



GOVERNMENT OF TAMILNADU

DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI-25

STATE PROJECT COORDINATION UNIT

(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	FABRICATION OF HOBBY ELECTRONIC CIRCUITS
Course Code	EC/2020/002
Course Duration	60 Hours
Minimum Eligibility Criteria	10 th /+2 /ITI/Diploma/Graduate
Pre-requisites (if any)	-
Course Objectives	<p>Training module has been designed for the participants to</p> <ul style="list-style-type: none"> • Understand the Basics of Electronics • Identify the Electronic components such as resistor, capacitor, Diode, LED, IC and Transistor. • Learn the Soldering and De-soldering Procedures. • Design and testing of simple Application circuit using Discrete Electronic components.
Course Outcomes	<p>At the end of training, the trainees will be able to</p> <ul style="list-style-type: none"> • Identify the Pin details of ICs and other Electronic Components • Use appropriate tools, spares and Perform Soldering and de-soldering of the components • Fabricate application circuit using electronic components. • Repair and Diagnose the Problem of all kinds of faults in Hobby Electronic Circuits.
Expected Job Roles	Electronics Technician

TEACHING AND SCHEME OF EXAMINATION

Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
EC/2020/002	FABRICATION OF HOBBY ELECTRONIC CIRCUITS	Theory	24	10	20	3 Hours
		Practical	36	40	80	
		Total	60	50	100	

EC/2020/002 – FABRICATION OF HOBBY ELECTRONIC CIRCUITS
DETAILED SYLLABUS

Unit No	Modules	No.of.Hours	
		Theory	Practical
I	Understanding the Basics of Electronics	20 Hours	
1.1	Introduction about basic electronic components, Decoding fixed Resistor, Reading capacitor values	08	12
1.2	Identifying IC with part number, Understanding IC pin diagram		
1.3	Practical: Getting hands-on practice with hand tools, Handling of Multimeter		
1.4	Practical: Identification of terminals of electronic components – checking the condition of electronic components		
1.5	Practical: Building simple circuit on solderless breadboard, Soldering and De-soldering techniques		
1.6	Practical: Preparation for component soldering – Hands on Soldering practice in Tag board and pre-drilled strip board using basic electronic components		
1.7	Overview of SMD components		
II	Construction of Circuits	40 Hours	
2.1	Simple circuit to turn on LED, simple current amplifier circuit using NPN transistor	16	24
2.2	Water Level Indicator circuit, Dual LED Flash circuit		
2.3	Component Tester Circuit - Factory Siren, Opto Tone Circuit		
2.4	Lamp Dimmer Circuit, Attractive Night Lamp, Two Neon Lamp Blinker		
2.5	Different types of Alarm circuits		
2.6	Mosquito repellent Circuit, Musical Bell Circuit		
2.7	Main Indicator using Neon Lamp & LED Circuit, Siren Sound Generator Circuit		
2.8	Music Buzzer Circuit, Heat sensor circuit, Piano Toy		
2.9	Electronic Motor Cycle, Running light, Clap switch		
3.0	Practical : construction and Testing of above circuits		
Total Theory / Practical Hours		24	36
Total Hours		60	

HARDWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS
1	Multimeter
2	Tag Board
3	Electronic Components: Resistor, Capacitor, IC, Transistor, LED, Diode, Buzzer, Sensor, Wires
4	Soldering Rod, Iron, Paste

SOFTWARE REQUIREMENT

NIL

REFERENCE BOOKS

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1	Make Electronics: Learning through Discovery	Charles Platt	Maker Media
2	Electronics for Dummies	Gordon McComb Earl Boysen	Wiley Publishers
3	Beginners guide to Electronics	Martin Pickering	Lulu Press
4	Electronics Bazaar	Magazine	EFY Enterprises Pvt Ltd
5	Electronic Devices and Circuits	V.K Mehta	S. Chand, 2008
6	Electronic Principles	Malvino	McGraw-Hill Education
7	Electronic Devices and Circuits	Jacob Millman and Halkies	McGraw-Hill International Book Company, 1985

ASSESSMENT AND CERTIFICATION

S.No	Criteria for assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the CIICP Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the CIICP Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The passing criteria for successful completion of training is every trainee should score 50% of marks in theory and practical examination.
6.	On successful completion of training, certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnics.

END EXAMINATION

ALLOCATION OF MARKS

S.NO	Description	Max. Marks
1.	Theory Examination	20
2.	Practical Examination	
	a)Objective and Circuit Diagram	20
	b)Procedure and Connections / Execution	20
	c)Result and Viva	20
	d)Record	20
Total Marks		100

THEORY MODEL QUESTION PAPER

EC/2020/002 - FABRICATION OF HOBBY ELECTRONIC CIRCUITS

(Maximum Marks: 20)

(N.B: Answer any Twenty questions)

20x1= 20 Marks

1. What are the different types of electronic component?
2. Write any two examples of active components.
3. Write any two examples of passive components.
4. Write about Laws of resistance.
5. What is the value of capacitance marked as 101?
6. What are the types of resistor?
7. What is the use of resistor in electronic circuits?
8. What is the value of 4 band resistor with a colour of Orange Orange Red Gold.
9. Draw the symbol of variable resistor.
10. Name the terminals of SCR.
11. What are the functions of Multimeter?
12. What is the value displayed in Multimeter for an overload condition?
13. What is meant by continuity testing?
14. Name the steps to test transistor in a n electronic circuit.
15. What is meant by BC in the part number?
16. What is a breadboard?
17. Write any two materials needed for soldering.
18. Write any two materials needed for desoldering.
19. Write the components used to turn on a LED.
20. Name the methods used to measure the resistance value.
21. What is the use of 10A port in Multimeter?
22. What is meant by strip board?
23. What is meant by SMD components?
24. How do you calculate the charge stored in capacitor?
25. Give two examples of passive linear components.