

Subject Teacher : Rubel Hossen
Instructor, Electrical Technology.
Subject Name : Electrical Installation Planning and Estimating
Subject Code : 26741
Technology : Electrical & Telecommunication Technology
Semester : 4th
BTEB Text Book Name : (Publisher: HAQUE PUBLICATION)

OBJECTIVES:

After completion of these contents' students will be able to acquire, achieve and develop:

- ☐ To acquire knowledge and skills of Electrical house wiring.
- ☐ To develop the capacity to know constructional details and working principles of electric lamps.
- ☐ To develop understanding about earthing.
- ☐ To develop understanding about controlling and protective devices.
- ☐ To acquaint the principles of Electro-magnetic Induction.
- ☐ To familiarize Magnetism and magnetization

SHORT DESCRIPTION:

Advance wiring; Electric lamps; Earthing; Controlling and Protective devices; Electro-magnetic Induction; Magnetism and Magnetization; Hysteresis and eddy current loss; Energy stored in magnetic field.

Marks	Grade Point	Letter Grade	Marks	Grade Point	Letter Grade
80>	4.00	A+	55-59	2.75	B-
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F

Mark Distribution (for 150 Marks)			
Theory Marks		Practical Marks	
Midterm	30	PC	25
Class test	20	PF	25
Quiz test	10	-	-
Final	90	-	-
Total	150	Total	50

Class Timing Distribution

Particulars	Time
Greeting with students	10 Minutes
Previous Class Review	10 Minutes
Present Class Topic Discussion and Lecture Delivery	60 Minutes
Present Class Topics Review	10 Minutes

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	01	Understand the Basic concept of electrical wiring.	1.1 List the different types of electrical house wiring. 1.2 Describe wiring of the high-rise residential building. 1.3 Describe wiring the high-rise commercial building. 1.4 Explain the indoor and outdoor wiring. 1.5 Distinguish between indoor and outdoor	After the Class, Students will be able to know about wiring	1) Basic Class Materials & 2) Projector 3) Register, Capacitor, Inductor wire 4) YouTube: https://www.youtube.com/watch?v=OWcDevDRaxU

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
			wiring. 1.6 Draw the wiring layout plan of a residential building. 1.7 Draw the wiring layout plan of a commercial residential building. 1.8 Describe the electrical symbols used in electrical wiring.		
	02	Understand the constructional details and working principles of different types of traditional electric lamps.	2.1 Mention name of the different types of lamps. 2.2 Explain the working principle of tungsten filament lamp ./ . 2.3 Describe constructional details of tungsten filament lamp. 2.4 Explain the working principle of a fluorescent lamp describing the function of the choke coil and starter. 2.5 Discuss advantages and disadvantages of fluorescent lamp. 2.6 Describe the detail circuit diagram of an electronically controlled fluorescent lamp. 2.7 Discuss the advantages of electronically controlled fluorescent lamp.	After the Class, Students will be able to know about traditional electric lamps	1) Basic Class Materials & Projector YouTube: https://www.youtube.com/watch?v=_U1VwQL96c0
	03	Understand the constructional details and working principles of modern electric lamps.	3.1 Explain the working principle of Sodium Vapor and Mercury Vapor lamps with circuit diagram. 3.2 Explain constructional details of Sodium Vapor & Mercury Vapor lamps. 3.3 List the uses of Sodium Vapor and Mercury Vapor lamps. 3.4 Explain working principle of a Compact Fluorescent lamp with circuit diagram. 3.5 Describe constructional details of a Compact Fluorescent lamp. 3.6 Explain working principle of a Light Emitting Diode (LED) lamp and LED tube light with circuit diagram. 3.7 Describe constructional details of LED lamp	After the Class, Students will be able to know about LED Lamp	1) Basic Class Materials & Projector Youtube: https://www.youtube.com/watch?v=IEju3AT1olk

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
			and LED tube light.		
	04	Lab-1	Show skill in connecting one lamp controlled from three different points.	After the Class, Students will be able to know about lamp controlled.	1. three SPDT and one DPDT switches 2. wiring board. 3. Power supply
	05	Understand the constructional details and working principles of modern electric lamps.	3.8 Explain working principle of Liquid Crystal Diode (LCD) lamp with circuit diagram. 3.9 Describe constructional details of LCD lamp. 3.10 Explain working principle of a Cold Cathode Filament lamp (CCFL) with circuit diagram. 3.11 Describe constructional details of a CCF lamp.	After the Class, Students will be able to know about LCD Lamp	1) Basic Class Materials & Projector YouTube:
	06	Understand the construction and uses of controlling and protective devices.	4.1 Explain the meaning and uses of SPST, SPDT, DPST, DPDT, TPST, Sliding switch, MCB and MCCB. 4.2 Describe the construction of MCB and its advantages. 9 4.3 Give reasons for the uses of a Lightning Arrester 4.4 Give reasons for the uses of a drop out fuse in distribution system. 4.5 Describe the Internal wiring of Combined socket with switch. 4.6 Describe the construction of Magnetic	After the Class, Students will be able to know about switch, fuse and conductor	1) Basic Class Materials & Projector YouTube: https://www.youtube.com/watch?v=ozdBhSBUxzk

