

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: **Electrical Engineering Workshop Practice**
(Code: **3320902**)

Diploma Programmes in which this course is offered	Semester in which offered
Electrical Engineering	Second Semester

1. RATIONALE

The diploma electrical engineering students are required to perform tasks such as selection of different types of wires, cables, switches etc. as per the current and voltage ratings and applications. The knowledge and skill can be developed through the electrical work shop practices which will be useful in industries for using various electrical tools, measuring instruments, safety tools and devices. This course is designed in such a way that practicals performed in this subject will enhance the skills to demonstrate the performance in the electrical industry.

2. LIST OF COMPETENCIES:

- Connect basic electrical instruments and devices
- Follow safety norms in electrical industries

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE	PA	ESE	PA	
0	0	4	4	0	0	40	60	100

Legends: L-Lecture; T ó Tutorial/Teacher Guided Student Activity; P - Practical; C ó Credit;; ESE - End Semester Examination; PA - Progressive Assessment.

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit- I	Use various electrical tools	Plier, nose plier , cutter, screw driver , tester , Test lamp etc.
Unit- II	Use measuring instruments	Ammeter , voltmeter, wattmeter , clip on meter, Multimeter, Megger, etc.
Unit- III	Select different types of Wires, cables & different types of light sources	Single core cable, multicore cable, single strand wire , multi strand wire, shielded wire , different types of light sources etc.
Unit- IV	Select different types of	Toggle switch, Rotary switch , Push button switch,

Unit	Major Learning Outcomes	Topics and Sub-topics
	switches	micro switch ,MCB,ELCB, etc.
Unit-V	Select and identify different types of resistors, capacitors	Rheostat , wire wound resistor, Carbon film resistor , Carbon composition resistor, fixed and variable potentiometer etc.
Unit-VI	Select and identify different types of capacitors	Electrolytic capacitor , ceramic capacitor , polyester, paper capacitor ,gang capacitor
Unit-VII	Select and apply safety rules	Electrical safety rules , I.E. rules for electrical hazards and accidents, Electrical safety tools, Importance of earthing etc

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS(THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks (Duration –Hours)			
			R Level	U Level	A Level	Total
1.	Electrical wiring tools	Not applicable				
2.	Electrical measuring instruments					
3.	Electrical wires and cables					
4.	Electrical switches					
5.	Electrical resistors.					
6.	Electrical capacitors.					
7.	Electrical earthing and safety					

Legends:

R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloomø taxomonoy

6. SUGGESTED LIST OF EXPERIMENTS

The experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency -

Sr. No.	Unit No.	Practicals / Exercises	Hours suggested
1	I	Identify various tools used for wiring.	04
2	I	Identify the symbols used in electrical circuits diagrams.	04
3	II	Identify and connect various electrical measuring instruments and measure various electrical parameters like current, voltage , power.	04
4	II	Use common testing instruments used in electrical workshops: 1: Test lamp. 2: line tester. 3: Multimeter. 4: Clamp-on meter. 5: Megger.	04
5	II	Connect different domestic appliances to power supply and measure current drawn by them using 1)Ammeter. 2)Tong tester. 3) Multimeter.	04
6	II	Identify different types of domestic wirings.	04
7	III	Identify and specify different types of wires, cables, cable joints used for different current and voltage ratings.	02
8	III	Identify different types of light sources, open circuit, closed circuit and	04

		short circuit.	
9	IV	Identify and specify different types of switches used for different applications as per current and voltage ratings.	02
10	IV	Identify and specify different types of sockets and plugs used for different current and voltage ratings.	02
11	IV	Know the working of various electrical circuit protective devices (fuse, MCB,)	04
12	II,III & IV	Prepare a meter board for lighting and power installation using MCB, energy meter, fuse unit, DP switch, indicators and bus bars.	04
13	V & VI	Identify and specify different types of conducting, insulating materials, resistors, capacitors and inductors as per standard color code practice.	04
14	V& VI	Solder various resistors, capacitors and electronic components on PCB.	04
15	VII	Understand the safety precautions to be observed in workshop and learn about safety procedures of first aid in case of electrical hazards.	04
16	VII	Know the importance of earthing in electrical installations.	02
		Total Hours	56

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

- 7.1 Draw various electrical symbols
- 7.2 Collect and study of various catalogues for cables ,switches and instruments
- 7.3 Study electrical safety I.S.

8. SUGGESTED LEARNING RESOURCES:

A. List of Books:

S.No.	Author	Title of Books	Publication
1	Mithal, G.K.	Electrical Engineering Materials	Khanna Publication ,2011
2	Gupta, J.B. , & Gupta, Renu	Electrical engineering materials & semiconductor devices	S.K. Kataria & sons, 2012
3	Singh, Surjit	Electrical engineering drawing i & ii	S.K. Kataria & sons, 2012
4	Bhatia, S.L.	Handbook of Electrical Engineering	Khanna Publication ,2012
5	Uppal, S.L. & Garg ,G.C.	Electrical Wiring, Estimating and Costing	Khanna Publication ,2012

B. List of Major Equipment/ Instrument:

- Various tools for wiring.
- Various electrical measuring instruments.
- Various safety devices for protection of electrical installation.
- Various safety devices used for first aid and electric fire hazards.
- Soldering kit.
- Different types of cables, wires, switches, light sources, resistors, capacitors, inductors, insulating and conducting materials.
- Various domestic appliances (e.g. fan, heater, electric iron, geyser etc.)

- Various electrical power supplying equipments (e.g. transformer, variac, d.c.power supply etc)

C. List of Software/Learning Websites

www.kpsec.freeuk.com

www.howstuffworks.com/

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

1. Prof. S.S.Mehta. Lecturer, Electrical engg.Dept. B&B Institute of Technology, Vallabhvidyanagar.
2. Prof. A. S. Pandya. HOD. Electrical engg.Dept. Govt. Polytechnic, Rajkot.
3. Prof. V. R. Kotdawala. Lecturer, Electrical engg. Dept. Govt. Polytechnic, Himmatnagar.
4. Prof. P.S. Chaudhary. Lecturer,Electrical engg.Dept. B&B Institute of Technology, Vallabhvidyanagar.