Core Curriculum

1st Year Syllabus

Commercial Curriculum 2023

electrical training ALLIANCE
IBEW - NECA

electrical training ALLIANCE
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electrical training ALLIANCE

Core Curriculum: Course Selection Per Year

1st Year Core	
Orientation, Level I	2
Job Information 1, Level I, Based on the 2017 NEC	3
Conduit Fabrication, Level I - 2nd Ed.	3
Job Information 1, Level II, Based on the 2017 NEC (previously Job Information 2)	3
Code, Standards, and Practices 1, Level I, Based on the 2017 NEC	4
DC Theory, Level I - 2nd Ed.	3
DC Theory, Level II - 2nd Ed.	3
DC Theory, Level III - 2nd Ed.	2
DC Theory, Level IV - 2nd Ed.	2
DC Theory, Level V - 2nd Ed.	2
Blueprints, Level I	2.5
Conduit Fabrication, Level II - 2nd Ed.	4
Applications Manual, Lesson 1 - Splicing Conductors	0.25
Applications Manual, Lesson 2 - Installing a Duplex Receptacle	0.25
Applications Manual, Lesson 3 - Installing a Single Pole Switch	0.25
Applications Manual, Lesson 4 - Installing a Switched Duplex Receptacle	0.25
Applications Manual, Lesson 8 - Using a Hacksaw	0.25
Applications Manual, Lesson 9 - Lifting and Carrying Conduit	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

Core Curriculum: 1st Year Core Courses

Notes:

	Credits	Page	Date
Orientation, Level I			
J200LM.I1	2.0	1	
Job Information 1, Level I, Based on the 2017 NEC			
J221LM.M1	3.0	2	
Conduit Fabrication, Level I - 2nd Ed.			
J204LM.H1	3.0	3	
Job Information 1, Level II, Based on the 2017 NEC (previously Job Information 2)			
J221LM.M2	3.0	4	
Code, Standards, and Practices 1, Level I, Based on the 2017 NEC			
J231LM.K1	4.0	5	
DC Theory, Level I - 2nd Ed.			
J202LM.K1	3.0	6	
DC Theory, Level II - 2nd Ed.			
J202LM.K2	3.0	7	
DC Theory, Level III - 2nd Ed.			
J202LM.K3	2.0	8	
DC Theory, Level IV - 2nd Ed.			
J202LM.K4	2.0	8	
DC Theory, Level V - 2nd Ed.			
J202LM.K5	2.0	9	
Blueprints, Level I			
J244LM.I1	2.5	9	

Core Curriculum: 1st Year Core Courses

Notes:

	Credits	Page	Date
Conduit Fabrication, Level II - 2nd Ed.			
J204LM.H2	4.0	10	
Applications Manual, Lesson 1 - Splicing Conductors			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 2 - Installing a Duplex Receptacle			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 3 - Installing a Single Pole Switch			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 4 - Installing a Switched Duplex Receptacle			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 8 - Using a Hacksaw			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 9 - Lifting and Carrying Conduit			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 11 - Hand Bending a 90° Stub-up			
Ξ J300.K	0.25	11	
Applications Manual, Lesson 12 - Hand Bending a Box Offset			
Ξ J300.K	0.25	11	

Core Curriculum: Course Level and Credit Summary

Orientation, Level I

Item Code: J200LM.I1

Core Curriculum Year: 1	Core Credits	Advanced Credits
	2.0	

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

Lesson 1	How to Study This Course and Achieve Your Personal Goals
Lesson 2	The Attributes of an IBEW/NECA Apprenticeship
Lesson 3	Knowing Your Apprenticeship and Your Responsibilities
Lesson 4	The IBEW and Its History
Lesson 5	NECA's Structure and Heritage
Lesson 6	Your Job and the Future It Holds for You
Lesson 7	Sexual Harassment
Lesson 8	The Economics of Employment
Lesson 9	Safety Never Takes a Break

Core Curriculum: Course Level and Credit Summary

Job Information 1, Level I, Based on the 2017 NEC

Item Code: J221LM.M1

Core Curriculum Year: 1	Core Credits	Advanced Credits
	3.0	

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2017 (S950)***
- ***DC Theory Textbook (S640)***
- ***Electrical Systems Textbook (S970)***

Lesson 1	Identifying Some Basic Tools of the Trade
Lesson 2	The Workplace of an Electrical Worker
Lesson 3	The Proper Care and Use of Ladders
Lesson 4	Choosing and Installing the Correct Masonry Fastener
Lesson 5	Alignment and Measurement
Lesson 6	The Reality of Electrical Shock
Lesson 7	Electrical Safety
Lesson 8	Understanding The Function and Design of Ground-Fault Interrupters
Lesson 9	CAUTION: Overhead Work in Progress
Lesson 10	Using and Installing Twist-On Wire Connectors

Core Curriculum: Course Level and Credit Summary

Conduit Fabrication, Level I - 2nd Ed.

