safety procedures for installation tasks techniques	Foundation preparation and surface requirements, Base plates, frames, and mounting arrangements, Anchor bolts, fasteners and torque considerations, Machine positioning and spatial layout planning, Vibration isolation techniques	Alignment principles for rotating machines, Cable routing principles during installation, Segregation of power and control cables, Earthing and bonding requirements at installation stage	Marking foundation points and layout transfer, Positioning equipment using safe handling methods, Levelling using spirit level and measuring tools, Securing equipment with bolts and fasteners, Stability and alignment verification	Routing cables through trays/conduits, Fixing and supporting cables properly, Terminating cables to equipment terminals, Earthing connections and bonding implementation, Inspection of installation quality

Week 5				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 6: Assemble Electrical Equipment and Systems - Installation Standards & Documentation (Theory))	**(Module 6: Assemble Electrical Equipment and Systems - Electrical Connections & Protection (Theory))**	**(Module 6: Assemble Electrical Equipment and Systems - Pre-Commissioning Checks (Theory))**	**(Module 6: Assemble Electrical Equipment and Systems - System Integration Practice (Practical))**	**(Module 6: Assemble Electrical Equipment and Systems - Pre-Commissioning Practice (Practical))**
National and industrial installation standards, Reading installation drawings and specifications, Equipment manuals and manufacturer instructions, Quality checks, Documentation and reporting procedures	Power supply connections and isolation devices, Protection systems integration, Control wiring integration with machines, Cable management systems and labeling, Inspection procedures before commissioning	Mechanical and electrical inspection checklist, Verification of earthing, alignment and mounting, Readiness evaluation for testing stage	Connecting panels to machines, Integration of control circuits, Securing wiring for vibration resistance, Final mechanical inspection	Mechanical inspection of installed system, Electrical inspection of connections, Verification of earthing system, Documentation of inspection results, Preparing system for testing stage

Week 6				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 7: Test, Commission and Perform Basic Troubleshooting of Electrical Equipment and Systems - Testing Principles & Safety (Theory))	**(Module 7: Test, Commission and Perform Basic Troubleshooting of Electrical Equipment and Systems - Testing Instruments & Methods (Theory))**	**(Module 7: Test, Commission and Perform Basic Troubleshooting of Electrical Equipment and Systems - Commissioning & Troubleshooting Concepts (Theory))**	**(Module 7: Test, Commission and Perform Basic Troubleshooting of Electrical Equipment and Systems - Electrical Testing Practice (Practical))**	**(Module 7: Test, Commission and Perform Basic Troubleshooting of Electrical Equipment and Systems - Commissioning & Fault Rectification Practice (Practical))**
Importance and types of electrical testing before energisation, Safety precautions during testing operations, Hazards of live equipment testing, Use of PPE and isolation techniques	Multimeter and clamp meter applications, Insulation resistance testing principles, Insulation resistance testing principles, Phase sequence testing and polarity checks,	Commissioning procedures and energisation sequence, Functional testing of machines and control systems, Common faults and diagnosis in newly installed systems, Preventive maintenance basics	Continuity testing of circuits, Insulation resistance testing, Phase sequence verification, Earthing resistance measurement, Recording and evaluating test results	Controlled energisation of equipment, Functional operation checks, Identification of abnormal conditions, Troubleshooting and corrective actions, Safe shutdown and reporting

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Week 7				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 8: Perform Post-Assembly and Completion Activities - Completion Activities & Inspection (Theory))	**(Module 8: Perform Post-Assembly and Completion Activities - Cleaning, Finishing & Safety Compliance (Theory))**	**(Module 8: Perform Post-Assembly and Completion Activities - Documentation & Handover Procedures (Theory))**	**(Module 8: Perform Post-Assembly and Completion Activities - Finishing & Worksite Restoration (Practical))**	**(Module 8: Perform Post-Assembly and Completion Activities - Documentation & Handover Practice (Practical))**
Importance of post-assembly activities in electrical projects, Final inspection procedures after installation and commissioning, Identification of unfinished tasks, defects, and punch-list items, Quality standards for completed electrical work	Cleaning of work area and removal of installation debris, Proper disposal of scrap materials and hazardous waste, Restoration of site conditions and safety arrangements, Identification and mitigation of residual hazards with environmental considerations.	Importance of documentation in electrical projects, Types of completion documents: test reports, inspection reports, certificates, Preparation of as-built drawings and equipment records, Equipment manuals, warranty papers, maintenance instructions, and handover procedures	Cleaning electrical panels, machines, and work area, Removal of temporary supports, tools and unused materials, segregation and disposal of scrap and waste, Rectification of minor defects identified during final inspection	Preparation of test reports and completion checklists, Updating equipment records and installation details, Simulated handover to supervisor/client, Feedback session, documentation review and corrective guidance

