

# Core Curriculum

## 5th Year Syllabus

### Commercial Curriculum 2020



## Core Curriculum: Course Selection Per Year

5th Year Core	
Orientation, Level III	1
Torque, Level I	0.5
Test Instruments, Level I	2
Installer/Tech CCTV, Level I	3
Code and Practices 4, Level I, Based on the 2017 NEC	2
Code and Practices 5, Level I, Based on the 2017 NEC	1
Code and Practices 6, Level I, Based on the 2017 NEC	1.5
Code Calculations, Level I, Based on the 2017 NEC	1
Code Calculations, Level II, Based on the 2017 NEC	1.5
Transformers, Level II, Based on the 2017 NEC - 2nd Ed.	2
Hazardous Locations, Level I, Based on the 2017 NEC	2
Health Care Facility Electrical Systems, Level I, Based on the NFPA 99 and 2017 NEC	1
Health Care Facility Electrical Systems, Level II, Based on the NFPA 99 and 2017 NEC	1
Foreman Development Series	4

# Core Curriculum: 5th Year Core Courses

	Credits	Page	Date
<b>Orientation, Level III</b>			
J200LM.I3	1.0	1	
<b>Torque, Level I</b>			
J242LM.1	0.5	2	
<b>Test Instruments, Level I</b>			
J285LM.H1	2.0	2	
<b>Installer/Tech CCTV, Level I</b>			
≡ J268IG	3.0	3	
<b>Code and Practices 4, Level I, Based on the 2017 NEC</b>			
J234LM.K1_CP	2.0	4	
<b>Code and Practices 5, Level I, Based on the 2017 NEC</b>			
J235LM.K1_CP	1.0	5	
<b>Code and Practices 6, Level I, Based on the 2017 NEC</b>			
J236LM.K1_CP	1.5	5	
<b>Code Calculations, Level I, Based on the 2017 NEC</b>			
J227LM.K1_CC	1.0	6	
<b>Code Calculations, Level II, Based on the 2017 NEC</b>			
J227LM.K2_CC	1.5	7	
<b>Transformers, Level II, Based on the 2017 NEC - 2nd Ed.</b>			
J205LM.I2_17	2.0	8	
<b>Hazardous Locations, Level I, Based on the 2017 NEC</b>			
J257LM.J1	2.0	9	

# Core Curriculum: 5th Year Core Courses

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	Credits	Page	Date
<b>Health Care Facility Electrical Systems, Level I, Based on the NFPA 99 and 2017 NEC</b>			
J260LM.K1	1.0	10	
<b>Health Care Facility Electrical Systems, Level II, Based on the NFPA 99 and 2017 NEC</b>			
J260LM.K2	1.0	11	
<b>Foreman Development Series</b>			
TX2690.LC1	4.0	11	

# 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 Your 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

## ***Test Instruments, Level I***

*Item Code:*      **J285LM.H1**

**Core Curriculum Year: Advanced**

**Core Credits**

**Advanced Credits**

**2.0**

*Course Prerequisite(s): AC Systems, Level I*

*Other Prerequisites: None*


*Required Material(s):*

- ***Test Instruments Textbook (S471)***

Lesson 1	Voice-Data-Video (VDV) Test Instruments
Lesson 2	Power Quality Test Instruments
Lesson 3	High Voltage and Insulation Test Instruments
Lesson 4	Instrumentation and Process Control Test Instruments
Lesson 5	Special Maintenance Test Instruments
Lesson 6	Troubleshooting

# Core Curriculum: Course Level and Credit Summary

## ***Installer/Tech CCTV, Level I***

 **Item Code:** J268IG

**Core Curriculum Year: Advanced**

**Core Credits**

**Advanced Credits**

**3.0**

***Course Prerequisite(s): Structured Cabling, Level I***

***Other Prerequisites: None***

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

- ***CCTV Surv Video Pract Technology 2nd Ed (S304)***

Lesson 1	Introduction to Video Security Systems
Lesson 2	Video Technology
Lesson 3	Lenses, Optics and Lighting Characteristics
Lesson 4	Camera Types and Characteristics
Lesson 5	Signal Transmission Methods
Lesson 6	Monitors and Digital Displays
Lesson 7	Analog and Digital Recorders
Lesson 8	Switchers, Quads and Multiplexers
Lesson 9	Video Motion Detectors
Lesson 10	Cameras, Housings and Accessories
Lesson 11	Pan/Tilt Mechanisms
Lesson 12	System Power Sources
Lesson 13	Lighting Characteristics
Lesson 14	Remote Monitoring and Video Communications Control

