Program: **Diploma in Electrical & Electronics Engineering**	
Course Code: **3038**	Course Title: **Electrical Workshop Practice**
Semester : **3**	Credits: **1.5**
Course Category: **Program Core**	
Periods per week: **3 (L:0 T:0 P:3)**	Periods per semester: **45**

Course Objectives:

- To familiarize with the design electrical installation systems in residential buildings.
- To provide thorough knowledge in earthing of electrical systems

Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge of basics Electrical circuits		Fundamentals of Electrical & Electronics Engg	2
Basic concepts of electrical engineering		Elementary Concepts of Electrical Systems	2

Course Outcomes:

On completion of the course, the students will be able to:-

COn	Description	Duration (Hours)	Cognitive Level
CO1	Identify various wiring systems and the usage of appropriate accessories for electrification.	3	Applying
CO2	Develop and practice electrical wiring installation for illumination schemes as per IS standard for residential units.	15	Applying
CO3	Identify the tests conducted on newly constructed wiring installations and diagnose the faults in installation.	12	Applying
CO4	Select and apply proper earthing for building electrification as per IS 3043.	9	Applying
	Lab Exam	6	

CO - PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3						3
CO2				3			3
CO3				3			3
CO4				3	3		

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline

Module Outcome	Name of Experiment	Duration (Hours)	Cognitive Level
CO1	**Identify various wiring systems and the usage of appropriate accessories for electrification.**		
M1.01	Practice various safety precautions and first aid.	1	Applying
M1.02	Identify different types of wiring, wiring accessories and draw electrical symbols	1	Understanding
M1.03	Practice the usage of wire gauge, line tester, Clamp-on ammeter, test lamp, extension board and series testing board.	1	Applying
CO2	**Develop and practice electrical wiring installation for illumination schemes as per IS standard for residential units.**		
M2.01	Model a system to control two lamps controlled by two switches independently in PVC surface conduit wiring system. as per the given layout, prepare the list of items required and estimate the approximate cost	3	Applying
M2.02	Construct a staircase wiring using PVC surface conduit wiring system and estimate the cost.	3	Applying
M2.03	Develop and practice wiring installation showing control of one lamp, one fan with electronic regulator and one socket outlet from one switchboard in PVC surface conduit wiring system.	3	Applying
M2.04	Develop the wiring installation for hospital wiring using PVC surface conduit wiring system.	3	Applying
M2.05	Make use of PVC casing and caping wiring system to build go-down wiring	3	Applying

	Lab Exam-I	3	
CO3	**Identify the tests conducted on newly constructed wiring installations and diagnose the faults in installation.**		
M3.01	Plan 2 BHK residential installation scheme, estimate the materials required and draw the layout.	3	Applying
M3.02	Develop a meter board for lighting installation using energy meter, fuse, MCB, DP switch, ELCB and indicator	3	Applying
M3.03	Utilize megger to test the insulation of wiring	3	Applying
M3.04	Develop and test the lighting installation for open circuit, short circuit, polarity, insulation resistance and earth fault	3	Applying
CO4	**Select and apply proper earthing for building electrification as per IS 3043.**		
M4.01	Construct the rod earthing systems used as per IS 3043.	3	Applying
M4.02	Construct the plate earthing systems used as per IS 3043.	3	Applying
M4.03	Make use of earth tester/earth megger to measure the resistance of the existing earthing arrangement	3	Applying
	Lab Exam -II	3	

Text /Reference:

T/R	Book Title/Author
T1	Electrical wiring and estimating and costing -S L Uppel -Khanna publications
R1	Electrical Design Estimating and Costing, K. B. Raina, New Age International
R2	Fundamentals of maintenance of electrical equipment -K .B Bhatia Khanna Publications
R3	Electric Wiring for Domestic Installers- Brian Scaddan- Publisher**:** Routledge

Online Resources:

Sl. No	Website Link
1	http://www.ceikerala.gov.in/index.php/act-and-rules
2	http://www.kseb.in/index.php?lang=en

3	https://www.cpwd.gov.in/
4	http://www.cercind.gov.in/
5	https://www.testequipmentdepot.com/megger/pdf/earth-resistance-testing_guide.pdf
6	IS 732 https://standardsbis.bsbedge.com/BIS_SearchStandard.aspx?Standard_Number=IS%20732&id=14292
7	IS 732 :http://pelsa.in/uploads/143-1.pdf

Student Activity

Suggested Open-ended Experiments:

Students can do open ended experiments as a group of 3-5. There is no duplication in experiments between groups. This is mainly for the purpose of continuous internal evaluation and a score of 15 marks. Students should prepare a separate report on the open ended experiment of their choice.

Example: 1. Model a residential wiring system .