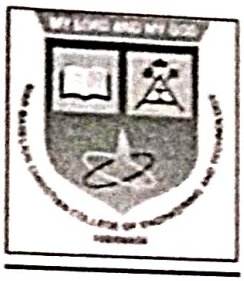

MAR BASELIOS CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY, PEERMADE

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

REPORT

ON

ELECTRICAL CAD

18-04-2023

REPORT ON ELECTRICAL-CAD

OBEJECTIVE ON THE WORKSHOP:

The primary objective of the Electrical CAD workshop was to provide hands-on experience in computer-aided design tools used in the field of electrical engineering. The training aimed to enhance the technical skills of students in designing, drafting, and simulating electrical circuits and layouts using professional software. It also focused on bridging the gap between academic knowledge and industry requirements by introducing standard practices in electrical drafting.

COVERAGE OF THE WORKSHOP:

The workshop covered various aspects of Electrical CAD, including:

- Introduction to CAD and its importance in electrical engineering.
- Familiarization with CAD software (such as AutoCAD Electrical or equivalent).
- Creating 2D electrical drawings and symbols.
- Circuit simulation and design validation.
- Panel layout design.
- Working with layers, blocks, and templates.
- Practical exercises and mini-projects.

DAY 1-INTRODUCTION TO ELECTRICAL CAD

The first day of the workshop began with an orientation session explaining the purpose, importance, and scope of Electrical CAD in modern

engineering industries. The instructor introduced the participants to the CAD software interface (such as AutoCAD Electrical or equivalent), explaining the various tools, menus, and settings. Students learned about the Cartesian coordinate system, drawing units, and workspace settings. Basic drawing commands like line, circle, rectangle, trim, extend, copy, and move were demonstrated through hands-on practice. The session also included exercises on navigating the workspace, zooming, panning, and organizing the drawing sheet. By the end of Day 1, all participants had a basic familiarity with the software and were able to create simple geometric diagrams confidently.

DAY 2-ELECTRICAL SYMBOLS AND LAYER MANAGEMENT

Day 2 was focused on the creation and usage of standard electrical symbols as per IEC/ANSI standards. The instructor introduced the symbol libraries available in the software and demonstrated how to insert, scale, rotate, and label them properly.
Students practiced drawing commonly used electrical components such as resistors, fuses, switches, relays, motors, transformers, and lamps. The concept of layers was also introduced—how to create and manage them, assign colors, line types, and layer names for better organization of complex electrical drawings. Layering helped in separating different components such as power lines, control lines, text, and dimensioning. The day concluded with practical exercises where students drafted a small circuit using appropriate symbols and layers.

DAY 3-SCEMATIC CIRCUIT DESIGN

On Day 3, the focus shifted towards creating complete schematic diagrams. The instructor explained how to logically design a circuit by

arranging symbols, placing connections using wire tools, and maintaining readability.

Participants learned how to use tagging tools, wire numbering, cross-referencing, and error-checking features in the software. Emphasis was given to signal flow, alignment, and clarity in schematic representation. The class then worked on a practical exercise to draw a simple control circuit like a motor starter, an automatic switch system, or a lighting circuit, applying all learned tools and commands. This session helped students understand how individual symbols come together to represent a functioning electrical system.

DAY 4-PANEL LAYOUT and WIRING DIAGRAMS

Day 4 introduced the students to the physical layout of components inside an electrical panel or distribution board. The instructor demonstrated how to draw enclosures, place components such as MCBs, contactors, relays, and terminal blocks with accurate spacing and alignment. Students were taught how to maintain panel dimensions, spacing requirements, clearance rules, and mounting positions. The use of grids and snap tools was emphasized to maintain consistency. Wiring diagrams were then introduced, showing how to represent interconnections between devices using different types of lines and labels. Participants practiced drawing the layout of a small distribution panel with a proper bill of materials, panel borders, and title blocks.

