

# Core Curriculum

## 5th Year Syllabus

### Commercial Curriculum 2022



## Core Curriculum: Course Selection Per Year

5th Year Core	
Orientation, Level III	1
Torque, Level I	0.5
Fire Alarm Systems, Level II, Based on the 2020 NEC	2
Distributed Generation, Level I	0.5
Code, Standards, and Practices 4, Based on the 2020 NEC	1
Code, Standards, and Practices 5, Based on the 2020 NEC	2
Code, Standards, and Practices 6, Based on the 2020 NEC	1.5
Code, Standards, and Practices 7, Based on the 2020 NEC	1
Electrical Code Calculations, Level I, Based on the 2020 NEC	1
Electrical Code Calculations, Level II, Based on the 2020 NEC	1
Electrical Code Calculations, Level III, Based on the 2020 NEC	0.5
Transformers, Level II, Based on the 2020 NEC - 2nd Ed.	2
Hazardous Locations, Based on the 2020 NEC	2
Health Care Facility Electrical Systems, Level I, Based on the 2021 NFPA 99 and 2020 NEC	1
Health Care Facility Electrical Systems, Level II, Based on the 2021 NFPA 99 and 2020 NEC	1

# Core Curriculum: 5th Year Core Courses

Notes:

	Credits	Page	Date
<b>Orientation, Level III</b>			
J200LM.I3	1.0	1	<input type="text"/>
<b>Torque, Level I</b>			
J242LM.1	0.5	2	<input type="text"/>
<b>Fire Alarm Systems, Level II, Based on the 2020 NEC</b>			
J211LM.L2	2.0	2	<input type="text"/>
<b>Distributed Generation, Level I</b>			
J229LM.I1	0.5	3	<input type="text"/>
<b>Code, Standards, and Practices 4, Based on the 2020 NEC</b>			
J234LM.L	1.0	3	<input type="text"/>
<b>Code, Standards, and Practices 5, Based on the 2020 NEC</b>			
J235LM.L	2.0	4	<input type="text"/>
<b>Code, Standards, and Practices 6, Based on the 2020 NEC</b>			
J236LM.L	1.5	4	<input type="text"/>
<b>Code, Standards, and Practices 7, Based on the 2020 NEC</b>			
J237LM.L	1.0	5	<input type="text"/>
<b>Electrical Code Calculations, Level I, Based on the 2020 NEC</b>			
J227LM.L1	1.0	6	<input type="text"/>
<b>Electrical Code Calculations, Level II, Based on the 2020 NEC</b>			
J227LM.L2	1.0	6	<input type="text"/>
<b>Electrical Code Calculations, Level III, Based on the 2020 NEC</b>			
J227LM.L3	0.5	7	<input type="text"/>

# Core Curriculum: 5th Year Core Courses

Notes:

	Credits	Page	Date
<b>Transformers, Level II, Based on the 2020 NEC - 2nd Ed.</b>			
J205LM.I2_20	2.0	7	<input type="text"/>
<b>Hazardous Locations, Based on the 2020 NEC</b>			
J257LM.L	2.0	8	<input type="text"/>
<b>Health Care Facility Electrical Systems, Level I, Based on the 2021 NFPA 99 and 2020</b>			
J260LM.L1	1.0	9	<input type="text"/>
<b>Health Care Facility Electrical Systems, Level II, Based on the 2021 NFPA 99 and 2020</b>			
J260LM.L2	1.0	10	<input type="text"/>

# Core Curriculum: Course Level and Credit Summary

## ***Orientation, Level III***

*Item Code:* J200LM.I3

**Core Curriculum Year: 5**

**Core Credits**

**Advanced Credits**

**1.0**

***Course Prerequisite(s): Orientation, Level II***

***Other Prerequisites: None***

***Required Material(s):***

- Lesson 1 The National Electrical Benefit Fund (NEBF)
- Lesson 2 After Apprenticeship
- Lesson 3 Soon To Be A Journey-Level Worker
- Lesson 4 This is a National Program
- Lesson 5 Keys to Success-Motivation and Leadership
- Lesson 6 The National Labor Relations Board
- Lesson 7 The Economics of Unemployment
- Lesson 8 The Realities of Construction

## ***Torque, Level I***

*Item Code:* J242LM.1

**Core Curriculum Year: 5**

**Core Credits**

**Advanced Credits**

**0.5**

***Course Prerequisite(s): None***

***Other Prerequisites: 4000 Hours of OJT***

***Required Material(s):***

- Lesson 1 Torque Theory
- Lesson 2 Threaded Fasteners Basics
- Lesson 3 Introduction to Torque Applications
- Lesson 4 Torque Products
- Lesson 5 Real World Electrical Torque Applications

