LNCT University
Diploma EX, IV Semester Syllabus

ELECTRICAL ENGINEERING DRAWING (DEX-403)

COURSE OUTCOMES:

After Completing the course student should be able to:

CO-1	Understand and interpret standard electrical symbols and diagram types.
CO-2	Develop wiring and installation diagrams for residential and commercial electrical systems, including layout planning for switches, DBs, lighting and appliances.
CO-3	Design and draw control & power circuit diagrams for electrical machines.
CO-4	Create detailed and assembly drawings of electrical machines such as DC machines and AC motors, including sectional views and transformer assembly layouts.
CO-5	Illustrate substation layouts and earthing systems by drawing single-line diagrams, physical layouts of substations, and grounding systems including lightning arrestors and bus bar arrangements.

UNIT I: ELECTRICAL SYMBOLS AND STANDARDS

Introduction to electrical engineering drawing, Importance and applications, Electrical symbols as per BIS/IEC standards: symbols for electrical components (resistors, capacitors, transformers, switches etc.), Symbols for protection devices (fuses, MCBs and relays), symbols for measuring instruments and wiring accessories, Types of diagrams: schematic, wiring, layout and single-line diagrams, Conventions used in electrical drawing.

UNIT II: WIRING AND INSTALLATION DIAGRAMS

Types of wiring systems: cleat, casing-capping, conduit and PVC wiring, House wiring plans: single-line and multiline wiring diagrams for residential and commercial buildings, Layout of electrical installation: Positioning of switchboards, distribution boards, fans, lights, etc.

UNIT III: MACHINE AND MOTOR CONTROL CIRCUIT DIAGRAMS

Wiring diagrams of electrical machines: starters for DC and AC motors (DOL, Star-Delta, Auto-transformer starters), control circuit diagrams for motor control: forward-reverse control, Jogging and inching, Interlocking circuits, Power circuit and control circuit differentiation, drawing of control panels and panel wiring layout.

UNIT IV: ELECTRICAL MACHINE ASSEMBLY DRAWINGS

Detailed drawings of parts of machines DC machine: yoke, armature, commutator, field poles, AC machines: stator, rotor (squirrel cage and wound rotor), sectional views of assembled machines, Nameplate design and specification layout, Assembly and exploded views of transformers (core type and shell type).

UNIT V: SUBSTATION AND EARTHING LAYOUTS

Substation single-line diagrams (11/0.433 kV, 66/11 kV), physical layout of outdoor and indoor substations, layout of pole-mounted distribution transformers, earthing diagrams: pipe and plate earthing, lightning arrestor and grounding system layout, Cable trench and bus bar arrangements.

Reference Books: -

1. Electrical Engineering Drawing, S.L. Uppal and G.C. Rai.
2. Electrical Engineering Drawing, K.L. Narang.
3. A Textbook of Electrical Engineering Drawing, Surjit Singh.
4. Electrical Drawing and Design, N. D. Bhatt