

Bangladesh Polytechnic Institute

Technology: **Electrical**

Semester: 2nd

Sub. Name: **ADVANCE ELECTRICITY (6722)**

T P C: 3 3 4

Course Outline

Teacher Name: Syeda Tanzila Zaman

Mob.No: 01740 91 87 24

Class No.	Discussion and Explanation of Topics/ Titles	Remarks
Class-1,2	<p style="text-align: center;">❖ Understand the concepts of electrical installation</p> <ul style="list-style-type: none"> ➤ Explain electrical installation. ➤ List at least three main types of electrical installations. ➤ Define indoor and outdoor electrical installation. ➤ Distinguish between indoor and outdoor electrical installation. 	
Class-3	<p style="text-align: center;">❖ Understand the concepts of electrical installation</p> <ul style="list-style-type: none"> ➤ Define indoor and outdoor electrical installation. ➤ Distinguish between indoor and outdoor electrical installation 	
Class- 4,5	<p style="text-align: center;">❖ Understand the concept of planning of an electrical installation.</p> <ul style="list-style-type: none"> ➤ Define the term planning of an electrical installation. ➤ Explain the necessity of planning of an electrical installation. ➤ List at least five main categories of planning of an electrical installation. ➤ List at least seven factors to be considered for proper planning. ➤ Calculate the electrical load of residential building, college building, student hostel and office building. 	
Class-6,7	<p style="text-align: center;">❖ Understand the concept of planning of an electrical installation.</p> <ul style="list-style-type: none"> ➤ Define the term planning of an electrical installation. ➤ Explain the necessity of planning of an electrical installation. ➤ List at least five main categories of planning of an electrical installation. ➤ List at least seven factors to be considered for proper planning. ➤ Calculate the electrical load of residential building, college building, student hostel and office building. 	
Class-8,9	<p style="text-align: center;">❖ Understand the concept of estimating of an electrical installation.</p> <ul style="list-style-type: none"> ➤ Discuss estimating of an installation. ➤ Explain the necessity of estimating. 	

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	<ul style="list-style-type: none"> ➤ List at least three important steps for costing of an installation. ➤ List at least eight steps to be considered for preparing an estimate. 	
Class-10	<ul style="list-style-type: none"> ✚ Feedback 	
Class-11	<ul style="list-style-type: none"> ✚ Feedback 	
Class-12,13	<ul style="list-style-type: none"> ❖ Understand the importance of MB writing. <ul style="list-style-type: none"> ➤ Describe MB. ➤ Explain the necessity of MB. ➤ Identify the style of maintaining an MB. ➤ Identify proper specifications for the required materials form catalogue. 	
Class-14	<ul style="list-style-type: none"> ❖ Understand the concept of price sheet and schedule of labor rates. <ul style="list-style-type: none"> ➤ Describe price sheet and schedule of labor rates. ➤ Explain the necessity of price sheet and labor rates for an estimate. ➤ Prepare a price sheet and a labor rate schedule. 	
Class-15,16	<p>ILLUMINATION</p> <ul style="list-style-type: none"> ❖ Understand the concept of illumination. <ul style="list-style-type: none"> ➤ Define illumination. ➤ Explain at least three laws of illumination. ➤ Calculate illumination required for different purposes. ➤ Prepare a chart of illumination for different lamp system (ie including CFL, Incandescent, Florescent) ➤ Solve problems related to illumination. ➤ Define the terms Solid angle, Candela, Luminous flux, Luminous intensity, MSCP, MHSCP and different related factors. 	
Class-17	<ul style="list-style-type: none"> ✚ Feedback 	
Class-18	<ul style="list-style-type: none"> ✚ Class test-1 	
Class-19	<ul style="list-style-type: none"> ❖ Understand the concept of lighting scheme. <ul style="list-style-type: none"> ➤ Discuss direct lighting, indirect lighting, semi-direct and semi-indirect lighting. ➤ Discuss the level of illumination required for different purposes. ➤ Discuss at least five factors to be considered for designing a lighting scheme. 	

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	<ul style="list-style-type: none">➤ Design a lighting scheme.	
Class-20,21	<p>CONDUCTOR SIZE AND CURRENT CARRYING CAPACITY</p> <ul style="list-style-type: none">❖ Understand the principle of calculating current carrying capacity and determining the conductor size.<ul style="list-style-type: none">➤ Describe at least three factors to be considered for determining the conductor size.➤ Identify the conductor size from the table.➤ Calculate the current carrying capacity of a given circuit and the sub circuits.	
Class-22	<p>ELECTRICITY ACTS /RULES</p> <ul style="list-style-type: none">❖ Understand the electricity Act/Rules and safety practices.<ul style="list-style-type: none">➤ List at least ten main electricity rules of Bangladesh Electricity Act.➤ Describe the importance of electricity act/rules.➤ Explain the need for maintaining safety procedure against electrical hazards.➤ Explain at least five of safety measures.	
Class-23	<p>ELECTRICAL CODES</p> <ul style="list-style-type: none">❖ Understand the utility of electrical codes.<ul style="list-style-type: none">➤ List at least ten electrical codes.➤ Explain different electrical codes.➤ State the advantages of using the electrical codes.	
Class-24,25	<p>INTERNAL WIRING INSTALLATION</p> <ul style="list-style-type: none">❖ Understand the installation of internal wiring.<ul style="list-style-type: none">➤ Explain internal wiring installation.➤ Describe at least three main types of internal wiring.➤ Prepare schedule of materials for batten, channel, surface conduit, and concealed conduit wiring.➤ Sketch the layout plan for batten, channel, surface conduit, and concealed conduit of small building.➤ Calculate the load of main circuit and sub circuits.➤ Select the sizes of wire, main switch, sub-main switches and switches.	

