

Core Curriculum

3rd Year Syllabus

2021-2022 OREJATC



Core Curriculum: Course Selection Per Year

3rd Year Core		
	Code, Standards, and Practices 3, Based on the 2020 NEC	2
	Rigging, Hoisting, and Signaling, Level I	2
	Electrical Safety-Related Work Practices, Level I, Based on the 2018 70E	2
	Electrical Safety-Related Work Practices, Level II, Based on the 2018 70E	2
	Grounding and Bonding, Level I, Based on the 2020 NEC	2
	Grounding and Bonding, Level II, Based on the 2020 NEC	2.5
	Fire Alarm Systems, Level I, Based on the 2020 NEC	2
	Fire Alarm Systems, Level II, Based on the 2020 NEC	2
	Transformers, Level II, Based on the 2017 NEC - 2nd Ed.	2
	Transformers, Level III - 2nd Ed.	1
	Semiconductors, Level I	2
	Blueprints, Level III	1

Core Curriculum: 3rd Year Core Courses

	Credits	Page	Date
Code, Standards, and Practices 3, Based on the 2020 NEC			
J233LM.L	2.0	1	
Rigging, Hoisting, and Signaling, Level I			
J241LM.J1	2.0	2	
Electrical Safety-Related Work Practices, Level I, Based on the 2018 70E			
J444LM.L1	2.0	3	
Electrical Safety-Related Work Practices, Level II, Based on the 2018 70E			
J444LM.L2	2.0	4	
Grounding and Bonding, Level I, Based on the 2020 NEC			
J210LM.L1	2.0	4	
Grounding and Bonding, Level II, Based on the 2020 NEC			
J210LM.L2	2.5	5	
Fire Alarm Systems, Level I, Based on the 2020 NEC			
J211LM.L1	2.0	6	
Fire Alarm Systems, Level II, Based on the 2020 NEC			
J211LM.L2	2.0	7	
Transformers, Level II, Based on the 2017 NEC - 2nd Ed.			
J205LM.I2_17	2.0	7	
Transformers, Level III - 2nd Ed.			
J205LM.I3	1.0	8	
Semiconductors, Level I			
J215LM.H1	2.0	8	

Core Curriculum: 3rd Year Core Courses

	Credits	Page	Date
Blueprints, Level III			
J244LM.I3	1.0	9	

Core Curriculum: Course Level and Credit Summary

Code, Standards, and Practices 3, Based on the 2020 NEC

Item Code: J233LM.L

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): Code, Standards, and Practices 2, Level II

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2020 (S1050)***

- Lesson 1 Purpose of Overcurrent Protection and Types of Overcurrents
- Lesson 2 Overcurrent Protective Device Categories
- Lesson 3 Overcurrent Protective Device Ratings
- Lesson 4 Types of OCPDs—Circuit Breakers
- Lesson 5 Types of OCPDs—Fuses
- Lesson 6 Practical Guidelines for OCPD Ampere Rating Sizing
- Lesson 7 Special Conductor Overcurrent Protection Permitted, Including Taps
- Lesson 8 Calculation of Available Fault Current
- Lesson 9 Panelboards, Switchboards, and Switchgear SCCR—NEC 408.6

Core Curriculum: Course Level and Credit Summary

Rigging, Hoisting, and Signaling, Level I

Item Code: J241LM.J1

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): None

Other Prerequisites: 4000 Hours of OJT

Required Material(s):

- *Rigging, Hoisting, Signaling Practices Textbook (S661)*

- Lesson 1 Hoisting Safety
- Lesson 2 Cranes
- Lesson 3 Lift Planning
- Lesson 4 Signaling
- Lesson 5 Load Weight and Balance
- Lesson 6 Slings and Sling Hitches
- Lesson 7 Rigging Equipment Maintenance
- Lesson 8 Rigging Hardware
- Lesson 9 Chains and Chain Slings
- Lesson 10 Synthetic Slings
- Lesson 11 Wire Rope and Wire Rope Slings
- Lesson 12 Fiber Rope and Knots
- Lesson 13 Block and Tackle
- Lesson 14 Hoists

Core Curriculum: Course Level and Credit Summary

Electrical Safety-Related Work Practices, Level I, Based on the 2018 70E

Item Code: J444LM.L1

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

- *Electrical Safety-Related Work Practices Textbook (S844)*

- Lesson 1 Electrical Safety Culture
- Lesson 2 Electrical Hazard Awareness
- Lesson 3 OSHA Considerations
- Lesson 4 Introduction to Lockout, Tagging, and the Control of Hazardous Energy
- Lesson 5 Fault Current Fundamentals

Electrical Safety-Related Work Practices, Level II, Based on the 2018 70E

Item Code: J444LM.L2

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): Electrical Safety-Related Work Practices, Level I

Other Prerequisites: None

Required Material(s):

- *Electrical Safety-Related Work Practices Textbook (S844)*

- Lesson 1 Introduction to *NFPA 70E*®
- Lesson 2 Justification, Assessment, and Implementation of Energized Work
- Lesson 3 Identifying OCPD Types
- Lesson 4 Methods to Select Arc Flash PPE
- Lesson 5 Maintenance Considerations
- Lesson 6 Eliminating or Reducing Hazards by Design and Upgrades

Core Curriculum: Course Level and Credit Summary

Grounding and Bonding, Level I, Based on the 2020 NEC

Item Code: J210LM.L1

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): AC Theory, Level II/III

Other Prerequisites: None

Required Material(s):

