Core Curriculum

2nd Year Syllabus

Commercial Curriculum 2022B

electrical training ALLIANCE
IBEW - NECA
electrical training ALLIANCE

Core Curriculum: Course Selection Per Year

2nd Year Core	
Codeology, Level I, Based on the 2017 NEC	3
Blueprints, Level III	1
AC Systems, Level I - 3rd Ed.	2
AC Theory, Level I - 3rd Ed.	3
AC Theory, Level II - 3rd Ed.	4
Electrical Safety-Related Work Practices, Level I, Based on the 2015 70E	2
Code, Standards, and Practices 2, Level I, Based on the 2017 NEC	2
Code, Standards, and Practices 2, Level II, Based on the 2017 NEC	2
Electrical Code Calculations, Level I, Based on the 2017 NEC	1
Transformers, Level I - 2nd Ed.	2
Lighting Essentials, Level I - 2nd Ed.	1.5
Lighting Essentials, Level II - 2nd Ed.	1.5
Lighting Essentials, Level III - 2nd Ed.	1.5
Applications Manual, Lesson 7 - Installing a Retrofit "Old Work" Electrical Box	0.25
Applications Manual, Lesson 11 - Hand Bending a 90° Stub-up	0.25
Applications Manual, Lesson 12 - Hand Bending a Box Offset	0.25
Applications Manual, Lesson 18 - Installing a Luminaire (Recessed "Can" Fixture)	0.25

NotesY

	Credits	Page	Date
Codeology, Level I, Based on the 2017 NEC			
J207LM.K1	3.0	1	
Blueprints, Level III			
J244LM.I3	1.0	2	
AC Systems, Level I - 3rd Ed.			
J103LM.K1	2.0	3	
AC Theory, Level I - 3rd Ed.			
J203LM.K1	3.0	3	
AC Theory, Level II - 3rd Ed.			
J203LM.K2	4.0	4	
Electrical Safety-Related Work Practices, Level I, Based on the 2015 70E			
J444LM.K1	2.0	5	
Code, Standards, and Practices 2, Level I, Based on the 2017 NEC			
J232LM.K1	2.0	6	
Code, Standards, and Practices 2, Level II, Based on the 2017 NEC			
J232LM.K2	2.0	6	
Electrical Code Calculations, Level I, Based on the 2017 NEC			
J227LM.K1	1.0	7	
Transformers, Level I - 2nd Ed.			
J205LM.I1	2.0	7	
Lighting Essentials, Level I - 2nd Ed.			
J259LM.K1	1.5	8	

Core Curriculum: 2nd Year Core Courses

NotesY

	Credits	Page	Date
Lighting Essentials, Level II - 2nd Ed.			
J259LM.K2	1.5	8	
Lighting Essentials, Level III - 2nd Ed.			
J259LM.K3	1.5	9	
Applications Manual, Lesson 7 - Installing a Retrofit "Old Work" Electrical Box			
Ξ J300.K	0.25	10	
Applications Manual, Lesson 11 - Hand Bending a 90° Stub-up			
Ξ J300.K	0.25	10	
Applications Manual, Lesson 12 - Hand Bending a Box Offset			
Ξ J300.K	0.25	10	
Applications Manual, Lesson 18 - Installing a Luminaire (Recessed "Can" Fixture)			
Ξ J300.K	0.25	10	

Core Curriculum: Course Level and Credit Summary

Codeology, Level I, Based on the 2017 NEC

Item Code: J207LM.K1

Core Curriculum Year: 2	Core Credits	Advanced Credits
	3.0	

Course Prerequisite(s): Code and Practices 1, Level I

Other Prerequisites: None

Required Material(s):

- ***Codeology Textbook (S01717)***
- ***National Electrical Code - 2017 (S950)***

Lesson 1	Developing *NEC* Skills
Lesson 2	The *National Electrical Code* Process
Lesson 3	The Arrangement of the *NEC*
Lesson 4	The Structure of the *NEC*
Lesson 5	The Language of the *NEC*
Lesson 6	*Codeology* Fundamentals
Lesson 7	Article 90 Introduction
Lesson 8	Applying the *NEC*'s "GENERAL" Chapter
Lesson 9	Applying the *NEC*'s "PLAN" Chapter
Lesson 10	Applying the *NEC*'s "BUILD" Chapter
Lesson 11	Applying the *NEC*'s "USE" Chapter
Lesson 12	Applying the *NEC's* "SPECIAL" Chapters
Lesson 13	Applying Chapter 8, Chapter 9 Tables, and *NEC* Exam Preparation Skills

Blueprints, Level III

Item Code: J244LM.I3

Core Curriculum Year: 2 | **Core Credits** 1.0 | **Advanced Credits**

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

AC Systems, Level I - 3rd Ed.

Item Code: J103LM.K1

Core Curriculum Year: 2 | **Core Credits** 2.0 | **Advanced Credits**

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

Other Prerequisites: None

Required Material(s):

- *AC Theory Textbook (S641)*
- *National Electrical Code - 2011 (S650)*
- ***Building a Foundation in Mathematics (S665)***

Lesson 1	Reviewing the Applications of DC Theory
Lesson 2	Understanding Vectors and How to Use Them Effectively
Lesson 3	Comparing Direct Current To Alternating Current
Lesson 4	Making Circuit Calculations for Basic Systems
Lesson 5	Becoming Familiar with AC Resistive Circuits
Lesson 6	Understanding the Basic Characteristics of AC Circuits

AC Theory, Level I - 3rd Ed.

