Core Curriculum

3rd Year Syllabus

Commercial Curriculum 2023

electrical training ALLIANCE
IBEW - NECA

electrical training ALLIANCE
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Core Curriculum: Course Selection Per Year

3rd Year Core	
Fire Alarm Systems, Level I, Based on the 2017 NEC	2
Rigging, Hoisting, and Signaling, Level I	2
Preparing for Leadership: Personal Qualities, Level I	2
Code, Standards, and Practices 3, Based on the 2020 NEC	2
Electrical Safety-Related Work Practices, Level II, Based on the 2018 70E	2
AC Theory, Level III - 3rd Ed.	3
Grounding and Bonding, Level I, Based on the 2020 NEC	2
Structured Cabling, Level I	3
Fiber Optics, Level I	1
Lightning Protection, Level I	1
Lighting Essentials, Level I - 2nd Ed.	1.5
Lighting Essentials, Level II - 2nd Ed.	1.5
Transformers, Level II, Based on the 2020 NEC - 2nd Ed.	2

Core Curriculum: 3rd Year Core Courses

Notes:

	Credits	Page	Date
Fire Alarm Systems, Level I, Based on the 2017 NEC			
J211LM.K1	2.0	1	
Rigging, Hoisting, and Signaling, Level I			
J241LM.J1	2.0	2	
Preparing for Leadership: Personal Qualities, Level I			
J900LM	2.0	3	
Code, Standards, and Practices 3, Based on the 2020 NEC			
J233LM.L	2.0	4	
Electrical Safety-Related Work Practices, Level II, Based on the 2018 70E			
J444LM.L2	2.0	5	
AC Theory, Level III - 3rd Ed.			
J203LM.K3	3.0	6	
Grounding and Bonding, Level I, Based on the 2020 NEC			
J210LM.L1	2.0	6	
Structured Cabling, Level I			
J271LM.I1	3.0	7	
Fiber Optics, Level I			
J277LM	1.0	8	
Lightning Protection, Level I			
J276LM.J1	1.0	9	
Lighting Essentials, Level I - 2nd Ed.			
J259LM.K1	1.5	10	

Core Curriculum: 3rd Year Core Courses

Notes:

	Credits	Page	Date
Lighting Essentials, Level II - 2nd Ed.			
J259LM.K2	1.5	10	
Transformers, Level II, Based on the 2020 NEC - 2nd Ed.			
J205LM.I2_20	2.0	11	

Core Curriculum: Course Level and Credit Summary

Fire Alarm Systems, Level I, Based on the 2017 NEC

Item Code: J211LM.K1

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 (S846)***
- ***National Electrical Code - 2017 (S950)***

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

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

Preparing for Leadership: Personal Qualities, Level I

Item Code: J900LM

Core Curriculum Year: 3 | Core Credits 2.0 | Advanced Credits

Course Prerequisite(s): None

Other Prerequisites: 4000 Hours of OJT

Notifications:

Instructors must have satisfactorily completed the TTT version of this course to be enrolled into this

Required Material(s):

- ***Effective Leadership Skills Textbook (S097)***

Lesson 1	The Contracting Business
Lesson 2	Personal Qualities: Professionalism And Respect
Lesson 3	Personal Qualities: Credibility and Character
Lesson 4	Personal Qualities: Ethics and Integrity
Lesson 5	Personal Qualities: Teaching and Learning
Lesson 6	Planning: The Importance of Planning
Lesson 7	Planning: Planning Challenges
Lesson 8	Communications: Effective Communication
Lesson 9	Communications: Crew Support and Morale
Lesson 10	Communications: Disruptive Behaviors
Lesson 11	Communications: Addressing Conflict

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

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

AC Theory, Level III - 3rd Ed.

Item Code: J203LM.K3

Core Curriculum Year: 3	Core Credits	Advanced Credits
	3.0	

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

Other Prerequisites: None

Required Material(s):

- ***AC Theory Textbook (S641)***
- ***Test Instruments and Applications Textbook (S571)***

Lesson 1	Power Factor
Lesson 2	Power Factor Correction
Lesson 3	General Use Test Instruments
Lesson 4	Electronic Circuit Test Instruments
Lesson 5	Introduction to Generators
Lesson 6	Understanding How the DC Generator Works
Lesson 7	Understanding the Design and Function of AC Generators
Lesson 8	An Introduction to 3-Phase Systems

