



## RAABED TECHNICAL TRAINING & LANGUAGE CENTER

53, Nimtolirtek, Diabari, turag, Uttara, Dhaka -1230.

Syllabus for the short course

ON  
**ELECTRICIAN**  
Total duration 312 hours (1.5 Month)

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RAABED TECHNICAL TRAINING & LANGUAGE CENTER



# COURSE TITLE

## ELECTRICIAN

Index		
S. No	Subject	Page no
01	Introduction	
02	objective	
03	Course out line	
04	Competencies	
05	Contents	
06	Contents of communicative English	
07	Theoretical: Common competencies and core competencies	
08	Practical: Common competencies and core competencies	
09	Entry Qualification	
10	Employment opportunities	
11	List of tools	
12	Book of References	

## ELECTRICIAN

### Introduction:

Bangladesh is a densely populated country. Over population adversely affects the economic development and progress of a country. It creates problem of foods, Communication, Education, Housing, Health, Sanitation, Employment etc. But if we can provide training to our unskilled people through technical (Trade/Vocational) Course we may convert them into skilled workers and solve the unemployment problem and earn foreign currency also.

Bangladesh Technical board is authorized by parliament of our country to introduce control and develop technical (Board/Vocational) curriculum.

In this regard BTEB has approved for Conducting Electrician course by the approved Training Center. The Syllabus has been prepared as per present need in the job market.

### Objective:

1. Covers procedures, processes, equipment and terminology employed in electrical along with related fields. Electrical equipment and industrial safety will be covered.
2. To provide the students with the basic and practical knowledge on electrical equipment.
3. To stress the theory and practical application on all types of Industrial wiring & Domestic house wiring
4. To stress the theory and practical applications on all types of concerned all electrical maintenances and installation works.
5. To stress the theory and practical applications on all types of concerned abroad job.
6. To stress the theory and practical application on all types of motors.
7. To stress the theory and practical application on all types of diagrams.
8. To stress the theory and practical application on all type's electrical circuits.
9. To provide the students with the ability to set up, maintain and operate all types of electrical equipment.
10. For giving dealing idea to the students about electrical drawing, so that they can trace out and rectify the electrical faults going through the drawings.
11. To emphasize and preparation small projects using drawings
12. To emphasize and teach the students about techniques to work on electrical equipment and circuit.

### Course outline:

Name of course	Duration of course		Entry qualification
Electrician	Total 312 hrs	6 days per week, per day 8 hrs	Minimum eight pass
	Theory 39 hrs	Theory = 2 hr	
	Practical 234 hrs	Practice = 6 hrs	
	Communicative English 39hrs	Total =8 hrs, per working day	

# Competencies:

## Common competencies:

1. Electrical theories
2. Familiarize with all Electrical equipment
3. Practice on Electrical fault finding
4. Understand Electrical circuit/drawing.
5. Adopt safety on working electrical equipment

## Core competencies:

1. Enhance skillness in knowing electrical tools
2. Enhance skillness in knowing electrical test equipment
3. Enhance skillness in knowing different parts of electrical notes
4. Enhance skillness in knowing different parts of generators
5. Enhance skillness in knowing various components of electrical circuits
6. Enhance skillness in knowing all electrical equipment used in domestic purposes
7. Enhance skillness Dismantling and Assembling of Electrical equipment with confidence
8. Enhance skillness to know the techniques for finding out the faults of electrical equipment / circuit and various means for rectification with confidence
9. Enhance skillness in tracing out electrical diagram

# Contents:

## Efficiently communicate in English:

1. Conversation in English with confidence
2. Effectively communicate with target persons
3. Understand the speech of English users
4. Achieve better professional performance

## Communicative English 39 hours:

Related subject 13 hours and general subject 26 hours

One hour/period on completion of these courses, trainees will be able to

1. Speak in English with confidence.
2. Communicate with target persons effectively.
3. Understand the speech of English users.
4. Achieve better professional performance.