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
			contactor. 4.7 Explain the Forward- Reverse speed control by using magnetic contactors.		
		Assignment -01	Chapter: 01,02,03		1. Must be submitted within two classes
	07	Quiz Test 1 Class Test 1	Examination Topic: Chapter 1,2,3,4,5 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	1) Basic Class Materials 2. Examination Kata
	08	Understand the concepts of earthing.	5.1 Discuss the factors to be considered in performing earthing. 5.2 Explain the working principles of pipe earth in with diagram. 5.3 Explain the working principles of plate earthing with diagram. 5.4 Explain the working principles of sheet earthing with diagram.	After the Class, Students will be able to know about pipe & plate earthing	1) Basic Class Materials & Projector YouTube: https://www.youtube.com/watch?v=LBEz4IHMr58 YouTube: https://www.youtube.com/watch?v=bCPyiIT2ZCk
	09	Understand the concepts of earthing.	5.5 Explain the working principles of rod earthing with diagram. 5.6 Describe the principle and operation of earth tester. 5.7 Describe the method of measuring the earth resistance. 5.8 Explain the earth resistance range in different installation.	After the Class, Students will be able to know about rod earthing and operation of earth tester	1) Basic Class Materials & Projector YouTube: https://www.youtube.com/watch?v=zvaO-XUY9qg
	10	Lab-2	Show skill in connecting one lamp, one 2-pin socket and one fan in a circuit by channel wiring.	After the Class, Students will be able to know about channel wiring	1. lamp, fan, switches and socket 2. power supply 3. wire
	11	Review Class	Review Class of Lecture 1-8 (Regarding students problem)	Through the review class, students can solve their problem	Basic Class Materials

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
	12	Assignment -02	Chapter: 02,03,04		1. Must be submitted within two classes
	13	Understand the phenomenon of induced emf.	6.1 Explain dynamically induced emf. 6.2 Deduce the formula of dynamically induced emf. 6.3 Explain self induced emf. 6.4 Define Coefficient of self-induction by First, Second and Third method for self-inductance (L). 6.5 Apply the formula obtained by First, Second and Third Method to find L of iron core. 6.6 Explain Mutual Inductance (M). 6.7 Define coefficient of self-induction by First, Second and Third Method for (M). 6.8 Apply the formula obtained by First, Second and Third method to find out Mutual Inductance (M). 6.9 Solve problems related to dynamically and statically induced emf.	After the Class, Students will be able to know about emf	1) Basic Class Materials & Projector YouTube: https://www.youtube.com/watch?v=hoTInTKij0o
	14	Lab -3	Show skills in performing internal/ wiring and installing a combined socket with switch	After the Class, Students will be able to know about combined socket	1. combined socket 2. wire 3. power supply 4. switch
	15	Understand the concept of Inductance and Co-efficient of coupling.	7.1 Explain co-efficient of coupling. 7.2 Deduce the expression for co-efficient of coupling. 7.3 Solve problems on mutual inductance and co-efficient of coupling. 7.4 Define the expression for inductance in series. 7.5 Derive the expression for inductance in series.	After the Class, Students will be able to know about co-efficient of coupling	1) Basic Class Materials & Projector YouTube: https://www.youtube.com/watch?v=ECwueNu4wwg