# Core Curriculum: Course Level and Credit Summary

## ***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

## ***Distributed Generation, Level I***

*Item Code:*        **J229LM.I1**

**Core Curriculum Year: Advanced**

**Core Credits**

**Advanced Credits**

**0.5**

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

***Other Prerequisites: None***

***Required Material(s):***

Lesson 1	Information Technology Sites and Critical Loads
Lesson 2	UPS — Uninterruptible Power Supplies
Lesson 3	Infrastructure Components
Lesson 4	Critical UPS Systems Design Configurations
Lesson 5	UPS Installation
Lesson 6	Critical Systems Service
Lesson 7	Fuel Cell Basics and Applications
Lesson 8	Fuel Cell Installation

# Core Curriculum: Course Level and Credit Summary

## ***Code, Standards, and Practices 4, Based on the 2020 NEC***

Item Code: J234LM.L

Core Curriculum Year: 5

Core Credits

Advanced Credits

1.0

*Course Prerequisite(s): Code, Standards, and Practices 3, Level I*

*Other Prerequisites: None*

*Required Material(s):*

• *National Electrical Code - 2020 (S1050)*

• *Electrical Systems Textbook (S1070)*

- Lesson 1 Special Occupancies
- Lesson 2 Electrical Equipment
- Lesson 3 Special Equipment
- Lesson 4 Introduction to Cable Tray Systems
- Lesson 5 Installing Surface Metal Raceways

## ***Code, Standards, and Practices 5, Based on the 2020 NEC***

Item Code: J235LM.L

Core Curriculum Year: 5

Core Credits

Advanced Credits

2.0

*Course Prerequisite(s): Code, Standards, and Practices 4, Level I*

*Other Prerequisites: None*

*Required Material(s):*

• *National Electrical Code - 2020 (S1050)*

• *Significant Changes to the NEC (S1053)*

- Lesson 1 Installing Electrical Services
- Lesson 2 Swimming Pools, Fountains, and Similar Installations
- Lesson 3 Understanding Emergency and Standby Systems Installation Requirements
- Lesson 4 Over 1,000-Volt Installations
- Lesson 5 Remote-Control, Signaling, and Power-Limited Circuits
- Lesson 6 2020 NEC Changes – Part I
- Lesson 7 2020 NEC Changes – Part II

# Core Curriculum: Course Level and Credit Summary

## ***Code, Standards, and Practices 6, Based on the 2020 NEC***

Item Code: J236LM.L

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.5

*Course Prerequisite(s): Code, Standards, and Practices 3, Level I*

*Other Prerequisites: None*

*Required Material(s):*

- *National Electrical Code - 2020 (S1050)*

Lesson 1	Reviewing Key OCPD Concepts
Lesson 2	Motor Branch-Circuit Devices and Protection – NEC Article 430
Lesson 3	Motor Branch Circuits and Air-Conditioning and Refrigeration Equipment
Lesson 4	Transformer Protection—Article 450
Lesson 5	Interrupting Rating: Fully Rated and Series Rated Systems
Lesson 6	Equipment Short-Circuit Protection
Lesson 7	Selective Coordination
Lesson 8	Ground-Fault Protection of Equipment



# Core Curriculum: Course Level and Credit Summary

## ***Code, Standards, and Practices 7, Based on the 2020 NEC***

Item Code: J237LM.L

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

*Course Prerequisite(s): Code, Standards, and Practices 5, Level I*

*Other Prerequisites: None*

*Notifications:*

*Expected use is as a 5th year Advanced course in 2021-2022.*

***Required Material(s):***

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

Lesson 1	Installing Wire Mesh Cable Tray (WMCT)
Lesson 2	Installing Surface Nonmetallic Raceways
Lesson 3	Infloor Installations
Lesson 4	Installing Multioutlet Assemblies
Lesson 5	NEC for Solar Photovoltaic (PV) Systems

## ***Electrical Code Calculations, Level I, Based on the 2020 NEC***

Item Code: J227LM.L1

Core Curriculum Year: 5

Core Credits

Advanced Credits

1.0

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

*Other Prerequisites: None*

***Required Material(s):***

- ***National Electrical Code - 2020 (S1050)***
- ***Code Calculations Textbook - 2020 (S00820)***
- ***Electrical Systems Textbook (S1070)***