Week 8				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Module 9: Perform Preventive Maintenance of Electrical Equipment and Installations - Maintenance Fundamentals (Theory))	**(Module 9: Perform Preventive Maintenance of Electrical Equipment and Installations - Maintenance of Electrical Installations (Theory))**	**(Module 9: Perform Preventive Maintenance of Electrical Equipment and Installations - Maintenance of Electrical Machines & Equipment (Theory))**	**(Module 9: Perform Preventive Maintenance of Electrical Equipment and Installations - Maintenance of Electrical Installations (Practical))**	**(Module 9: Perform Preventive Maintenance of Electrical Equipment and Installations - Maintenance of Machines & Equipment (Practical))**
Importance of maintenance in electrical systems for safety and reliability, Types of maintenance: preventive, predictive, corrective and breakdown maintenance, Maintenance planning and scheduling concepts, Roles and responsibilities of an Assistant Electrician in maintenance work	Maintenance of wiring systems and distribution boards, Inspection of switches, sockets, protective devices and accessories, Identification of overheating, loose connections and insulation damage, Maintenance safety procedures including isolation and lockout practices	Maintenance of electric motors and control panels, Lubrication, cleaning and tightening procedures, Inspection of cooling systems and ventilation, Common causes of equipment deterioration and failure, Record-keeping and maintenance logs	Isolation of circuits before maintenance work, Inspection and tightening of connections in distribution boards, Cleaning of switchgear, panels and wiring accessories, Checking earthing continuity and condition, Identification and replacement of damaged components	Inspection of electric motors for wear, noise and overheating, Cleaning and lubrication of motor parts where applicable, Checking control panels for loose wiring and faulty components, functional testing and recording activities in log sheets.

Week 9 (Revision of Modules 1 to 9 — Assistant Electrician)				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Fundamentals, Safety & Workplace Skills (Theory Revision))	**(Preparation, Assembly & Wiring (Theory Revision))**	**(Installation, Testing & Maintenance (Theory Revision))**	**(Integrated Practical Practice (Practical Revision))**	**(End-to-End Task Simulation (Practical Revision))**

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Revision of basic electrical concepts, Review of electrical symbols, diagrams and basic calculations, Comprehensive safety practices: electrical hazards and prevention, PPE, Communication.	Revision of tools, equipment and measuring instruments, Material selection and preparation procedures, Wiring systems, cable types and routing methods, assembly, wiring mistakes and remedies	Installation procedures for machines, panels and accessories, Testing methods: continuity, insulation, polarity, earthing, Commissioning steps and safety precautions, preventive maintenance, troubleshooting and fault identification.	Identification and safe use of tools and testing instruments, Cable preparation, stripping and termination practice, Wiring of basic electrical circuits, Installation of switches, sockets and distribution components, Inspection of completed work for safety and quality	Planning and preparation for a complete electrical job, Execution: wiring, connection and installation, Testing and commissioning of the installed system, Troubleshooting intentionally introduced faults, Maintenance checks, documentation and safe shutdown

Week 10 (OJT)				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Workplace Orientation)	**(Safety & Preparation Activities)**	**(Assisting in Electrical Work)**	**(Testing & Inspection Assistance)**	**(Maintenance Assistance)**
Introduction to workplace rules, safety regulations and reporting structure, Identification of electrical installations and systems present, Demonstration of standard operating procedures, Discussion on daily work planning and job allocation	Inspection of PPE and safety equipment, Assisting in isolating circuits before work, Identification of hazards at worksite, Material handling and storage procedures, Tool issue, care and return practices	Assisting senior electrician in wiring tasks, Supporting cable routing and dressing, Observing installation techniques, Discussion of observed procedures	Assisting in continuity and insulation testing, Recording readings and observations, Observing fault detection methods and completion, Review of safety compliance	Assisting in cleaning panels and equipment, Checking connections and fasteners, Identifying worn or damaged components, Supporting minor maintenance tasks, Daily logbook completion

Week 11 (OJT)				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Wiring & Installation Tasks)	**(Electrical Connections)**	**(Testing Activities)**	**(Commissioning Tasks)**	**(Maintenance & Troubleshooting)**
Planning wiring layout for assigned task, Cable measurement, cutting and preparation, Installation of conduits or cable supports, Routing and securing cables, Inspection by supervisor	Termination of wires in switches/sockets, Connection of distribution boards, Earthing connections, Verification and correction of tightness and polarity.	Performing continuity tests independently, Insulation resistance testing, Polarity and earthing verification, Recording test results,	Pre-energisation inspection, Controlled energisation of circuits, Functional testing of installations, Observation of abnormal conditions, Reporting findings	Inspection of existing installations, Identification of faults or wear, Identification of faults or wear, Rectification of minor issues, Functional re-testing, Documentation of maintenance work

Week 12 (OJT)				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
(Independent Work & Competency Demonstration)	**(Execution of Installation Work)**	**(Testing & Commissioning)**	**(Troubleshooting & Maintenance Simulation)**	**(Final Review & Workplace Readiness)**
Understanding assigned job requirements, Preparation of materials and tools, Risk assessment and safety planning, Layout marking, Supervisor approval	Installation of wiring and accessories, Connection of components, Earthing implementation, Inspection and correction of completed installation,	Performing all required electrical tests, Verification of safety compliance, Energisation of system, Functional testing, Recording results	Diagnosis of introduced faults, Planning corrective action, Rectification of faults, Re-testing of system, Confirmation of proper operation	Review of OJT logbook and performance, Feedback from supervisors/trainers, Discussion on workplace expectations, Preparation for trade assessment/interview, Program completion briefing

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Week 13 (Recap)				
10:00-11:00	**11:10-12:10**	**12:20-01:20**	**02:20-03:20**	**03:30-04:30**
Revision and Pre-Test				