EEEI 335 Computer-Aided Design-Assignment No.2.

Due Date: 27th November 2024

Assignment: Electrical Inspection and Audit at the Technical University of Kenya

Objective
The goal of this assignment is to assess and analyze the electrical services in each building block at the Technical University of Kenya (TUK), identify deficiencies, and propose improvements. This practical task will help students develop skills in electrical auditing, technical analysis, and reporting.

Instructions:

1. **Group Formation:** Form groups, with each group assigned to a building block at the Technical University of Kenya. The number of groups will match the number of building blocks, and group assignments will be as advised during the lecture on **23rd October 2024**.
2. **Group Task:** Each group will be assigned a specific building block to carry out an electrical inspection and audit. Your tasks will include:

   A. Electrical Services Identification:

   - Visit the assigned block and list all electrical services (such as lighting, power outlets, air conditioning, IT infrastructure, fire alarms, etc.) within each room.
   - Organize the data systematically, separating rooms or sections by function (e.g., lecture halls, laboratories, offices, etc.).

   B. Suitability Analysis:

   - Assess the adequacy of the identified electrical services for their respective rooms or functions. Are there enough power outlets? Is the lighting sufficient for the room's use? Does the IT infrastructure support modern academic activities?
   - Provide specific reasons for your assessment, backed by observations or standards where applicable (e.g., IEEE standards, safety codes).

   C. Documentation of Defects:

   - Document any defective electrical services or installations. This includes malfunctioning lights, exposed wiring, broken switches, overloaded circuits, etc.
   - Take **clear and labelled photographs** of each defect and include them in your report.
   - Create a table or diagram summarizing the issues for each room/section.

   D. Rectification Measures:

- Propose measures to rectify the identified defects. This can include recommendations for repairs, replacements, or upgrades.
- Consider safety, cost-efficiency, and compliance with electrical standards when suggesting solutions.

E. Design Proposals:

- As future electrical designers, suggest additional electrical services that could improve the functionality of the rooms. This could involve more power outlets, better lighting control systems, additional IT infrastructure, energy-efficient systems, or smart technologies.
- Justify your proposals by referencing the needs of the students, lecturers, and other users.

3. **Deliverables:**
   Each group must submit a **detailed report** (minimum of 10 pages, maximum of 60 pages) that includes the following sections:
   - **Cover Page:** Title of the report, group number, block number, course title, and group member details (names and student registration numbers).
   - **Table of Contents:** Provide a well-structured table of contents for easy navigation of the report.
   - **Introduction:** Briefly introduce the purpose of the report and the scope of the inspection.
   - **Methodology:** Explain how you conducted the inspection (tools used, steps followed, etc.).
   - **Findings:** Document the list of electrical services, their suitability, and identified defects. Include labelled photographs in this section.
   - **Discussion:** Analyze the adequacy of the services and installations. Provide in-depth reasoning based on observations, and relate your findings to relevant electrical standards.
   - **Recommendations:** Propose rectification measures for defective services and suggest new services that could be added to improve functionality.
   - **Conclusion:** Summarize your findings and recommendations.
   - **References:** List all the sources, standards, and materials you referred to for your analysis and suggestions.

   Formatting Guidelines:

   - Use a **professional report structure** with clear headings and subheadings.
   - Ensure that all photographs are clear, well-labelled, and embedded within the text.
   - Use **formal language** and **technical terms** where necessary. Avoid casual or colloquial expressions.
   - Include **diagrams or charts** where relevant to support your analysis.
   - All pages should be numbered, and the report should be in **PDF format**.
4. **Submission:**
   Upload the final report (in PDF format) to the provided link by the deadline

communicated during class. Name your file as follows: **Assignment 2-Group Number & Block Number** (e.g., "Assignment 2-Group 3-Block A").

5. **Evaluation Criteria:** Your report will be evaluated based on:
    - **Completeness:** Have all aspects of the assignment been addressed?
    - **Technical Accuracy:** Are the findings and recommendations technically sound and well-reasoned?
    - **Clarity and Presentation:** Is the report well-organized, with clear writing, labelled images, and professional formatting?
    - **Innovation:** Are the design proposals creative and aligned with modern electrical engineering practices?

Key Reminders:

- **Safety First!** While conducting inspections, follow all safety protocols and avoid interacting directly with live electrical installations.
- **Group Coordination:** Each member should actively contribute. Assign specific tasks (e.g., photo documentation, defect analysis, report writing) to ensure balanced participation.
- **Use Resources:** Refer to your class materials, relevant electrical standards, and online resources to inform your assessment and design proposals.

Report Title:
"Electrical Inspection and Audit of Block [Assigned Block] at the Technical University of Kenya."