DAY 5-MINI PROJECT. REVIEW & EVALUATION

The final day was reserved for applying all the knowledge gained during the workshop. Students were assigned a mini project where they had to design a complete electrical circuit including:

- A schematic diagram

- A wiring diagram
- A control panel layout

They worked individually or in small teams and were guided by the instructors during the process. After completing the projects, each student presented their design, explaining the layout, symbols used, and logic behind their circuit.

A review and feedback session followed, where the instructor highlighted good practices, corrected mistakes, and clarified doubts. Certificates of participation were distributed, and the workshop concluded with a discussion on the career importance of CAD skills in electrical engineering fields such as automation, building services, and industrial design.

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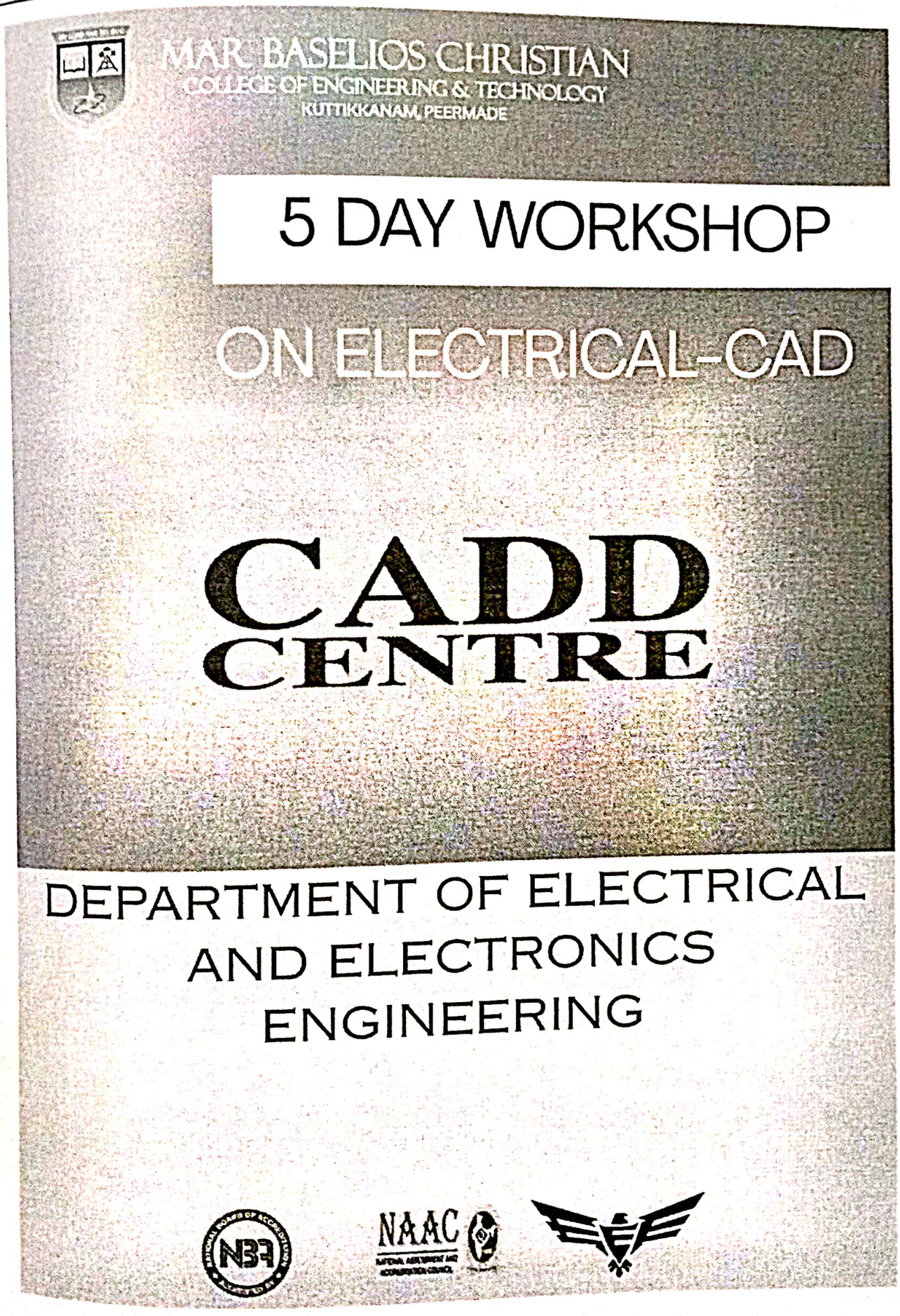
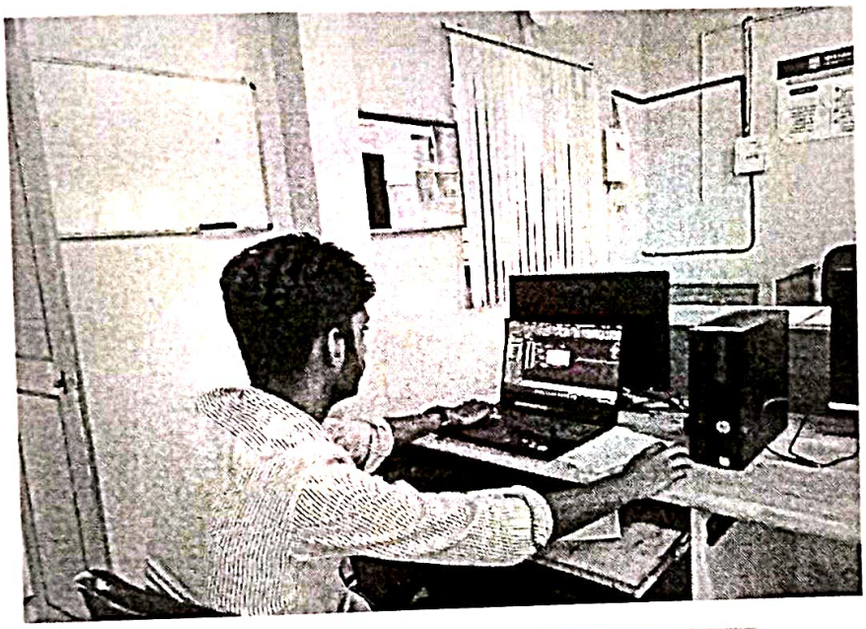
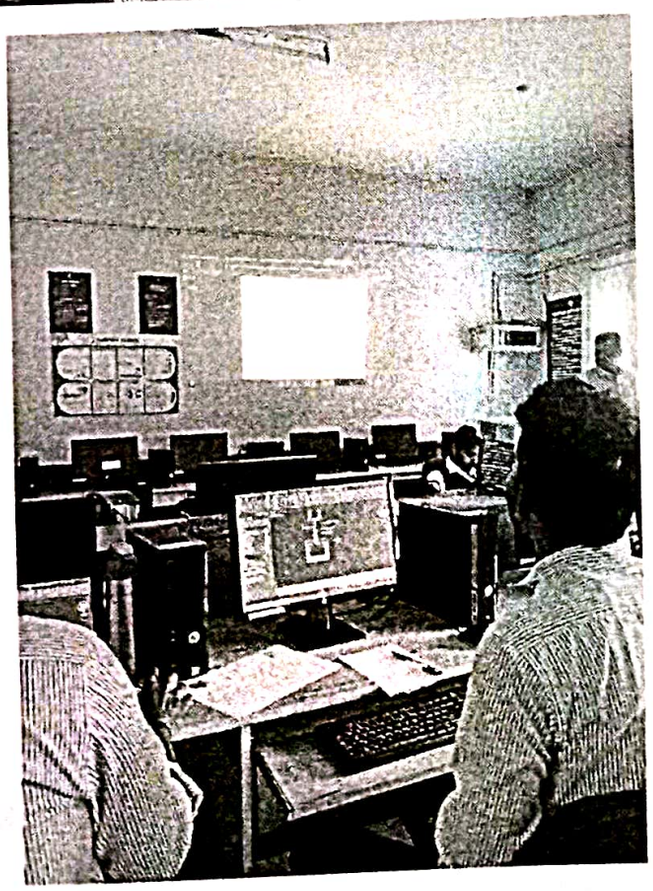
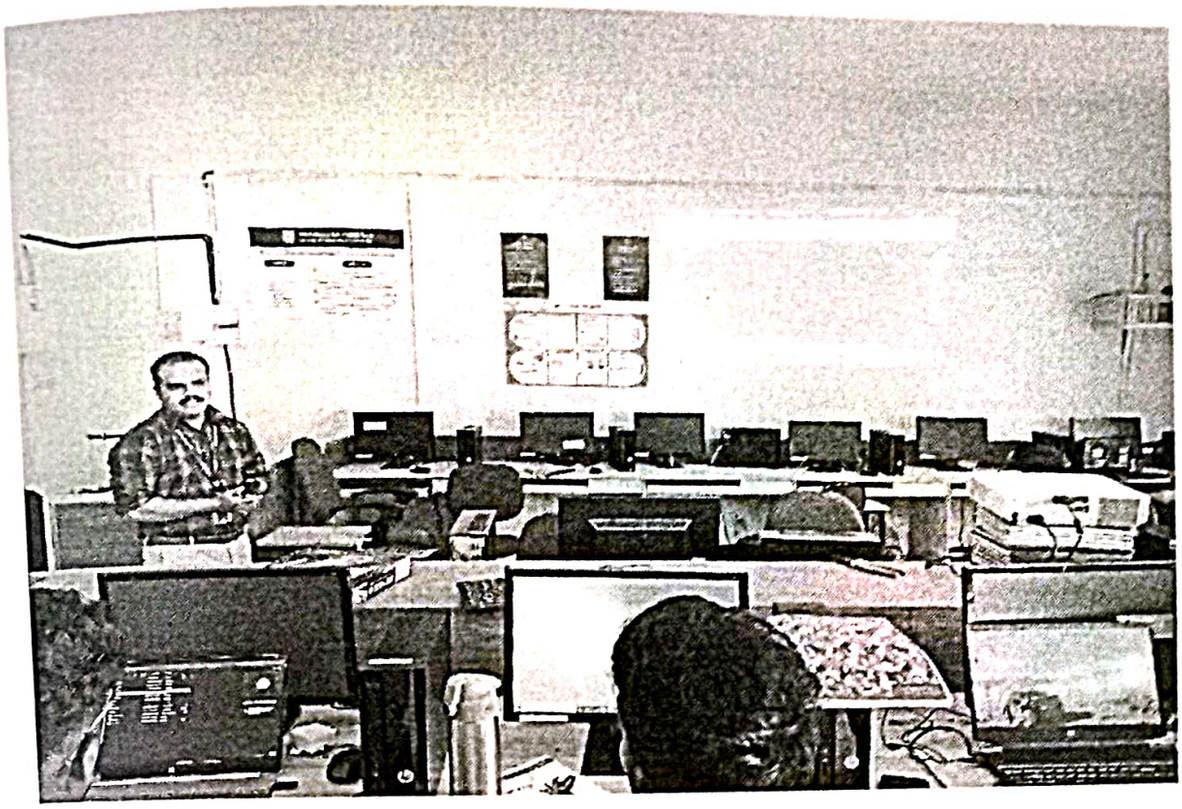
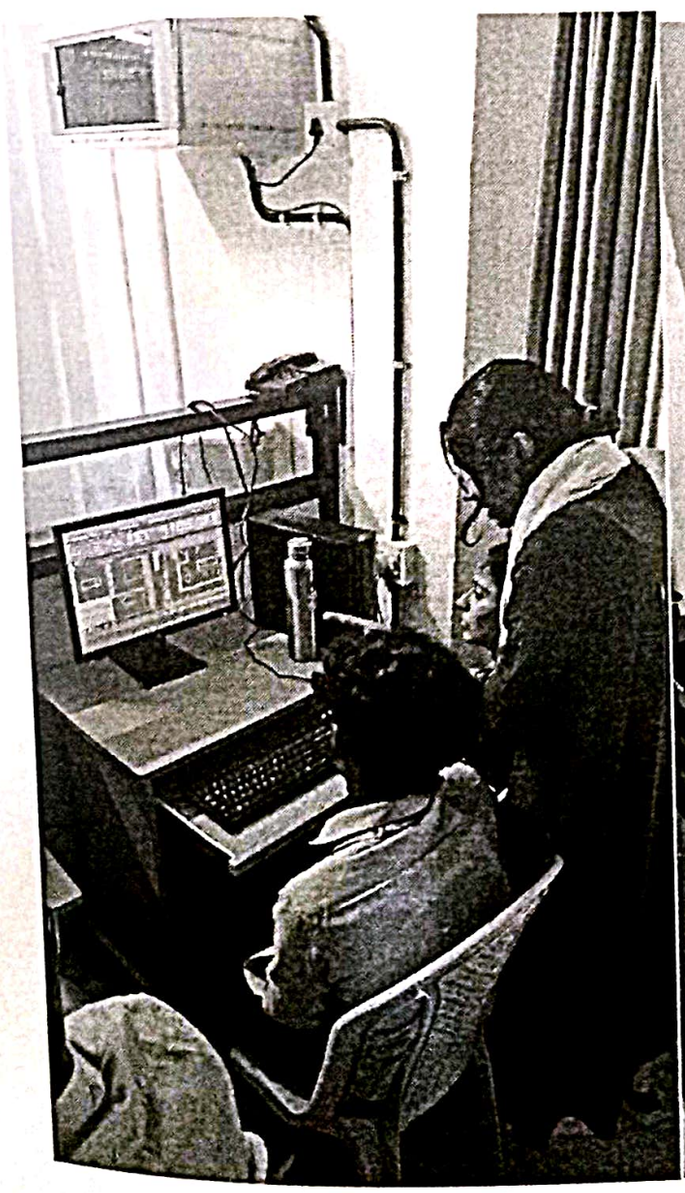

