

**Mizoram University**  
**School of Engineering and Technology**  
**SYLLABUS: LATERAL ENTRY**  
**ELECTRICAL ENGINEERING**

**Electrical Circuits:** Phasors and phasor algebra, balanced and unbalanced poly-phase circuit, Test signals, Star-Delta transformation, Network theorems, Parameters of electromagnetic circuits, resonance in R-L-C Series and Parallel circuits, Network analysis by mesh and node methods.

**Basic Electronics:** Conductors, Semiconductors and Insulators: Electrical Properties, Band Diagram, Formation of P-N Junction, Zener Diode, Rectifier, Principle and Mechanism of Transistor and FET.

**Electrical Engineering Materials:** Conducting, Insulating materials and Magnetic materials, Properties and applications

**Electrical Instruments and Measurements:** Principles of measurements: Classification, accuracy and sensitivity, damping and control forces, shunt and multiplier, Measurement of resistance: Low, medium and high. Principle and uses of DC potentiometers, AC Bridges. Indicating instruments: Multimeter, PF meters, synchroscope.

**Electrical Machines:** Classification of D.C. machines: Constructional features, e.m.f., torque, excitations, motor performance, speed, power, size considerations, speed control, efficiency.

**Transformers:** Induced e.m.f., equivalent circuits, regulation, different efficiencies. Three phase induction machines: Torque characteristics, Starting, equivalent Circuits.

**Generation, Transmission and Distribution:**

**Generation:** Thermal, Hydel and Nuclear Power Stations, Prime movers and alternators.

**Transmission:** Voltage levels, line conductors, electrical line parameters of short and medium lines, voltage regulation, corona.

**Distribution:** D.C. and A.C. systems, voltage level, types of distribution feeders and distributors, voltage drop and effects, power factor improvement plant. **Switchgear:** Switches, isolators, circuit breakers and their types. Protection: Fault current and protective devices, fuses, relay functions, alternator, over voltage-causes.

**Power Electronics:** Power diodes and Darlington Pair. Thyristor: Principle, thyristor family, firing circuits, applications, Selenium rectifiers, uncontrolled and controlled rectification, Power MOSFETS.

**Digital Electronics:** Digital signals, gates, Boolean algebra, logic families, multiplexures / demultiplexure, Encoders/decoders, flip-flops, registers, counters and applications of logic gates, OPAMPS in timing circuits, A/D and D/A conversion.

**Microprocessor and Computer Programming:** Evolution of Microprocessor, specific feature of Microprocessor, explanation of 8085 Microprocessor, Instruction cycle of 8085 Microprocessor, application of Microprocessor, Concept of low level and high level languages, Block-diagram, concept of flow chart, and algorithm, Assemblers, Macros, sub-routines, co-routines, loaders, linkers, editors and compilers, programming and file handling in C and C++.