Lesson Plan No. 1.	Course Name: Building services & maintenance Lab **Practical 1:** *Electrical Layout Plan for a Given Building*	Course No.: CE-211

Objective	*At the end of the lecture the student shall be able to:* • *Understand the principles of designing an electrical layout plan for a building.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Briefly explain the importance of electrical layout plans in ensuring safe and efficient distribution of electrical power within a building.* **2. Development** *(90 minutes)* *a. Explain the components of an electrical layout plan: main switchboard, distribution boards, circuits, outlets, switches, and wiring.* *b. Discuss the concept of load distribution and the importance of balanced loads.* *c. Introduce different types of wiring systems: conduit, surface, and concealed wiring.* *d. Explain the selection of appropriate cable sizes based on load requirements.* e. *Discuss the importance of safety measures, such as earthing, circuit breakers, and residual current devices (RCDs).* **3. Exercise** – *5 minutes* • *Provide a simple building layout and ask students to design an electrical layout plan for it. Include details such as the number of rooms, types of outlets, and lighting requirements.*
Closure	• *Summarize the key points discussed in the lesson. Emphasize the importance of careful planning to ensure safety and efficiency in electrical systems.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 2	Course Name: Building services & maintenance Lab **Practical :** *Fire Safety Measures for a Multistory Building*	Course No.: CE-211

Objective	*At the end of the lecture the student shall be able to:* • *Understand the essential fire safety measures for multistory buildings.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Explain the potential fire hazards in multistory buildings and the importance of fire safety measures.* **2. Development** *(30 minutes)* *a. Discuss the significance of fire-resistant construction materials.* *b. Explain the importance of fire exits, evacuation plans, and emergency lighting.* *c. Introduce fire alarm systems, smoke detectors, and sprinkler systems.* *d. Discuss the role of fire extinguishers and their types.* **3. Exercise –** *5 minutes* • *Provide a multistory building layout and ask students to design a fire safety plan, indicating escape routes, fire exits, and locations for fire safety equipment.*
Closure	• *Summarize the key takeaways from the lesson, emphasizing the collaborative effort required to ensure fire safety in multistory buildings.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 3	Course Name: Building services & maintenance Lab **Practical :** *Lighting Plan for a Commercial Complex*	Course No.: CE-211

Objective	*At the end of the lecture the student shall be able to:* • *Learn the principles of designing an effective lighting plan for a commercial complex.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Discuss the significance of proper lighting design in enhancing the functionality and aesthetics of commercial spaces* **2. Development** *(30 minutes)* *a. Introduce the different types of lighting: ambient, task, and accent lighting.* *b. Explain the factors to consider when designing a lighting plan, such as the purpose of the space, color temperature, and energy efficiency.* *c. Discuss lighting fixtures, their types, and placement for optimal illumination.* *d. Explain the concept of lighting calculations and light level requirements for different areas.* **3. Exercise –** *5 minutes* • *Provide a layout of a commercial complex and ask students to create a lighting plan that addresses the needs of various spaces within the complex.*
Closure	*Summarize the key points of the lesson and highlight the impact of effective lighting on the overall ambiance of commercial spaces.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 4	Course Name: Building services & maintenance Lab **Practical :** *Rainwater Harvesting Layout Plan for a Building*	Course No.: CE-211

Objective	*At the end of the lecture the student shall be able to:* • *Understand the concept and design of rainwater harvesting systems for sustainable water management.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Introduce the concept of rainwater harvesting and its importance in conserving water resources.* **2. Development** *(30 minutes)* • *Explain the process of designing an efficient rainwater harvesting layout, considering factors like roof area, rainfall patterns, and water demand.* **3. Exercise** – *5 minutes* • *Provide a building layout and ask students to design a rainwater harvesting system, including the placement of components and calculations for storage capacity.*
Closure	• *Summarize the key takeaways from the lesson, emphasizing the role of rainwater harvesting in sustainable water management.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 5	Course Name: Building services & maintenance Lab **Practical :** *Grey Water Management for a Residential Complex*	Course No.: CE-211

