GANPAT UNIVERSITY

FACULTY OF DIPLOMA ENGINEERING

Programme	Diploma in Electrical Engineering				
Semester	III		Version	1.0.0.0	
Effective from Academic Year	2026-27		Effective for the batch Admitted in		JULY 2025
Course code	1EE3106	Course Name	Installation and Testing of Electrical Appliances		

I. TEACHING-LEARNING AND ASSESSMENT SCHEME

Course Type	Course code	Course Title	Teaching & Learning Scheme									Examination Scheme							
			Credit				Actual Contact Hrs/week			SLH	Total Learning Hrs/Week	TH			PR			SLA	Total
			CL	TL	LL	Total	CL	TL	LL			CE	SEE	Total	CE	SEE	Total		
SEC	1EE3106	Installation and Testing of Electrical Appliances	0	0	1	5	1	0	2	2	4	0	0	0	30	20	50	20	70

Abbreviation:	**CL-** Classroom Learning	**TL -** Tutorial Learning	**LL -** Laboratory Learning
	SLH - Self Learning Hours	**SLA -** Self Learning Assessment	**SA -** Summative Assessment
	CE – Continuous Evaluation		**SEE –** Semester End Examination

II. PRE-REQUISITES

Basic knowledge of electrical engineering fundamentals, ability to identify and use basic electrical tools and awareness of standard electrical symbols and basic wiring components

III. INDUSTRY / EMPLOYER EXPECTED OUTCOMES

The aim of this course is to enable students to achieve the following industry-identified outcomes through diverse teaching and learning experiences:

- Install common domestic and small commercial electrical appliances as per wiring diagrams and manufacturer manuals.
- Perform routine testing, fault finding and basic repair of electrical appliances using standard test instruments.

IV. COURSE LEARNING OUTCOMES

At the end of the course, students will be able to achieve the following course learning outcomes:

CO1. Identify construction, nameplate details and ratings of common household and small industrial electrical appliances.

CO2. Select appropriate accessories, cables, protective devices and tools for installation of electrical appliances.

CO3. Carry out safe installation and wiring of single-phase electrical appliances including proper earthing and protection.

CO4. Test insulation resistance, continuity, polarity, earthing and performance parameters of installed appliances using standard instruments.

CO5. Diagnose common faults and undertake basic maintenance/repair of electrical appliances in accordance with safety norms.

V. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL

Sr. No.	Practical/Laboratory Learning Outcome (LLO)	Practical Titles	Relevant COs
1	**LLO 1.1** Identify tools, accessories and safety devices used in installation of electrical appliances.	Identification of Electrical Tools and Accessories.	CO1, CO2
2	**LLO 2.1** Interpret nameplate data and connection diagrams of common electrical appliances.	Study of Nameplate Details of Household Appliances	CO1

3	**LLO 3.1** Prepare and test extension board/socket outlet for appliance connection.	Wiring of Portable Extension Board	CO2, CO3
4	**LLO 4.1** Install and test ceiling fan with regulator and proper earthing.	Installation of Ceiling Fan with Regulator	CO3, CO4
5	**LLO 5.1** Install and test electric geyser with appropriate protection and earthing.	Installation of Electric Geyser	CO3, CO4
6	**LLO 6.1** Perform insulation resistance and continuity tests on appliance circuits.	Insulation and Continuity Testing using Megger	CO4
7	**LLO 7.1** Measure current, voltage and power of single-phase appliance under load.	Performance Testing of Electrical Appliances	CO4
8	**LLO 8.1** Test polarity and earthing of socket outlets and appliance connections.	Polarity and Earth Continuity Testing	CO4
9	**LLO 9.1** Diagnose and rectify common faults in lighting circuits.	Fault Finding in Lighting Circuits	CO5
10	**LLO 10.1** Diagnose and rectify common faults in fan circuits.	Fault Finding in Ceiling Fan Circuits	CO5
11	**LLO 11.1** Diagnose faults and perform basic repair in electric iron.	Fault Finding and Repair of Electric Iron	CO5
12	**LLO 12.1** Diagnose faults and perform basic repair in mixer/grinder.	Fault Finding and Repair of Mixer Grinder	CO5
13	**LLO 13.1** Connect power supply and test basic operation of window air conditioner with stabilizer.	Connection and Installation of Air Conditioner (AC)	CO3, CO4
14	**LLO 14.1** Wire washing machine power cord with plug, socket and leakage tester check.	Installation and Wiring of Washing Machine	CO3, CO4
15	**LLO 15.1** Check power supply, fuse and door switch operation of microwave oven.	Basic Testing of Microwave Oven	CO4, CO5
16	**LLO 16.1** Prepare installation and testing report for electrical appliances.	Preparation of Installation Test Report	CO2, CO4, CO5