S. No	Topics	Period
1.	Speaking English - Getting information and finding one's way	2
2.	Speaking English - About tools and equipment	2
3.	Speaking English - About meeting someone and participating in class	2
4.	Speaking English - Daily asking about theoretical contents	2
5.	Speaking English - Evening activities and about theoretical contents	1
6.	Speaking English - Meeting at the train station and asking question at the train station	1
7.	Speaking English - About different types of tools, test equipment and electrical equipment and circuit	1
8.	Speaking English - Getting to the Hotel and Asking direction	1
9.	Speaking English - Asking about buses and traveling by bus	1
10.	Speaking English - About Practical Class	1
11.	Speaking English - Going by Taxi and Asking the time	1
12.	Speaking English - Arriving early or late and time and the calendar	1
13.	Speaking English - Living in a Apartment	1
14.	Speaking English - Using telephone	1
15.	Speaking English - About different types of faults developed in electrical equipment	1
16.	Speaking English - Getting help in stores and talking about shopping	1
17.	Speaking English - Sending and Receiving letters	1
18.	Speaking English - About electrical circuits	1
19.	Speaking English - Taking about the weather and trips and sight seeing	1
20.	Speaking English - Talking about eating and dinner conversation	1
21.	Speaking English - Common health problem and quitting and finding jobs	1
22.	Speaking English - Office details and office conversation	1
23.	Speaking English - On a specific situation and public speaking	2
24.	Speaking English - About exchanging view with a person and introducing oneself.	1
25.	Speaking English - Describing and Narrating events, place, object etc	1
		39

## Syllabus - English

Total Marks 20

Total period 39

S No	Topics	Period
01.	To give idea about vowel and consonant and sentence making	1
02.	To give idea about article and sentence making by A, An and the	1
03.	Discussion about parts of speech with examples	2
04.	Sentence making by different parts of speech	1
05.	Discussion about different types of sentences with examples	2
06.	To give idea about tense	1
07.	Discussion about classification of tense with example	6
08.	Speaking English - about tools and equipment	2
09.	Speaking English- About meeting someone and participating in class	2
10.	Speaking English - About using of Telephone	1
11.	Speaking English - About different types of faults developed in electrical equipment	1
12.	Speaking English - About shopping	1
13.	Speaking English - About eating and dinner conversation	1
14.	Speaking English - Common health problems and quitting and finding jobs	1
15.	Speaking English - Office details and office conversations.	1
16.	Speaking English - On a specific situation and public speaking	2
17.	Speaking English - About exchanging view with a person and introducing oneself	1
18.	Speaking English - Describing and Narrative events, place and object etc.	1
19.	Speaking English - Asking about buses and Traveling by bus	1
20.	Speaking English - Getting to the hotel and asking direction	1
21.	Final examination (10 Marks)	1

## **Communicative English 39 hours (Practical):**

1. Interpret the meaning of given words (by the teachers) - Vocabulary
2. Speaking on a specific situation
3. Public speaking
4. Exchanging views with target persons
5. Introducing one self
6. Describing and narrating events, places, objects etc.

### **Practical:**

Speaking on a specific situation  
public speaking  
Exchanging views with target persons  
Introducing oneself  
Describing and Narrating events, Places, Objects etc  
Producing the meaning of given words (by the teachers) vocabulary  
Prepared speech

### **Theoretical Subjects:**

#### **Introduction:**

Knowledge about Electricity  
Knowledge about Resistance  
Knowledge about Ohm Law  
Knowledge about DC generator fault finding and rectification  
Knowledge about DC Motor fault finding and rectification  
Knowledge about AC Theory  
Knowledge about AC Generator fault finding and rectification  
Knowledge about AC Motor fault finding and rectification  
Knowledge about X-former fault finding and rectification  
Knowledge about Rectifier  
Knowledge about Electronic

