

# IEC's Electrical Apprenticeship Program

## 2nd Year Course Outline



### *First Semester*

Orientation, Safety, Introduction to Meters, Feeder/Branch Circuits

Service Calculations

Services

Conductor and Overcurrent Protection

Grounding and Bonding Part I

Grounding and Bonding Part II

Wiring Methods

Wiring Materials, Conduit and Box Fill

Semester Mid-Term Review and Exam

Switches, Switchboards, and Panelboards

Equipment for General Use

Introduction to AC Theory

AC Theory I

AC Theory II

Single-Phase Transformers Part I

Single-Phase Transformers Part II

Semester Exam Review

Semester Exam

### *Second Semester*

Power Generation – Three-Phase Transformers, Circuits, and Calculations

3Ø Transformers – Delta-Delta

3Ø Transformers – Delta-Wye

Transformers for Non-Linear Loads – 3Ø Fault Currents – Voltage Drop

NEC® Requirements for Transformers

Buck-Boost Transformers: Single - and Three-Phase

Buck-Boost Transformers: Connection and Selection

Generators and Transfer Switches

Mid-Term Exam

Electric Motors – DC and 1Ø AC

Electric Motors – Polyphase

Motors: General Knowledge and Sizing Branch Circuit Conductors

Motor Branch Circuit Overcurrent Protective Devices: Short Circuit and Ground Fault Protection

Motor: Branch Circuit Grounding Conductors, Disconnects, Starters, and Overload Protection

Locked Rotor Current and Phase Loss for Motors-A/C and Refrigeration Equipment Generators and Fire Pumps

Motor Feeder Conductors, OCPDs, and Taps – Motor Branch Circuit Conductors and OCPDs

Final Exam Review

Final Exam



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