GOVERNMENT OF TAMILNADU

DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI-25

STATE PROJECT COORDINATION UNIT

(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	**WIRE HARNESS DESIGN USING ARCADIA**
Course Code	**EE/2020/017**
Course Duration	40 Hours
Minimum Eligibility Criteria	10th/+2 /ITI/Diploma/Graduates
Pre-requisites (if any)	-
Course Objectives	Training module has been designed for the participants to • Understand the concept of Wire harness design. • Learn Creation of electrical diagrams with true electrical behaviour that are in right first time half the time of other 2D software tools. • Practice in Integrated checks & balances. • Practice in using of all features of Arcadia for wire Harness design.
Course Outcomes	At the end of training, the trainees will be able to • Explain the concept of wire harness design • Create electrical diagrams with true electrical behaviour in Arcadia. • Prepare Integrated Schematic and Harness in Arcadia tool • Use In-built design rule checks features of Arcadia for harness design.
Expected Job Roles	Draftsman

TEACHING AND SCHEME OF EXAMINATION						
Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
EE/2020/017	WIRE HARNESS DESIGN USING ARCADIA	Theory	21	10	20	3 Hours
		Practical	19	40	80	
		Total	40	50	100	

EE/2020/017– WIRE HARNESS DESIGN USING ARCADIA

DETAILED SYLLABUS

Unit No	Modules	No.of.Hours	
		Theory	Practical
I	**Introduction to Wire Harness Design**	**11 Hours**	
1.1	Need of harness in automotive	08	03
1.2	Consideration before designing a cable harness		
1.3	Environmental considerations - Design considerations - Other considerations		
1.4	Functional application in machinery and automotive - The benefits of a wiring harness		
1.5	Harness components		
1.6	Cost saving strategy while purchase cable harnesses		
1.7	Process flow of wiring harness design		
1.8	Bundle covering selection		
1.9	Database introduction & necessity of component database		
II	**Basics of Electrical Circuit**	**13 Hours**	
2.1	Need of tool designing	06	07
2.2	Fundamentals of circuit design		
2.3	Wire selection		
2.4	Fuse relay selection - FET switches		
2.5	Schematic design requirement		
2.6	Fundamental logics - Electrical circuit basics		
III	**Harness Creation in ARCADIA**	**16 Hours**	
3.1	Overview of harness creation	07	09
3.2	Harness creation in arcadia tool		
3.3	Bill of material		
3.4	Design rule checking		
3.5	Project implementation		
3.6	Applications		
3.7	Harness hardware overview		
3.8	Harness hardware assembly		
	Total Theory and Practical Hours	**21**	**19**
	Total hours	**40**	

HARDWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS
1	PC/Laptop

SOFTWARE REQUIREMENT

S.NO	LIST OF SOFTWARE
1	ARCADIA SOFTWARE

REFERENCE BOOKS

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1	2D Wiring Harness Design	Caresoft Global Inc	Caresoft Global Inc

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 / Program	20
	b)Procedure and Connections / Execution	20
	c)Result and Viva	20
	d) Record	20
	Total Marks	**100**

THEORY MODEL QUESTION PAPER

EE/2020/017 WIRE HARNESS DESIGN USING ARCADIA

(Maximum Marks: 20)

(N.B: Answer any Twenty questions) 20x1= 20 Marks

1. What does the word “harness” mean?
2. List the need of harness in automotive.
3. What is 2D wiring harness design?
4. What are the factors to be considered for before designing a cable harness?
5. List the benefits of a wiring harness.
6. List the major components used in harness design.
7. What are the cost saving strategies to be followed while purchase the cable harnesses?
8. Why should you choose specialist cable harnessing?
9. Write the process flow of wiring harness design in phase 1.
10. Write the process flow of wiring harness design in phase 2.
11. Write the process flow of wiring harness design in phase 3.
12. Write the necessity of component database.
13. List the various connectors used in wiring harness design.
14. List the types of terminals used in automotive industry.
15. What is plating.
16. List the types of plating used in wiring harness design.
17. What is cavity seal?
18. What is splice wiring harness design?
19. What is the use of heat shrink?
20. What is schematic circuit in wiring harness design?
21. What is the requirement of schematic design?
22. What are relays used in wiring harness design?
23. What are the factors to be considered in wire selection?
24. What are the factors to be considered in fuse selection?
25. Write the various applications of wiring harness design.