

Course Name: Electrical Level III

Contact Hours: 144

Number of Sessions: 48

Number of Hrs. /Session: 3

Mode of Instruction: Classroom, Virtual, or Online

Course Description:

Level 3 covers additional OSHA construction safety rules, Chapter 4 of the NEC, and common industrial applications, methods, and requirements. While motors and motor controls are a major area of focus, hazardous locations, special applications, and Solar (PV) Photovoltaic and Energy Storage Systems, are also introduced.

Text: ► Mike Holt's Understanding the National Electrical Code, Volume 1 Mike Holt Enterprises ISBN 978-1-950431-77-9, 2023 ► Mike Holt's Understanding NEC Requirements for Bonding and Grounding Mike Holt Enterprises ISBN 978-1-950431-74-8, 2023 ► Mike Holt's Understanding the National Electrical Code, Volume 2 Mike Holt Enterprises ISBN 978-1-950431-78-6, 2023 ► OSHA Construction Safety Training Handbook, 6th Edition J.J. Keller & Associates, ISBN 978-1-60287-891-4, 2010 ► Mike Holt's Understanding NEC Requirements for Solar Photovoltaic (PV) and Energy Storage Systems Mike Holt Enterprises ISBN 978-1-950431-75-5, 2023 ► Mike Holt's Understanding Basic Motor Controls Mike Holt Enterprises ISBN 978-0-9992038-4-2, Revised Edition

Course Outline and Modules:**Module I (Sem 1)**

Session 1: Introduction | Orientation | Tool Safety Level 3

Session 2: OSHA Construction Safety — Electrical Safety and PPE

Session 3: OSHA Construction Safety — Excavation / Motor Vehicles / Tool Safety

Session 4: NEC — Articles 400 and 402 Flexible Cords and Cables, and Fixture Wires

Session 5: NEC — Articles 404 and 406 Switches and Receptacles

Session 6: NEC — Article 408 Switchboards, Switchgear, and Panelboards

Session 7: NEC — Articles 410 and 411 Luminaires and Low-Voltage Lighting Systems

Session 8: NEC — Articles 410 and 411 Luminaires and Low-Voltage Lighting Systems

Session 9: NEC — Article 422 Appliances

Session 10: NEC — Articles 424 and 440 Electric Space-Heating and AC Equipment

Session 11: NEC — Articles 445 and 450 Generators, Transformers

Session 12: Module Review

Session 13: Module Quiz

Module II (Sem 1)

Session 1: Bonding and Grounding — Electrical Theory Units 1–4, 6, and 25

Session 2: Bonding and Grounding — NEC Article 250 Part I

Session 3: Bonding and Grounding — NEC Article 250 Part II

Session 4: Bonding and Grounding — NEC Article 250 Part III

Session 5: Bonding and Grounding — NEC Article 250 Part IV

Session 6: Bonding and Grounding — NEC Article 250 Part V

Session 7: Bonding and Grounding — NEC Article 250 Parts VI and VII

Session 8: NEC — Articles 500–502, 511, and 514 Hazardous Locations; Commercial Garages; Motor Fuel Dispensing

Session 9: NEC — Articles 517, 518, 525, and 547 Health Care Facilities; Assembly Occupancies; Carnivals, Circuses, Fairs; Agricultural Buildings

Session 10: NEC — Article 555 Marinas and Boatyards

Session 11: NEC — Article 590 Temporary Installations

Session 12: Module Review

Session 13: Module Quiz

WINTER BREAK

Module III (Sem 2)

Session 1: NEC — Articles 600, 604, and 620 (Electric Signs, Manufactured Wiring Systems, Elevators)

Session 2: NEC — Articles 630, 640, and 645 (Electric Welders, Audio Signal Processing, Information Technology Equipment)

Session 3: NEC — Article 680 (Swimming Pools, Spas, Hot Tubs, etc.)

Session 4: NEC — Articles 700, 701, and 702 (Emergency, Legally Required, and Optional Standby Systems)

Session 5: NEC — Articles 722, 724, 725, 760, 770 (Cables for Power-Limited Circuits, Class 1 and 2 Power-Limited Circuits, Fire Alarm Systems, Optical Fiber Cables)

Session 6: NEC — Articles 800, 810 (Communications Systems, Antenna Systems)

Session 7: NEC — Articles 625, 690 (Electric Vehicle Power Transfer Systems, Solar Photovoltaic (PV) Systems 1)

Session 8: NEC — Article 690 (Solar Photovoltaic (PV) Systems 2)

Session 9: NEC — Articles 691, 705 (Large Scale Solar Photovoltaic (PV) Systems, Interconnected Electric Power Production Sources (IEPPS))

Session 10: NEC — Articles 705, 480, and 706 (IEPPS, Storage Batteries, and Energy Storage Systems (ESS))

Session 11: NEC — Articles 706, 710, and 750 (Energy Storage, Stand-Alone, and Energy Management Systems)

Session 12: Module Review

Session 13: Module Quiz

Module IV (Sem 2)

Session 1: Motor Controls — Units 1–3 Introduction to Motor Controls

Session 2: Motor Controls — Units 4–8 Motor Controls and Schematics 1

Session 3: Motor Controls — Units 9–10 Motor Controls and Schematics 2

Session 4: Motor Controls — Units 11–12 Reversing Controls 1

Session 5: Motor Controls — Units 13–14 Reversing Controls 2

Session 6: Motor Controls — Units 15–16 Controls for Multiple Motors

Session 7: Motor Controls — Units 17–20 Miscellaneous Requirements

Session 8: NEC — Article 430 Parts I–V

Session 9: NEC — Article 430 Parts VI, VII, IX, X, XIV

Session 10: Module Review

Session 11: Module Quiz

Session 12: Level 3 Review

Session 13: Level 3 Exam