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

Structured Cabling, Level I

Item Code: J271LM.I1

Core Curriculum Year: Advanced	Core Credits	Advanced Credits
		3.0

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

Other Prerequisites: None

Notifications:

The S471 edition of the Test Instruments Textbook can be used for this course if it is already owned by

Required Material(s):

- ***Structured Cabling Textbook (S581)***
- ***National Electrical Code - 2014 (S750)***
- ***Test Instruments and Applications Textbook (S571)***

Lesson 1	The Need for Structured Cabling Systems
Lesson 2	Introduction to TIA/EIA Standards and Codes
Lesson 3	Structured Cabling System Overview
Lesson 4	Safety Codes
Lesson 5	Cabling System Performance
Lesson 6	Unshielded Twisted Pair Cables
Lesson 7	Unshielded Twisted Pair Connected Hardware
Lesson 8	Telecommunications Pathways and Spaces
Lesson 9	Telecommunications Cabling Administration
Lesson 10	Telecommunications Grounding and Bonding
Lesson 11	Configuring Structured Cabling Systems
Lesson 12	Structured Cabling Systems Application
Lesson 13	Residential Telecommunications Cabling
Lesson 14	Certifying the UTP Cabling System

Core Curriculum: Course Level and Credit Summary

Fiber Optics, Level I

Item Code: J277LM

Core Curriculum Year: Advanced	Core Credits	Advanced Credits
		1.0

Course Prerequisite(s): Structured Cabling, Level I

Other Prerequisites: None

Notifications:

The S471 edition of the Test Instruments Textbook can be used for this course if it is already owned by

Required Material(s):

- ***Reference Guide to Fiber Optics (S480)***
- ***Test Instruments and Applications Textbook (S571)***

Lesson 1	Introduction to Fiber Optics
Lesson 2	Understanding Fiber-Optic Terminology
Lesson 3	Fiber-Optic Communications
Lesson 4	Fiber-Optic Transmission Systems and Components
Lesson 5	Optical Fiber
Lesson 6	Fiber-Optic Cable
Lesson 7	Connectors and Splices
Lesson 8	Fiber-Optic Testing
Lesson 9	Fiber-Optic Network Design
Lesson 10	Fiber-Optic Network Installation

Core Curriculum: Course Level and Credit Summary

Lightning Protection, Level I

Item Code: J276LM.J1

Core Curriculum Year: Advanced	Core Credits	Advanced Credits
		1.0

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

Other Prerequisites: None

Required Material(s):

Lesson 1	Lightning Protection Systems Introduction
Lesson 2	Lightning Protection Systems - Ground Work
Lesson 3	Down Conductors and Bonding
Lesson 4	Rooftops
Lesson 5	Concealed and Structural Steel Systems
Lesson 6	Bonding Requirements and Potential Equalization
Lesson 7	Surge Protection Devices

Lighting Essentials, Level I - 2nd Ed.

Item Code: J259LM.K1

Core Curriculum Year: Advanced	Core Credits	Advanced Credits
		1.5

Course Prerequisite(s): None

Other Prerequisites: 4000 Hours of OJT

Required Material(s):

- ***Lighting Design Basics Textbook (S699)***

Lesson 1	Basic Concepts in Lighting
Lesson 2	The Science of Light
Lesson 3	Qualities of Light Sources
Lesson 4	Daylighting
Lesson 5	Lamps
Lesson 6	Luminaires
Lesson 7	Lighting Controls
Lesson 8	Quantity and Quality of Light

Core Curriculum: Course Level and Credit Summary

Lighting Essentials, Level II - 2nd Ed.

Item Code: J259LM.K2

Core Curriculum Year: Advanced	Core Credits	Advanced Credits
		1.5

Course Prerequisite(s): Lighting Essentials, Level I - 2nd Ed.

Other Prerequisites: None

Required Material(s):

- ***Lighting Design Basics Textbook (S699)***

Lesson 1	Basic Lighting Retrofit and Energy Codes
Lesson 2	Understanding Fluorescent and HID Lighting Terminology
Lesson 3	The ABCs of Electronic Fluorescent Ballasts
Lesson 4	The ABCs of High Intensity Discharge (HID) Ballasts I
Lesson 5	The ABCs of High Intensity Discharge (HID) Ballasts II
Lesson 6	Introduction to LED Lighting and Technology
Lesson 7	LED Lighting in Detail
Lesson 8	LED Lighting Applications

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

Item Code: J205LM.I2_20

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)*** • ***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