# Core Curriculum: Course Level and Credit Summary

## **Code and Practices 4, Level I, Based on the 2017 NEC**

Item Code: J234LM.K1\_CP

Core Curriculum Year: 5

Core Credits

Advanced Credits

2.0

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

*Other Prerequisites: None*

*Required Material(s):*

• *National Electrical Code - 2017 (S950)*

• *Significant Changes to the NEC (S953)*

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 2017 NEC Changes – Part I

Lesson 7 2017 NEC Changes – Part II

## **Code and Practices 5, Level I, Based on the 2017 NEC**

Item Code: J235LM.K1\_CP

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

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

*Other Prerequisites: None*

*Required Material(s):*

• *National Electrical Code - 2017 (S950)*

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



# Core Curriculum: Course Level and Credit Summary

## ***Code and Practices 6, Level I, Based on the 2017 NEC***

Item Code: J236LM.K1\_CP

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.5

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

*Other Prerequisites: None*

*Required Material(s):*

- *National Electrical Code - 2017 (S950)*

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 Current Protection
Lesson 7	Selective Coordination

# Core Curriculum: Course Level and Credit Summary

## ***Code Calculations, Level I, Based on the 2017 NEC***

Item Code: J227LM.K1\_CC

Core Curriculum Year: 5

Core Credits

Advanced Credits

1.0

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

***Other Prerequisites: None***

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

• *Code Calculations Textbook - 2017 (S00817)*

• *National Electrical Code - 2017 (S950)*

• *Electrical Systems Textbook (S970)*

- 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
- Lesson 6 Cable Tray Fills
- Lesson 7 Ampacity of Conductors in Cable Trays
- Lesson 8 Electric Welders

# Core Curriculum: Course Level and Credit Summary

## ***Code Calculations, Level II, Based on the 2017 NEC***

Item Code: J227LM.K2\_CC

Core Curriculum Year: 5

Core Credits

Advanced Credits

1.5

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

***Other Prerequisites: None***

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

• *Code Calculations Textbook - 2017 (S00817)*

• *National Electrical Code - 2017 (S950)*

Lesson 1 Determining Conductor Ampacity

Lesson 2 Finalizing Ampacity Calculations

Lesson 3 Performing Box Size and Fill Calculations

Lesson 4 Calculating Raceway Fill

Lesson 5 Introduction to Electrical Load Calculations

Lesson 6 Range and Appliance Calculations

Lesson 7 Calculating the Parameters of Multifamily Dwelling Loads in Accordance with the *NEC*

Lesson 8 Calculating the Parameters of Commercial Loads in Accordance with the *NEC*

# 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: 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*

*Notifications:*

*Transformers II is in 5th year due to prerequisite requirements in Code Calc II.*

*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

# Core Curriculum: Course Level and Credit Summary

## ***Hazardous Locations, Level I, Based on the 2017 NEC***

Item Code: J257LM.J1

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):***

- ***National Electrical Code - 2017 (S950)***

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 NFPA 99***

Item Code: J260LM.K1

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

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

*Other Prerequisites: None*

*Required Material(s):*

- *Health Care Systems Textbook (S798)*

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 NFPA 99***

Item Code: J260LM.K2

Core Curriculum Year: Advanced

Core Credits

Advanced Credits

1.0

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

*Other Prerequisites: None*

*Required Material(s):*

- *Health Care Systems Textbook (S798)*

Lesson 1	Facility Electrical Equipment Maintenance
Lesson 2	Work in Existing Health Care Facilities
Lesson 3	The Future of Health Care

# Core Curriculum: Course Level and Credit Summary

## ***Foreman Development Series***

*Item Code:* TX2690.LC1

**Core Curriculum Year: Advanced**

**Core Credits**

**Advanced Credits**

**4.0**

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

***Other Prerequisites: None***

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

- Lesson 1 The Role of the Foreman (Required)
- Lesson 2 Project Start Up
- Lesson 3 Material Management
- Lesson 4 Labor Relations
- Lesson 5 Understanding the Estimate - Part I
- Lesson 6 Manloading and Scheduling
- Lesson 7 Managing Production
- Lesson 8 Safety
- Lesson 9 Communication
- Lesson 10 Documentation
- Lesson 11 Change Management
- Lesson 12 Project Closeout