MAR BASELIOS CHRISTIAN
COLLEGE OF ENGINEERING & TECHNOLOGY
KUTTIKKANAM, PEERMADE
5 DAY WORKSHOP
ON ELECTRICAL-CAD
CADD
CENTRE
DEPARTMENT OF ELECTRICAL
AND ELECTRONICS
ENGINEERING
NBA
NAAC

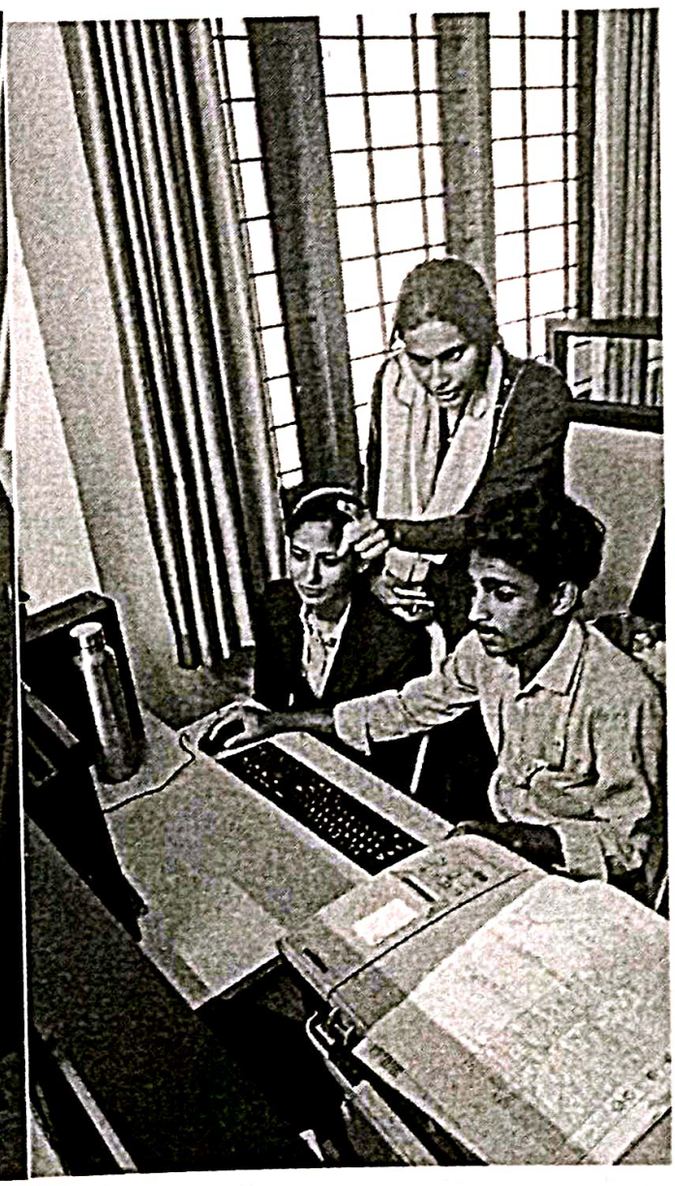
GLIMPSES OF WORKSHOP:











PO JUSTIFICATION

PO1 – Engineering Knowledge

Applies foundational and advanced electrical engineering concepts to create and understand electrical CAD drawings and circuit layouts.

PO2 – Problem Analysis

Enables students to analyze circuit problems and optimize layouts using CAD tools.

PO3 – Design and Development of Solutions

CAD tools are used to design electrical systems such as power distribution, control panels, wiring diagrams, etc.

PO4 – Conduct Investigations of Complex Problems

Through simulations and design validation, students investigate system behavior and make informed design decisions.

PO5 – Modern Tool Usage

Electrical CAD software is a modern engineering tool widely used in industry for designing, simulating, and documenting electrical systems.

PO9 – Individual and Team Work

Workshop activities often involve collaborative circuit or system design tasks that build teamwork skills.

PO12 – Life-long Learning

Builds readiness to continuously learn industry-relevant design software and stay updated with technological trends.

PSO JUSTIFICATION:

PSO1 – Design, Analyze and Test Components and Systems...

The workshop directly involves design and analysis using modern software tools like AutoCAD Electrical, E-Plan, etc.

PSO2 – Specify and Analyze Electronic Systems...

Useful for designing layouts and schematics for control systems, digital/analog circuits, PLC wiring, etc.

CONCLUSION:

The Electrical CAD workshop proved to be an enriching and insightful experience for all participants. Over the course of five days, we transitioned from basic understanding to hands-on application of advanced CAD tools used in electrical design and drafting. The workshop not only introduced us to industry-standard software but also enabled us to apply theoretical electrical engineering concepts in a digital, practical environment.

Each day was thoughtfully structured to build our skills step by step—from learning basic drawing tools and understanding electrical symbols to designing complete schematic circuits and panel layouts. The inclusion of real-world examples, guided exercises, and a final project ensured that we could confidently implement what we learned.

Moreover, the workshop emphasized the importance of precision, clarity, and standardization in electrical documentation—skills that are crucial for any aspiring electrical engineer. The collaborative environment, timely support from the instructors, and hands-on nature of the training greatly enhanced our learning experience.

In conclusion, the Electrical CAD workshop has significantly improved our design capabilities and prepared us for future roles in engineering design, automation, control systems, and power distribution industries. It has not only strengthened our technical foundation but also inspired us to explore further into the field of computer-aided electrical design.