Lesson 1	Beginning to Calculate Conductor Ampacity
Lesson 2	Determining Conductor Ampacity
Lesson 3	Finalizing Ampacity Calculations
Lesson 4	Identifying Boxes and Fittings as Defined by the NEC
Lesson 5	Performing Box Size and Fill Calculations
Lesson 6	Calculating Raceway Fill

# Core Curriculum: Course Level and Credit Summary

## ***Electrical Code Calculations, Level II, Based on the 2020 NEC***

Item Code: J227LM.L2

Core Curriculum Year: 5

Core Credits

Advanced Credits

1.0

*Course Prerequisite(s): Electrical Code Calculations, Level I*

*Other Prerequisites: None*

*Required Material(s):*

- *National Electrical Code - 2020 (S1050)*
- *Code Calculations Textbook - 2020 (S00820)*

- Lesson 1 Calculating Voltage Drop in Feeders and Branch Circuits
- Lesson 2 Introduction to Electrical Load Calculations
- Lesson 3 Range and Appliance Calculations
- Lesson 4 Calculating the Parameters of Residential Loads in Accordance with the *NEC*
- Lesson 5 Calculating the Parameters of Multifamily Dwelling Loads in Accordance with the *NEC*
- Lesson 6 Calculating the Parameters of Commercial Loads in Accordance with the *NEC*

## ***Electrical Code Calculations, Level III, Based on the 2020 NEC***

Item Code: J227LM.L3

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

0.5

*Course Prerequisite(s): Electrical Code Calculations, Level II*

*Other Prerequisites: None*

*Notifications:*

*Expected use is as a 5th year Advanced course in 2021-2022.*

*Required Material(s):*

- *National Electrical Code - 2020 (S1050)*
- *Code Calculations Textbook - 2020 (S00820)*

- Lesson 1 Cable Tray Fills
- Lesson 2 Ampacity of Conductors in Cable Trays
- Lesson 3 Electric Welders

# Core Curriculum: Course Level and Credit Summary

## ***Transformers, Level II, Based on the 2020 NEC - 2nd Ed.***

Item Code: J205LM.I2\_20

Core Curriculum Year: 5

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)* • *National Electrical Code - 2020 (S1050)*
- *Code Calculations Textbook - 2020 (S00820)*

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

# Core Curriculum: Course Level and Credit Summary

## ***Hazardous Locations, Based on the 2020 NEC***

Item Code: J257LM.L

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

2.0

***Course Prerequisite(s): Code and Practices 3, Level I***

***Other Prerequisites: None***

***Required Material(s):***

Lesson 1	Hazardous (Classified) Location Concepts
Lesson 2	Article 500—Understanding Class I, II, and III Locations
Lesson 3	The Requirements for Electrical Installations in Class I Hazardous (Classified) Locations
Lesson 4	The Requirements for Electrical Installations in Class II Hazardous (Classified) Locations
Lesson 5	Requirements for Wiring in Class III Hazardous (Classified) Locations and Intrinsically Safe Systems
Lesson 6	Article 505—Zone 0, 1, and 2 Locations
Lesson 7	Article 506—Zone 20, 21, and 22 Locations for Combustible Dusts or Ignitable Fibers/Flyings
Lesson 8	Specific Locations—Article 511 through 516
Lesson 9	Hazardous Location Applications

# Core Curriculum: Course Level and Credit Summary

## ***Health Care Facility Electrical Systems, Level I, Based on the 2021 NFPA***

Item Code: J260LM.L1

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

*Course Prerequisite(s): Code and Practices 3, Level I*

*Other Prerequisites: None*

*Notifications:*

*Course coming soon. Test Generator Tests coming soon.*

*Required Material(s):*

- *Health Care Systems Textbook (S898)*

Lesson 1 Introduction

Lesson 2 Utility Power

Lesson 3 Distribution

Lesson 4 Patient Care Spaces

## ***Health Care Facility Electrical Systems, Level II, Based on the 2021 NFPA***

Item Code: J260LM.L2

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

*Course Prerequisite(s): Health Care Facility Electrical Systems, Level I*

*Other Prerequisites: None*

*Notifications:*

*Course coming soon. Test Generator Tests coming soon.*

*Required Material(s):*

- *Health Care Systems Textbook (S898)*

Lesson 1 Facility Electrical Equipment Maintenance

Lesson 2 Work in Existing Health Care Facilities

Lesson 3 The Future of Health Care