VI. SUGGESTED MICRO PROJECT / ASSIGNMENTS / ACTIVITIES FOR SELF LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

- Prepare a report on different types of electrical accessories (switches, sockets, plugs, holders, lamp fittings, ceiling roses, etc.) used in domestic installations.
- Survey different types of household electrical appliances available in the local market and compare ratings, efficiency and safety features.
- Prepare a checklist for safe installation and testing of a ceiling fan / geyser / water pump.

Mini projects

- Smart Home Wiring Layout
- Appliance Energy Audit
- Earthing Effectiveness Study

VII. LIST OF INSTRUMENTS / EQUIPMENT / TRAINER BOARD

1	Single-phase energy meters, ammeters, voltmeters, wattmeter’s and clamp meters.

2	Digital multi-meters and insulation resistance testers (meggers).
3	Continuity testers, test lamps, line testers and earth testers.
4	Ceiling fan, table fan, exhaust fan, domestic water pump, electric iron, mixer/grinder, electric geyser and lamp holders with various lamps.
5	Wiring boards/trainer boards with switches, sockets, regulators, MCBs, ELCBs and junction boxes for practice.
6	Tool kits: screwdrivers set, pliers, wire strippers, cutters, crimping tools, drill machine and related accessories.
7	Cables and wires of different sizes, lugs, glands, conduits, PVC casing–capping and accessories.
8	Window AC (1.5 ton trainer model with plug connection board) - 1 No.
9	Washing machine (trainer model with terminal block for wiring practice) - 1 No.
10	Microwave oven (trainer model with accessible fuse/door switch) - 1 No.
11	Voltage stabilizer (1-5 KVA, single phase) - 2 Nos.
12	15/32A heavy-duty plug-socket set with 4/6 sq.mm cable - 5 sets

VIII. LIST OF REFERENCE BOOKS

Sr.No.	Title	Author	Publication
1	Electrical Wiring, Estimating and Costing	S. L. Uppal, J. B. Gupta	Standard publishers
2	Electrical Installation Work	Brian Scaddan, Newnes	Elsevier
3	Basic Electrical Engineering	V. N. Mittle & Arvind Mittal	Tata McGraw Hill
4	Handbook of Electrical Installation Practice	Geoffrey Stokes	Wiley

IX. LINK OF LEARNING WEB RESOURCE

1	https://www.electrical4u.com
2	https://electrical-engineering-portal.com
3	https://nationalsafetycouncil.org

X. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE

Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	Basics of appliances, ratings and nameplates	CO1	4	1	1	2	4
2	Tools, accessories and protection devices	CO1, CO2	6	2	2	2	6
3	Domestic wiring and appliance installation	CO2, CO3	12	4	4	4	12
4	Testing, measurement and performance evaluation	CO3, CO4	10	3	3	4	10
5	Fault finding, maintenance and documentation	CO4, CO5	8	2	2	4	8
		Grand Total	40	12	12	16	40

XI. COs AND POs AND PSOs MAPPING

Course outcome (Cos)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	1	2	0	3	1	2	1	1	0	1
CO2	2	1	1	3	1	2	1	2	1	2
CO3	2	3	2	3	2	1	2	2	3	1
CO4	1	3	2	3	1	2	2	2	1	1
CO5	1	3	1	2	1	2	3	3	1	1
Legends: - *3- High* *2-Moderate/Medium* *1-Slight/Low* *0-None*										