

NIRMA UNIVERSITY
Institute of Technology
Electrical Engineering Department
(Course Offering for B. Tech. All Branches)
(Semester – I/II)
w.e.f.: Academic Year 2018-19

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Course Code	EE104
Course Title	Electrical Workshop

Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. identify and propose appropriate electrical and electronic components for relevant applications,
2. select and make use of various laboratory equipment,
3. build simple domestic and industrial wiring systems,
4. apply basic maintenance and troubleshooting skills to house hold electrical appliances,
5. extend the awareness about safe practices in electrical systems.

Syllabus:	Teaching Hours
Unit-1 Wiring Techniques Designing of domestic and industrial wiring, selection of wire, load calculations	02
Unit-2 Introduction to Electronic Components Study of various electronic components like, power and signal diodes, zener diodes, BJTs, FETs, LED, LDR, Photo diode, Photo transistor, SMD components, general purpose ICs, use of bread board	04
Unit-3 Lab Equipment CRO, DC regulated power supply, function generator, multimeter, single-phase and three-phase auto-transformer (variac)	04
Unit-4 Introduction to Electrical Components Study of different types of switches, solid state and electromagnetic relays, contactors, rheostats, different types of capacitors, resistors, variable inductor (choke) etc.	04
Unit-5 Soldering Techniques Basics of soldering techniques, effectiveness of soldering and problem associated with soldering, general purpose board soldering.	02
Unit-6 Basics of Household Electrical Equipment rewiring / replacement of fuse, switch board layout, functioning of switch, fan regulator, tube light, electric iron, electric heater	04
Unit-7 Electrical Safety and Protection Safety, electric shock, safety protections in electrical laboratory, methods of earthing, protective devices - fuses, MCB, ELCB and relays	04
Unit-8 Designing of Electrical Panel Basic design steps and criteria, selection of various components, layout of panel, ferruling, crimping, lugging, annunciation, display, mimic, meter mounting etc.	04

Unit-9 Introduction to DC Machine**02**

Study of various parts of DC machine, operation of DC machine as DC motor

Laboratory Work

Laboratory work will be based on above syllabus with minimum 10 experiments to be incorporated.

Suggested Readings:

1. Mr. S.Samaddar, Textbook of Electric Wiring, New Central Book Agency (P) Ltd., Calcutta.
2. Surjit Singh, Textbook of Electrical Design Estimating and Costing, Dhanpat Rai & Sons
3. Sengupta R., Textbook of Principles and Reliable Soldering Techniques, New Age International Ltd.
4. B. L.Theraja, A. K Theraja, Textbook of Electrical Technology Vol – III, S. Chand Publishers.
5. K.B.Bhatia, Textbook of Fundamentals of Maintenance of Electrical Equipments, Khanna Publishers.
6. Er. Mehta S. D., Textbook of Electronic Product Design Vol – I, S. Chand Publishers.
7. Dr.S.K.Bhattacharya, Dr. S.Chatterji, Textbook of Projects in Electrical, Electronics, Instrumentation and Computer Engineering, S. Chand Publishers., New Delhi.
8. National Electrical Code: Bureau of Indian Standards, Govt. Of India, 2011.
9. Operating Manuals of Various Equipments.