

COURSE TITLE	ELECTRICAL WORKSHOP
COURSE CODE	01EE1113
COURSE CREDITS	1

Objective:

- 1 Students of electrical allied programs will work with various types of electrical and electronic components and systems. Students should understand hazards related to electrical systems and should always work within safe working conditions. Students of these branches should also be connected to circuits even on Printed Circuit Boards. The student should also develop a skill required to identify faults and repairing of the same. This course deals with a basic introduction to system components of electrical and electronic systems and provides hands-on practice in assembling, interconnecting, testing, and repairing such systems by making use of various tools used in the electrical and electronic workshops.
- 2 The aim of this course is to equip students with the necessary skills to utilize a variety of tools and methodologies fundamental to the field of electrical engineering

Course Outcomes: After completion of this course, student will be able to:

- 1 Understand usage of different types of electrical & electronics tools, Cables, Switches, Electronics components, and measuring instruments (Understand)
- 2 Study the application of fuse, MCB, and ELCB as protective devices. (Remember)
- 3 Design circuits for Staircase wiring, Godown wiring, and induction motor starters. (Create)
- 4 Carry out soldering & de-soldering of electronics components on the General Purpose Board. (Apply)
- 5 Design hardware-based project and troubleshoots the problems of related project. (Analyze)

Pre-requisite of course:Na

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	0	0	25	25
Contents : Unit	Topics						Contact Hours
Total Hours							

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Experiment NO. 01 To study the symbols of various electrical and electronic equipment.	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
2	Experiment NO. 02 To understand the use of various laboratory equipment like DC supply, function generator, DSO, Multimeter, wattmeter, etc.	2
3	Experiment NO. 03 To know about the different types of switches, indicators, and cables used in domestic wiring and panel wiring	2
4	Experiment NO. 04 To design and verify the staircase wiring and godown wiring.	2
5	Experiment NO. 05 To identify the components and pins of various electronic components like resistors, capacitors, diodes, LEDs, Transistors, etc.	2
6	Experiment NO. 06 Solder and de-solder electronic components on general-purpose board.	2
7	Experiment NO. 07 To study the various protecting devices.	2
8	Experiment NO. 08 To understand the Arduino microcontroller and its software interface	2
9	Experiment NO. 09 To develop and verify the code of LED blinking using Arduino	2
10	Experiment NO. 10 To interface the infrared object sensor with Arduino for object detection.	2
11	Experiment NO. 11 To use the Multisim for simulation of electrical and electronics circuits	2
12	Experiment NO. 12 Demonstration of MATLAB Simulink and Script for electrical simulation and analysis.	2
13	Experiment NO. 13 Demonstration of Electrical AutoCAD software for the drawing of electrical wiring.	2
Total Hours		26

Textbook :

- 1 Textbook of Electric Wiring, S.Samaddar, New Central Book Agency (P) Ltd, 2007
- 2 Textbook of Electrical Design Estimating and Costing, Surjit Singh, Dhanpat Rai & Sons, 1998
- 3 Textbook of Principles and Reliable Soldering Techniques, Sengupta R, New Age International Ltd., 1997
- 4 Textbook of Electrical Technology Vol – III, B. L. Theraja, A. K Theraja, S. Chand Publishers., 2013

References:

- 1 Fundamentals of Maintenance of Electrical Equipments, Fundamentals of Maintenance of Electrical Equipments, K.B.Bhatia, Khanna Publishers, 2014
- 2 Electronic Product Design Vol – I, Electronic Product Design Vol – I, Mehta S. D, S. Chand Publishers, 2013
- 3 Projects in Electrical, Electronics, instrumentation and Computer Engineering, Projects in Electrical, Electronics, instrumentation and Computer Engineering, S Chatterjee & S K Bhattacharya, S. Chand Publishers, 2012

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching methods, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs, etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory
- 3 Practical examinations will be conducted at the end of the semester to evaluate the performance of students in the laboratory.

Supplementary Resources:

- 1 https://www.services.bis.gov.in/php/BIS_2.0/BISBlog/national-electrical-code-of-india-2023/
- 2 <https://www.tek.com/en/documents/primer/setting-and-using-oscilloscope>