### **Theoretical: Common competencies and core competencies**

S No	Topics	Period
1	Description on Electricity.	1
2	Define current, voltage, resistance and describe their relation	2
3	Define Ampere (A), Volt (V), Hertz (Hz), Watt (W) and coulomb (C)	1
4	Laws of Resistance	2
5	What do you understand by insulation resistance of electrical equipment	1
6	Define ohms law	1
7	Define AC and DC	2
8	What is generator? Define AC and DC generator, Define Faradays laws	4
9	Define different Parts of AC and DC generator	1
10	Discuss difference between AC and DC generator	1
11	Define types of DC generator	2
12	Mention possible faults of DC generator	1
13	Describe, how faults of DC generator can be remedied	2
14	Define efficiency and energy loss of generator	1
15	Define Dynamo. Describe its function	1
16	Discuss the types of DC motor	1
17	Describe the function of different parts of DC motor	2
18	Mention possible faults of DC motor	2
19	Discuss the remedies of fault of DC motor	2
20	Define cycle, time period and frequency	2
21	What do you understand by form factor, AC circuit power factor and phase angle.	2
22	What is the bad effect for the degradation of power factor	1
23	How power factor can be improved	1
24	Uses of capacitor in AC and DC circuit	1
25	Discuss circuit with resistance and inductance	2
26	Discuss circuit with resistance and capacitance	1
27	Define single phase circuit	1
28	Define poly phase circuit	1
29	Discuss star connection	1
30	Discuss delta connection	1
31	Discuss star-delta connection	2
32	Define phase voltage and line voltage	1
33	Discuss the condition of line and phase voltage and line and phase current in star connection	2
34	Discuss the condition of line and phase voltage and line and phase current in delta connection	2
35	Define basic principle of alternator	1
36	Discuss the advantage of rotating armature by keeping stator field constant	2

37	Discuss starting procedure of generator. Explain how voltage induced and becomes available in the switch board.	2
38	What is AVR, How voltage is controlled by AVR	2
39	Name and discuss the different parts of AC motor.	1
40	Define single phase AC motor and discuss how the rotor rotates.	2
41	Mention the possible faults of single phase AC motor	1
42	Discuss about the remedies of various faults of single phase AC motor.	2
43	Explain capacitor start motor	1
44	Define three phase AC motor and discuss its working principle	2
45	Probable faults of three phase AC motor and their remedies	2
46	Uses of Induction and synchronous motor	2
47	Define starter. Discuss the necessity of starter	2
48	Various safety devices of a starter	1
49	Draw the diagram of star/delta starter and explain how it functions	2
50	Mention possible faults of starter	1
51	Discuss various way to find out faults of starter and their rectification	1
52	Define self starter and describe its function	1
53	Mention, possible faults of self starter and their remedies	1
54	Define transformer. Discuss types of transformer	2
55	Discuss necessity of transformer	1
56	Define auto transformer	1
57	Explain auto transformer with block diagram	1
58	Describe with diagram, single phase and three phase transformer	2
59	Discusses about Charger and Rectifier	1
60	Familiarization of transistor, FET, Diode etc.	1
61	Define wiring. Discuss about types of wiring	1
62	Discuss about safety and precaution while working on alive electrical equipment/circuit	1
63	Discus about various types of first aid against electric shock	1
64	Revision of all subject previously discussed	8
	Draw The	
		100

