GOVERNMENT POLYTECHNIC, PUNE

(An Autonomous Institute of Govt. of Maharashtra)

Programme	:	Diploma in ET/CE/EE//ME/MT/CM/IT/DDGM
Programme Code	:	01/02/ 03 /04/05/06/07/08/16/ 17 /21/22/ 23 /24/26
Name of Course	:	Electronic workshop
Course Code	:	ET 282

Teaching Scheme:

. 164. 5	Hours /Week	Total Hours
Theory		
Tutorial	01	16
Practical	04	64

Evaluation Scheme:

1577	Progressive	Semester End Examination			
2000	Assessment		Practical	Oral	Term work
Duration				3Hrs. For batch of 20 students	15
Marks	$-$ X $_{-}$		1,61,	25	25

Course Rationale:

To provide basic information regarding the materials used in Electronics Devices and components. It covers the types of various Electronics components and their constructions and also PCB manufacturing process.

Course Objectives:

After studying this course, the student will be able to

- Understand the different types of materials and components.
- Understand the constructions specification and application of different Electronics components.
- Understand the concept of PCB manufacturing.

Diploma in E & TC 51

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Course Content:

Chapter No.	Name of Topic/Sub topic	Hrs	Marks
1.	1.1 Passive components: Introduction to Resisters, Capacitors & Inductors, Types of Resisters, Capacitors & Inductors, color codes, specifications, testing.	4	
	1.2 Active components: Testing of semiconductor diode, zener diode, LED, BJT, FET, UJT,SCR by multimeter		
2.	Switches & Relays: Types of Switches & Relays, specifications, applications, testing.	2	4
3.	Cable & connectors: Types of Cable & connectors, applications, specification, testing.	2	-\6
4.	Transformer Types of Transformer, applications, specification, testing	2	
5.	Display Devices: Types of Display Devices, applications, specification, testing.	2	-/'
6.	Microphones & Speakers Types of Microphones & Speaker, applications, specification, testing.	2	15
7.	Introduction to PCB manufacturing PCB layout drawing, etching, drilling, soldering.	2	4
	Total	16	9

Diploma in E & TC 52

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List of Practical/Experiments/Assignment:

 Identify the different controls of electronic lab. equipment's (Analog multimeter, Digital multimeter, CRO, Function generator and IC Tester) Observe the square wave, triangular wave and sine wave generated by function generator measure their amplitude and frequencies Identify various electronics components by physical observation. Test resistor, capacitors, inductor and diodes using CRO Verify values of resistors and capacitors by color codes and compare with actual values. Study specification of R, L and C from data manuals. Test various passive components by analog/digital multimeter. Identify various active components by physical observation. Test various active components by analog/digital multimeter. Write specification of active components from data books. Identify various switches and relays by physical observation. Test various cable and connectors by physical observation. Test various cable and connectors. Identify various transformers. Identify various display devices by physical observation. Test various display devices by physical observation. Test various display devices. Identify various microphones and speakers by physical observation. Test various microphones and speakers. Test various types of ICs by IC tester. Practice of PCB layout drawing. Practice of faciling. Practice of soldering. Continuity testing. 	Sr.	Name of Experiment/Assignment
(Analog multimeter, Digital multimeter, CRO, Function generator and IC Tester) 2. Observe the square wave, triangular wave and sine wave generated by function generator measure their amplitude and frequencies 3. Identify various electronics components by physical observation. 4. Test resistor, capacitors, inductor and diodes using CRO 5. Verify values of resistors and capacitors by color codes and compare with actual values. 6. Study specification of R, L and C from data manuals. 7. Test various passive components by analog/digital multimeter. 8. Identify various active components by analog/digital multimeter. 10. Write specification of active components from data books. 11. Identify various switches and relays by physical observation. 12. Test various switches and relays by physical observation. 13. Identify various cable and connectors by physical observation. 14. Test various cable and connectors. 15. Identify various transformers. 16. Test various transformers. 17. Identify various display devices by physical observation. 18. Test various display devices. 19. Identify various microphones and speakers by physical observation. 20. Test various microphones and speakers. 21. Test various types of ICs by IC tester. 22. Practice of PCB layout drawing. 23. Practice of etching. 24. Practice of soldering. 26. Continuity testing. 27. Mini project (by individual student): like regulated Power Supply(Fix & Variable), bati	No.	
2. Observe the square wave, triangular wave and sine wave generated by function generator measure their amplitude and frequencies 3. Identify various electronics components by physical observation. 4. Test resistor, capacitors, inductor and diodes using CRO 5. Verify values of resistors and capacitors by color codes and compare with actual values. 6. Study specification of R, L and C from data manuals. 7. Test various passive components by analog/digital multimeter. 8. Identify various active components by physical observation. 9. Test various active components by analog/digital multimeter. 10. Write specification of active components from data books. 11. Identify various switches and relays by physical observation. 12. Test various switches and relays. 13. Identify various cable and connectors by physical observation. 14. Test various cable and connectors. 15. Identify various transformers. 16. Test various transformers. 17. Identify various display devices by physical observation. 18. Test various display devices. 19. Identify various microphones and speakers by physical observation. 20. Test various types of ICs by IC tester. 21. Test various types of ICs by IC tester. 22. Practice of PCB layout drawing. 23. Practice of soldering. 24. Practice of soldering. 25. Practice of soldering. 26. Continuity testing. 27. Mini project (by individual student): like regulated Power Supply(Fix & Variable), bati	1.	
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 24. Practice of drilling. 25. Practice of soldering. 26. Continuity testing. 27. Mini project (by individual student): like regulated Power Supply(Fix & Variable), batter 	22.	Practice of PCB layout drawing.
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26. Continuity testing.27. Mini project (by individual student): like regulated Power Supply(Fix & Variable), batter	24.	Practice of drilling.
27. Mini project (by individual student): like regulated Power Supply(Fix & Variable), batt	25.	Practice of soldering.
	26.	7 C
charger, fire alarm, Doorbell, clapswitch, running light, temperature controller etc.	27.	Mini project (by individual student): like regulated Power Supply(Fix & Variable), battery
		charger, fire alarm, Doorbell, clapswitch, running light, temperature controller etc.

*Visit to one PCB manufacturing industry

Diploma in E & TC 53

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Learning Resources:

Sr. No	Books/Software	Title	Publication
ģ	Dhir	Electronics components &	Tata Macgraw Hill
		Material	
2.	Mrs. Madhuri Joshi	Electronics Material &	
		components	
3.	Printed Circuit Boards	Walter C. Bosshart	Tata Macgraw Hill
	4 2		₹^ .
4.	Video Clip for PCB	http://www.youtube.com	Freeware
	manufacturing		
5.	Express PCB	http://www.expresspeb.com/Ex	Freeware
		pressPCBHtm/Download.htm	

(C.D.Pophale.)	(S.V.Chardhari)	(R.N.Shikari.)
Lect. In E & TC.	Member Secretary, PBOS	Chairman, PBOS