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	<ul style="list-style-type: none"> ➤ Prepare a detail estimate for necessary materials and labor of installation of internal wiring. ➤ Prepare a summary of the estimate. ➤ Prepare an estimate by point method. 	
Class-26,27	<ul style="list-style-type: none"> ❖ Understand the concept of earthing. <ul style="list-style-type: none"> ➤ Describe earthing. ➤ Explain the necessity of earthing. ➤ Explain at least three methods of earthing. ➤ Prepare an estimate for earthing. ➤ Explain the method of testing of an earthing installation. ➤ List the desired value of earth resistance for different installations. 	
Class-28	<ul style="list-style-type: none"> 🚩 Feedback 	
Class-29	<ul style="list-style-type: none"> 🚩 Class test-2 	
Class-30	<ul style="list-style-type: none"> ❖ Understand wiring layout and schematic diagram of an electrical installation. <ul style="list-style-type: none"> ➤ Sketch the layout plan for casing wiring of a small workshop showing lighting loads. ➤ Sketch the layout plan for conduit wiring of a small workshop showing lighting loads. ➤ Sketch the layout plan of casing wiring of the same workshop showing power loads. ➤ Sketch the layout plan of conduit wiring of the same workshop showing power loads. 	
Class-31,32	<ul style="list-style-type: none"> ➤ Sketch the layout plan for service connection showing the required energy meter, DB & SDB. ➤ Sketch the layout plan for earth connection. ➤ Calculate power loads and lighting loads respectively of main circuit and sub-circuits. ➤ Select the sizes of wire, main switch, sub-main switches, switches and distribution boards to lighting and power line respectively. ➤ Prepare an estimate for the required materials and labour from the schedule. ➤ Prepare an estimate for earth connections and earthing. ➤ Prepare a summary of the estimate 	
	<ul style="list-style-type: none"> ❖ Model Test Exam 	
Class-33	<p>DISTRIBUTION LINE</p> <ul style="list-style-type: none"> ❖ Understand the estimate of LT overhead distribution line. 	

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	<ul style="list-style-type: none">➤ Sketch the layout plan of a 400V, 3-phase, 4-wire overhead distribution line with street poles, conductors, insulators and other accessories.➤ Prepare a schedule of materials required for overhead line.➤ Prepare an estimate for required materials for one kilometre long overhead LT distribution line with the 5th wire for street lighting.➤ Prepare a schedule of labor for overhead LT distribution line.➤ Prepare an estimate for overhead LT distribution line.	
Class-34,35	<p>❖ INSTALLATION OF ELECTRICAL MACHINE/EQUIPMENT Understand the principle of installation of electrical machine and equipment.</p> <ul style="list-style-type: none">➤ Sketch the layout plan and single line wiring diagram of a motor connection➤ Identify the position of motor, main switch, starter and accessories in the diagram.➤ Calculate the distance of the motor, main switch and starter from the mains.➤ Determine the sizes of wire, main switch and starter for the installation.➤ Prepare the material cost.➤ Estimate labor charge.➤ Prepare the estimate adding contingencies .	
Class-36	<p>❖ Understand the principle of installation of substation.</p> <ul style="list-style-type: none">➤ Sketch the layout plan and single line diagram of a substation.➤ Identify the position of the transformer, circuit breaker, auto re-closer, lightning arrester, isolator and incoming and outgoing bus bar arrangement.➤ Prepare a schedule of materials required.➤ Prepare an estimate.	
Class-37	<p>❖ TESTING ELECTRICAL INSTALLATION Understand the principle of testing of electrical installation.</p> <ul style="list-style-type: none">➤ Describe at least five main tests to be carried out after completion of wiring of a building.➤ Describe the tests to be performed after installation of a motor.➤ Describe the tests to be performed after	

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	installation of a transformer.	
Class-38,39	❖ Apply the principle of winding of electrical machine. <ul style="list-style-type: none">➤ Sketch the developed diagrams of full pitch and fractional pitch winding of a three-phase induction motor.➤ Sketch the developed winding diagram of a single phase induction motor.➤ Estimate the required materials and costs for rewinding of a burnt out induction motor.➤ Describe the methods of testing winding of electrical machine	
Class-40	➤ <u>Class test-3</u>	
Class-41,42	➤ <u>Feedback</u>	

REFERENCE BOOKS

1. Electrical Installation Planing & Estimating
– J. B. Gupta.
2. Electrical Installing Planning and Costing
– Uppal.