Item Code: J203LM.K1

Core Curriculum Year: 2 | **Core Credits** 3.0 | **Advanced Credits**

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

Other Prerequisites: None

Required Material(s):

- ***AC Theory Textbook (S641)***

Lesson 1	Understanding Inductance and How It Affects a Circuit
Lesson 2	Working with Inductors that are in Series and/or Parallel
Lesson 3	Becoming Familiar with Inductive Reactance
Lesson 4	Understanding Capacitance and How it Affects a Circuit
Lesson 5	Understanding and Working Safely With Capacitors
Lesson 6	Working with Capacitors that are in Series and/or Parallel
Lesson 7	Becoming Familiar with Capacitive Reactance

AC Theory, Level II - 3rd Ed.

Item Code: J203LM.K2

Core Curriculum Year: 2 | **Core Credits** 4.0 | **Advanced Credits**

Course Prerequisite(s): AC Theory

Other Prerequisites: None

Required Material(s):

- ***AC Theory Textbook (S641)***
- ***Building a Foundation in Mathematics (S665)***

Lesson 1	Comprehending the Parameters of Series RL Circuits
Lesson 2	Comprehending the Parameters of Series RC Circuits
Lesson 3	Comprehending and Analyzing Series RLC Circuits
Lesson 4	Understanding and Working with Parallel RL Circuits
Lesson 5	Understanding and Working with Parallel RC Circuits
Lesson 6	Comprehending and Analyzing Parallel RLC Circuits
Lesson 7	Identifying and Working with LC Circuits
Lesson 8	Comparing Series and Parallel RLC Circuits
Lesson 9	Analyzing and Working with Combination RLC Circuits

Electrical Safety-Related Work Practices, Level I, Based on the 2015 70E

Item Code: J444LM.K1

Core Curriculum Year: 2 | **Core Credits** 2.0 | **Advanced Credits**

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

- ***Electrical Safety-Related Work Practices Textbook (S744)***
- ***National Electrical Code - 2014 (S750)***
- ***NFPA 70E Textbook (S35915)***

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	Fundamentals of 3-Phase Bolted Fault Currents

Code, Standards, and Practices 2, Level I, Based on the 2017 NEC

Item Code: J232LM.K1

Core Curriculum Year: 2 | **Core Credits** 2.0 | **Advanced Credits**

Course Prerequisite(s): Code, Standards, and Practices 1, Level I

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2017 (S950)***
- ***Electrical Systems Textbook (S970)***

Lesson 1	Understanding the Principles Involved in the Sizing of Building Wire
Lesson 2	Branch Circuits I
Lesson 3	Branch Circuits II
Lesson 4	Feeders and Outside Branch Circuits and Feeders
Lesson 5	Services
Lesson 6	Switches, Receptacles, and Luminaires

Code, Standards, and Practices 2, Level II, Based on the 2017 NEC

Item Code: J232LM.K2

Core Curriculum Year: 2	Core Credits	Advanced Credits
	2.0	

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

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2017 (S950)***
- ***Electrical Systems Textbook (S970)***

Lesson 1	Conduit and Raceway Basics
Lesson 2	*NEC* Requirements for Cable Assemblies
Lesson 3	General Requirements for Wiring Methods and Materials
Lesson 4	Conductors for General Wiring
Lesson 5	Electrical Nonmetallic Tubing (ENT)
Lesson 6	Liquidtight Flexible Conduit: Types LFMC and LFNC

Electrical Code Calculations, Level I, Based on the 2017 NEC

Item Code: J227LM.K1

Core Curriculum Year: 2	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 - 2017 (S950)***
- ***Code Calculations Textbook - 2017 (S00817)***
- ***Electrical Systems Textbook (S970)***

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

Transformers, Level I - 2nd Ed.

Item Code: J205LM.I1

Core Curriculum Year: 2	Core Credits	Advanced Credits
	2.0	

Course Prerequisite(s): AC Theory, Level I/II; Code and Practices 2, Level I/II

Other Prerequisites: None

Required Material(s):

- ***Transformers Principles and Applications Textbook (S476)***

Lesson 1	Magnetism and Electromagnetism
Lesson 2	Transformers Operation Principles
Lesson 3	Transformer Connections
Lesson 4	Real World Transformer Connections
Lesson 5	Harmonics
Lesson 6	Power Generation and Distribution

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 (S599)***

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

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 (S599)***

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

Lighting Essentials, Level III - 2nd Ed.

Item Code: J259LM.K3

Core Curriculum Year: Advanced	Core Credits	Advanced Credits
		1.5

Course Prerequisite(s): Lighting Essentials, Level I/II

Other Prerequisites: None

Required Material(s):

- ***Lighting Design Basics Textbook (S599)***

Lesson 1	Lighting Design Approach and Documenting the Design
Lesson 2	Residential Lighting Design
Lesson 3	Lighting Commercial Spaces
Lesson 4	Lighting Commercial Spaces Case Studies
Lesson 5	The Process of Professional Lighting Design
Lesson 6	Troubleshooting High Intensity Discharge (HID) Ballasts I
Lesson 7	Troubleshooting High Intensity Discharge (HID) Ballasts II
Lesson 8	The Economics of LED Lighting

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