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
			7.6 Solve problems on inductance in series.		
	16	Understand the principle of Magnetism and Magnetization.	8.1 Explain magnetization properties of materials. 8.2 Explain cycle of magnetization. 8.3 Draw magnetization (B-H) curve. 8.4 Mention applications of B-H curve. 8.5 State and explain Steinmetz' s hysteresis law. 8.6 Derive the formula for hysteresis loss on the basis of the Steinmentz' s law. 8.7 Solve problems on hysteresis loss related to Steinmentz' s law.	After the Class, Students will be able to know about magnetism and magnetization.	1) Basic Class Materials Projector YouTube: https://www.youtube.com/watch?v=62lmfPki868
	17	Quiz Test 2 Class Test 2	Examination Topic: Chapter: 03,04,05 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	2) Basic Class Materials 2) Examination Kata
	18	Lab-4	. Review Lab class 1,2,3	Through the review class, students can solve their problem	Must be submitted within two classes
	19	Review Class	Review Class of Lecture 8-16 (Regarding students' problem)	Through the review class, students can solve their problem	Basic Class Materials
			Mid exam Syllabus		
	20	Understand the concept of hysteresis loss. and eddy current loss with their minimization	9.1 Define magnetic hysteresis. 9.2 Explain hysteresis loss. 9.3 Explain hysteresis loop. 9.4 Determine areas of hysteresis loop. 9.5 Deduce the expression for energy loss in one cycle of magnetization per cubic meter. 9.6 State the uses of hysteresis loss curves. 9.7 Define eddy current loss. 9.8 Discuss the methods for minimization of eddy current loss. 9.9 Describe the expression for eddy current loss and hysteresis loss. 9.10 Solve problems related to eddy current loss.	After the Class, Students will be able to know about hysteresis and eddy current loss.	1) Basic Class Materials & Projector 2) YouTube: https://www.youtube.com/watch?v=HUrJXZGM97U 3) YouTube: https://www.youtube.com/watch?v=sSvOIL4YLsI 4)

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
	21	Understand the concept of energy-stored in a magnetic field.	10.1 Explain the principle of energy stored in a magnetic field. 10.2 Drive the expression for energy stored in a magnetic field. 10.3 Solve problems related to energy stored in a magnetic circuit. 10.4 Explain the lifting power of electromagnet. 10.5 Mention the application of lifting power of electromagnet.	After the Class, Students will be able to know about energy-stored in a magnetic field.	1) Basic Class Materials Projector YouTube: https://www.youtube.com/watch?v=gxmPC76ZgEg
	22	Lab-5	Show skill in connecting one lamp, one 3-pin socket one fan in a circuit by surface conduit wiring.	After the Class, Students will be able to know about surface conducting wire.	1. socket, switch board. 2. conduct pipe 3. Fastening the wall 4. cables or wines 5. switches, holders 6. supply
	23	Understand the concept of various kinds of special electrical circuit.	11.1 Describe the working principle and construction of calling bell. 11.2 Explain the working principle and construction of Alarm circuit. 11.3 Describe the working principle and construction of light Dimmer. 11.4 Explain the working principle and construction of Electronic Fan regulator circuit. 11.5 Describe the working principle and construction of Electronic Choke coil.	After the Class, Students will be able to know about various kinds of special electrical circuit	1) Basic Class Materials Projector YouTube: https://www.youtube.com/watch?v=acHTnvSGIJ8 YouTube: https://www.youtube.com/watch?v=K171Kt0QM9A
	24	Assignment - 03	Chapter: 06,07,08		3) Must be submitted within two classes
	25	Quiz Test 3 Class Test 3	Examination Topic: Chapter: 06,07 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	4) Basic Class Materials Examination Kata
	26	Understand the	12.1 Mention the different types of test for	After the Class, Students will be able to know about various kinds of Testing the Electrical House Wiring	1) Basic Class Materials Projector

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
		concept of various kinds of Testing the Electrical House Wiring.	newly installed electrical house wiring. 12.2 Explain the methods of Continuity test for electrical wiring. 12.3 Describe the method of Polarity test for switches in electrical wiring. 12.4 Describe the methods of short circuit test for electrical wiring.		YouTube: https://www.youtube.com/watch?v=AZenZfLQOgw
	27	Review Class	Review Class of Lecture 17-27 (Regarding students' problem)	Through the review class, students can solve their problem	Basic Class Materials
	28	Lab-06	Show skill in installation of Plate earthing	After the Class, Students will be able to know about plate earthing	<ol style="list-style-type: none"> 1. earthing diagram 2. List the necessary tools, equipment and materials 3. G-I Plate
	29	Understand the concept of various kinds of Testing the Electrical House Wiring.	Perform skills for continuity test and short circuit test of wiring and polarity test of switches in an electrical installation 12.5 Explain the methods of Insulation resistance test for electrical wiring. 12.6 Explain the methods of Earth test for electrical wiring.	After the Class, Students will be able to know about electrical installation	Basic Class Materials Projector YouTube:
	30	Class Test 4 Quiz Test 4	Examination Topic: Chapter: 08,09,10 Examination mark: 20 Passing Mark: 08	Through class tests and Quiz Test students will learn to evaluate themselves on their own	<ol style="list-style-type: none"> 2) Basic Class Materials 3) Examination Kata
	31	Presentation	Short presentation by individual student.	Be confident on practical life.	Laptop, projector
	32	Assignment-04	Chapter: 09,10		Must be submitted within two classes
	33	MODEL TEST	All Syllabus	After the Class, Students will be highly confident for Final exam	Basic Class Materials
	34	Final Exam Syllabus Review			

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment@s
	35	Final Exam Syllabus Review			