Objective	*At the end of the lecture the student shall be able to:* • *Learn about grey water management techniques for sustainable water usage in residential complexes.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Discuss the concept of grey water and its potential for reuse in non-potable applications.* **2. Development** *(30 minutes)* *a. Explain the sources and characteristics of grey water.* *b. Introduce grey water treatment methods such as filtration, disinfection, and aerobic treatment.* *c. Discuss the applications of treated grey water, including irrigation, toilet flushing, and cooling systems.* **3. Exercise** – *5 minutes* • *Provide a residential complex layout and ask students to design a grey water management system, including treatment methods and distribution for reuse.*
Closure	• *Summarize the key points of the lesson and highlight the environmental and economic benefits of grey water reuse.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 6	Course Name: Building services & maintenance Lab **Practical :** *Assembling of Plumbing Works with Holding Tools*	Course No.: CE-211

Objective	*At the end of the lecture the student shall be able to:* • *Learn about assembling plumbing components using holding tools.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Explain the importance of proper tool usage in plumbing assembly and the role of holding tools in the process.* **2. Development** *(30 minutes)* *a. Introduce common holding tools used in plumbing, such as pipe wrenches, bench vices, and pipe clamps.* *b. Explain the correct techniques for holding and securing pipes and fittings during assembly.* *c. Discuss safety measures when working with holding tools to prevent accidents.* **3. Exercise** – *5 minutes* • *Provide plumbing components and ask students to demonstrate the proper use of holding tools to assemble the components securely.*
Closure	• *Summarize the key takeaways from the lesson, emphasizing the importance of precision and safety in plumbing assembly.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 7	Course Name: Building services & maintenance Lab **Practical :** *Practice on Wrenches and Spanners in Plumbing*	Course No.: CE-211

Objective	• *To provide hands-on practice in using wrenches and spanners for plumbing tasks.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Discuss the different types of wrenches and spanners used in plumbing and their specific applications.* **2. Development** *(30 minutes)* *a. Introduce various wrenches and spanners such as adjustable wrenches, pipe wrenches, basin wrenches, and open-ended spanners.* *b. Explain the proper techniques for using each type of wrench or spanner to tighten and loosen different plumbing components.* *c. Discuss common mistakes to avoid when using wrenches and spanners.* **3. Exercise** *– 5 minutes* • *Provide a variety of plumbing components and have students practice using different types of wrenches and spanners to assemble and disassemble them.*
Closure	• *Summarize the key points of the lesson and emphasize the importance of using the correct tools for plumbing tasks.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*

Lesson Plan No. 8	Course Name: Building services & maintenance Lab **Practical** *: Hands-on Practice with Plumbing Tools*	Course No.: CE-211

Objective	• *To provide practical experience in using various plumbing tools.*
Teaching Aids (if any)	*a. Chalk and talk*
Teaching Development	**1. Introduction** *(5 minutes)* • *Emphasize the significance of hands-on practice for becoming proficient in plumbing tasks.* **2. Development** *(30 minutes)* *a. Introduce a range of plumbing tools including hacksaws, water-pump pliers, pipe cutters, and deburring tools.* *b. Explain the correct usage of each tool for tasks such as cutting pipes, tightening fittings, and removing burrs.* c. *Discuss safety guidelines for using plumbing tools to prevent injuries.* **3. Exercise –** *5 minutes* • *Provide a variety of plumbing components and have students practice using different types of plumbing tools including hacksaws, water-pump pliers, pipe cutters*
Closure	• *Summarize the key points of the lesson and emphasize the importance of using the correct tools for plumbing tasks.* *Spend 5 minutes to wrap up and consolidate the learnings*
Evaluation	*Reflective Questions (What, Why, Who?). Allow students to answer and discuss.* *Spend 5 minutes to evaluate student assimilation of the lesson contents*