• *Grounding and Bonding Textbook (S36820)*

• *National Electrical Code - 2020 (S1050)*

- Lesson 1 Introduction
- Lesson 2 Circuit Basics and Overcurrent Protection
- Lesson 3 **Code** Arrangement and Application
- Lesson 4 Grounding Electrodes and the Grounding Electrode System
- Lesson 5 Requirements for Services and Grounded Conductors
- Lesson 6 Grounding Electrode Conductors
- Lesson 7 Bonding Requirements
- Lesson 8 Equipment Grounding Conductors (EGCs)
- Lesson 9 Grounding Electrical Equipment
- Lesson 10 Isolated (Insulated) Grounding Circuits and Receptacles

Core Curriculum: Course Level and Credit Summary

Grounding and Bonding, Level II, Based on the 2020 NEC

Item Code: J210LM.L2

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.5

Course Prerequisite(s): Grounding and Bonding, Level I

Other Prerequisites: None

Required Material(s):

- ***Grounding and Bonding Textbook (S36820)***
- ***National Electrical Code - 2020 (S1050)***
- ***Test Instruments and Applications Textbook (S571)***

- Lesson 1 Grounding at Separate Buildings or Structures
- Lesson 2 Grounding Electrical Systems
- Lesson 3 Grounding Requirements for Separately Derived Systems
- Lesson 4 Special Occupancies and Conditions
- Lesson 5 Grounding Special Equipment
- Lesson 6 Grounding and Bonding for Communications Systems and Equipment
- Lesson 7 Ground-Fault Circuit Interrupters (GFCI) and Ground-Fault Protection of Equipment (GFPE)
- Lesson 8 Grounding Rules for Medium- and High-Voltage Systems
- Lesson 9 Grounding Systems and Earth Ground Test Instruments

Core Curriculum: Course Level and Credit Summary

Fire Alarm Systems, Level I, Based on the 2020 NEC

Item Code: J211LM.L1

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): DC Theory, Level I/IV; Job Information, Level I

Other Prerequisites: None

Required Material(s):

• *Fire Alarm Textbook (S946)*

• *National Electrical Code - 2020 (S1050)*

Lesson 1	Introduction to Fire Alarm Systems
Lesson 2	Fundamentals and System Requirements
Lesson 3	Initiating Devices
Lesson 4	Notification Appliances
Lesson 5	Wiring and Wiring Methods
Lesson 6	System Interfaces and Safety Control Functions
Lesson 7	Emergency Communications Systems and Emergency Voice/Alarm Communications Systems
Lesson 8	Plans and Specifications

Fire Alarm Systems, Level II, Based on the 2020 NEC

Item Code: J211LM.L2

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): Fire Alarm Systems, Level I

Other Prerequisites: None

Required Material(s):

• *Fire Alarm Textbook (S946)*

Lesson 1	Advanced Detection Topics
Lesson 2	Public Emergency Alarm Reporting Systems and Supervising Stations
Lesson 3	Single- and Multiple-Station Alarms and Household Fire Alarm Systems
Lesson 4	Inspection, Testing, and Maintenance

Core Curriculum: Course Level and Credit Summary

Transformers, Level II, Based on the 2017 NEC - 2nd Ed.

Item Code: J205LM.I2_17

Core Curriculum Year: 3

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): Code Calc Lvl II OR Elec Code Calc Lvl I; Transformers, Level I

Other Prerequisites: None

Required Material(s):

- *Transformers Principles and Applications Textbook (S476)* • *Code Calculations Textbook - 2017 (S00817)*
- *National Electrical Code - 2017 (S950)*

- Lesson 1 Reactors and Isolation Transformers
- Lesson 2 Autotransformers
- Lesson 3 Buck-Boost Transformers
- Lesson 4 Understanding Transformer Overcurrent Protection
- Lesson 5 Transformer Overcurrent Protection with Associated Tap Rules

Transformers, Level III - 2nd Ed.

Item Code: J205LM.I3

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

Course Prerequisite(s): Transformers, Level I

Other Prerequisites: None

Required Material(s):

- *Transformers Principles and Applications Textbook (S476)*

- Lesson 1 Electrical Safety
- Lesson 2 Special Transformers
- Lesson 3 Special Connections
- Lesson 4 Selection and Installation
- Lesson 5 Maintenance and Troubleshooting

Core Curriculum: Course Level and Credit Summary

Semiconductors, Level I

Item Code: J215LM.H1

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

2.0

Course Prerequisite(s): DC Theory, Level I/IV

Other Prerequisites: None

Required Material(s):

- *Semiconductor Principles and Applications (S542)*

Lesson 1	Semiconductors
Lesson 2	Semiconductor Diode
Lesson 3	Zener Diodes and Other Special Purpose Diodes
Lesson 4	Understanding the Basic Functions of Diodes and Rectifiers
Lesson 5	Power Supplies
Lesson 6	Filters, Chokes, Voltage Regulators, Dividers, and Doublers
Lesson 7	Transistors
Lesson 8	Light Emitting Diodes (LEDs), Lasers, and Phototransistors
Lesson 9	Electronic Applications
Lesson 10	Optoelectronics and Fiber Optics

Blueprints, Level III

Item Code: J244LM.I3

Core Curriculum Year: 3

Core Credits

Advanced Credits

1.0

Course Prerequisite(s): Blueprints, Level II

Other Prerequisites: None

Required Material(s):

- *Blueprint Reading for Electricians Textbook (S648)*
- *Industrial Blueprints (S137)*

Lesson 1	Review and Introduction
Lesson 2	Industrial Specifications
Lesson 3	Industrial Prints I
Lesson 4	Industrial Prints II
Lesson 5	Industrial Prints III