## Practical: Common competencies and core competencies

S No	Description	Hours
1	Visit and introduction of Fabrication and Electrical workshop	3
2	Name and identify various tools	3
3	Using procedure of various tools	3
4	Name and identify various test equipment	2
5	How to use various test equipment in Practice	3
6	Dismantling and assembling of DC generator	6
7	Practically orientation on shunt, series and compound generator	6
8	To find out various fault developed in DC generator and means of rectification	6
9	Overhauling of dynamo	4
10	To find out faults of dynamo and their rectification	4
11	To measure insulation resistance and balance test of generator	3
12	Overhauling procedure of DC motor	6
13	Practically find out various faults of DC motor and their rectification	3
14	Overhauling of self-starter	4
15	To find out probable faults of self-starter and their remedies	4
16	Show skill in measuring electrical power, voltage, current etc.	2
17	Show skill in testing resistance, Capacitor, diode	2
18	Dismantling and assembling of AC generator	6
19	Orientation of different parts of AC generator and their functions	3
20	Probable faults of AC generator and their remedies	3
21	Overhauling of brushless generator	6
22	Procedure to find out different faults of brushless generator and their rectification	4
23	Orientation of various component of AVR (Auto voltage regulator)	3
24	Procedure testing of rotating diode of brushless generator	2
25	Procedure to find out different faults of AVR and their rectification	3
26	Dismantling and Assembling practice on table fan, pedestal fan, wall fan.	4
27	Dismantling and assembling practice on ceiling fan	4
28	To find out probable faults of all types of fan and their remedies	3
29	Show skill in starting a ceiling fan with regulator	3
30	To Find out starting and running coil of ceiling fan by meter/series lamp	3
31	Show skill in testing tube light, starter, choke and regulator	3
32	Dismantling and Assembling practice of single-phase AC motor	4
33	Fault finding procedure of single-phase AC motors and various means of fault rectification.	4
34	Insulation resistance test of single-phase AC motor	2
35	Overhauling practice on 3phase AC motors	4
36	Show in skill in fault finding procedure of 3 phase motors	3
37	Show in skill fault rectification of 3 phase motors	3
38	Insulation resistance and balance test of 3 Phase AC motor	3
39	To know winding procedure of single/three phases transformer	3
40	Open circuit test of transformer in practice	4
41	Removing and replacing procedure of roller/ball bearing	3
42	To make traffic control system	4
43	Show skill in giving connection to tube light	3
44	To control two tube light by one switch	3
45	To control calling bell by push button switch from four places	3
46	To draw the diagram of direct on-line starter and make one starter practically by giving connection with all required component	4
47	Practically first aid against electric shock	4
48	Revision of DC generator	4
49	Revision on DC motors	4
50	Revision on AC generator	6
51	Revision on Brushless generator	6
52	Revision on AC motors	4
53	Revision on transformer	4
54	Practically orientation on star, delta and star/delta connection	4
		200

## Entry Qualification:

Minimum qualification Class Eight pass.

## Employment opportunities:

Qualified field electrician may find lucrative jobs in following areas of marine/industrial establishment in Bangladesh as well as overseas employment market:

- Manufacturing
- Construction
- Engineering
- Fabrication
- Repair and maintenance
- Technical Education
- Inspection

## Qualified Electrician may enter career, such as

- General Electrician in any Mill, Factory or other establishment
- As electrician in any marine ship of any country
- May join in any military force where electrician required
- May find out the job in any foreign country as electrician
- May open workshop for Electrical repair.

## List of Tools (for numbers of trainees 26):

S. No	Topics	Period
1.	AVO meter	4
2.	Digital multi meter	2
3	Bridge megger	2
4	Wee megger	2
5	Clamp meter	2
6	Screw driver 8 inch - flat	12
7	Screw driver 12 inch - flat	12
8	Open spanner set	3set
9	Open and ring spanner set	3set
10	Allen key	3set
11	Wire stripper	6
12	Adjustable Wrench 10 inch	6
13	Plier	6
14	Nose Plier	6
15	Box spanner set	3set
16	Bearing structor	4
17	Cutter	5
18	Flat file 12 inch	5
19	Flat file 10 inch	5
20	Flat file 8 inch	5
21	Hammer 1/4 lb	4
22	Hammer 1/2 lb	4
23	Safety goggles	4
24	Centre punch	6
25	Hack saw blade	50
26	First aid box	4
27	Hand gloves	30

## Book reference:

1.	Basic electrical knowledge	MM Khoynar Ali Diploma in Electrical engineering Instructor (Electrical) Technical Training Centre, Mirpur, Dhaka.
2.	Electrical appliance	Engineer Khondoker Shofiqul Islam Instructor (Electrical) Dhaka Poly Technique institute, Tejgoan, Dhaka
3.	General electrical works	Md. Mizanur Rahman BSC TE in Electrical, and Electronic engineering (1st class 1st) Principal, Technical School and college, Rajbari.
4.	AC machine	Sree Shudhangsha Shomadder BEE. MIE. Professor Electrical Engineering, Calcutta Technical School.
5.	DC machine	Sree Shib Proshad Gongo Paddhay, M. I. E. E M. A. E Retired Assistant Professor of Lahore Maklagan Engineering college in electrical engineering and Sree Shudhangsha Shomadder BEE, MIE Retired Professor of Calcutta Technical School.
6.	Torit kowshal parichayya	Doctor Jahurul Haque Bangla Academy, Dhaka
7.	Electrical installation	Sree Arobindo Podder Anirban prokashon