

Semester – I

Subject Name: Electrical Practice

Subject Code: 09EE3102

Diploma Branches in which this subject is offered: Electrical Engineering

Objective: To provide students with hands-on experience and practical skills in electrical systems, enabling them to design, analyze, and troubleshoot electrical circuits and equipment, while also emphasizing safety and industry standards.

Credits Earned: 2 Credits

Course Outcomes: After learning the course the students should be able:

1. To apply appropriate electrical safety practices and fire hazard prevention to minimize accidents, equipment damage, and risk to human life.
2. To apply appropriate protective devices based on electrical load requirements and utilize electrical symbols, wires, and cables in residential and industrial wiring diagrams.
3. To understand, select and effectively use appropriate tools as per requirement of electrical work.
4. To understand, select and effectively use appropriate measuring instruments as per requirements.

Pre-requisite of course: Basic knowledge of physics.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
0	0	4	2	00	30	20	25	25	100

List of Experiments:

Sr. No.	Name of Experiment	Contact Hours
1	To understand electric hazards & safety, safety rules and application of electrical personal protective equipments.	2
2	To understand electric shock, its effect and precaution using Silvester's method, Eve's rocking method, Modern month-to-mouth respiration method and Artificial resuscitator.	2
3	Identify various type of fire and select suitable fire extinguishers as per class of fire.	2
4	Identify the different symbols and abbreviations used in electric network.	2

5	Use various tools such as Bearing Puller, Pipe Bender, Pipe Cutter, Pipe Wrench, Chisel, Spanners, Wrenches, Soldering Instruments, Poker, Electric Hand Drills, Hacksaw, Mallet, Hand Tongs, Tester, Continuity Tester, Test lamp, Screwdriver, Electrician's Knife, Files, Pliers, Cutter, Crimping tool, Poker, Hammer, Hand Drill, Drilling Machine, Spirit Level etc. for electric work and study color code for electric wire.	4
6	Identify different types of wires; single strand wire, multi strand wire, shielded wire, multi core wire etc. and make wire joints.	2
7	Identify different types of switches used for different application as per current and voltage rating; SPST, SPDT, DPST, DPDT, two-way switch, multi point switch, rotary switch, heavy duty switch, toggle switch, push button etc. and Distribution board used for electric network; LDB, DCDB, MDB, HDB, ASB, MLDB, MCB, MCCB etc.	4
8	Identify the different classes of sockets and plugs according to standards (IEC, CEE, NEMA, BS etc.) and understand their applications.	2
9	Identify different types of fuses, such as Re-wireable, HRC (High Rupturing Capacity), and Kit-Kat, and demonstrate operation of fuse.	2
10	Understand concept of lamp with power rating and illumination, also use fixtures & reflectors for lightening purpose.	2
11	Identify and use materials required for wiring; wire ties, Lag, Glands, wire tray, Ferrules, Strip connectors, etc.	4
12	To prepare house wiring diagram and understand different method of wiring.	4
13	To understand internal electric wire connection, working and repair different electric home appliances; Lamps, CFL, Fluorescent tubes light and type, LED, Fan and energy saving by fan, Refrigerator, Washing machine, Toaster, LED etc.	8
14	To prepare extension board as per requirement and draw house wiring diagram.	2
15	To use measuring instrument for measurement electric parameters; voltmeter, Ammeter, Multimeter, Wattmeter, Frequency meter, Clip-on-meter, Megger, Energy meter, Earth tester, Test lamp and Tachometer etc.	6
16	To understand general techniques for trouble-shooting and repairing of electrical home appliance and equipment.	2
17	Practice breadboard and soldering to prepare electric circuit on PCB.	4

References:

1. R. P. Singh, "*Electrical Workshop*", I.K. International Publishing House Pvt. Ltd., 2013
2. G. K. Mithal, "*Electrical Engineering Materials*", Khanna Publication, 2011
3. Singh, S. K. Surjit, "*Electrical Engineering Drawing I & II*", Kataria & Sons, 2012
4. S.L. Bhatia, "*Handbook of Electrical Engineering*", Khanna Publication, 2012
5. S. L. Uppal & G. C. Garg, "*Electrical Wiring, Estimating and Costing*", Khanna Publication, 2012

Instructional Method:

- a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory.
- c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

1. <http://nptel.ac.in/courses/108108076/>
2. <http://nptel.ac.in/downloads/108105053/>
3. <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/video-lectures/>
4. <https://www.facstaff.bucknell.edu/mastascu/eLessonsHTML/EEIndex.html>
5. <http://www.electrical4u.com/nature-of-electricity/>