Item Code: J204LM.H1

Core Curriculum Year: 1 | Core Credits 3.0 | Advanced Credits

Course Prerequisite(s): None

Other Prerequisites: None

Notifications:

This course replaces Conduit Fabrication, Level I - 1st Ed.

Required Material(s):

- ***Building a Foundation in Mathematics (S665)***
- ***Conduit Bending and Fabrication Textbook (S495)***
- ***National Electrical Code - 2011 (S650)***

Lesson 1	How to Work with Fractions
Lesson 2	Using Basic Trigonometric Functions
Lesson 3	Introduction to Conduit Bending
Lesson 4	Conduit Types
Lesson 5	Hand Fabrication of 90° Stubs
Lesson 6	Hand Fabrication of Back-to-Back Bends
Lesson 7	Hand Bending Offsets and Kicks
Lesson 8	Hand Bending—Three- & Four-Bend Saddles

Core Curriculum: Course Level and Credit Summary

Job Information 1, Level II, Based on the 2017 NEC (previously Job

Item Code: J221LM.M2

Core Curriculum Year: 1	Core Credits	Advanced Credits
	3.0	

Course Prerequisite(s): Job Information 1, Level I

Other Prerequisites: None

Notifications:

This course is the same as Job Information 2, Level I. Only the course title changed.

Required Material(s):

- *DC Theory Textbook (S640)*
- *National Electrical Code - 2017 (S950)*
- *Building a Foundation in Mathematics (S665)*
- *Electrical Systems Textbook (S970)*

Lesson 1	Building Wire Construction and Insulation Properties
Lesson 2	How Building Wire is Sized
Lesson 3	Working Properly With Aluminum Conductors
Lesson 4	Identifying Commonly Used Electrical Materials
Lesson 5	Working with Prefixes and Powers of 10
Lesson 6	Using the Metric System and Metrication Changes
Lesson 7	How to Solve Basic Algebraic Equations
Lesson 8	Introduction to Firestopping
Lesson 9	Fire-Resistant Wall and Floor Assembly Penetrations
Lesson 10	Firestop Applications
Lesson 11	Wire-Pulling Techniques

Core Curriculum: Course Level and Credit Summary

Code, Standards, and Practices 1, Level I, Based on the 2017 NEC

Item Code: J231LM.K1

Core Curriculum Year: 1	Core Credits	Advanced Credits
	4.0	

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

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

Lesson 1	An Introduction to the *National Electrical Code*
Lesson 2	Interpreting the Language of the *NEC*—Article 100
Lesson 3	Understanding and Applying Article 110 of the *NEC*
Lesson 4	Understanding and Applying Article 110 of the *NEC* II
Lesson 5	General Building Wire Properties and the *NEC*
Lesson 6	Understanding Conductor Insulation and *NEC* Specifications
Lesson 7	Introduction to Wiring Devices
Lesson 8	General Requirements Related to Installing Wiring Devices
Lesson 9	General Requirements Related to Installing Industrial Wiring Devices
Lesson 10	Specific Receptacle Installation Requirements
Lesson 11	Specific Switch Installation Requirements

Core Curriculum: Course Level and Credit Summary

DC Theory, Level I - 2nd Ed.

Item Code: J202LM.K1

Core Curriculum Year: 1 | Core Credits 3.0 | Advanced Credits

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

- ***DC Theory Textbook (S640)***
- ***Test Instruments Textbook (S471)***

Lesson 1	What is Electricity?
Lesson 2	Electrical Energy Sources
Lesson 3	Electrical Switches
Lesson 4	Conductors, Conductor Resistance, and Wattage Loss
Lesson 5	Introduction to Electrical Devices
Lesson 6	Current, Voltage, and Resistance in a Circuit
Lesson 7	The Electrical Circuit and Ohm's Law
Lesson 8	Power in a Circuit

Core Curriculum: Course Level and Credit Summary

DC Theory, Level II - 2nd Ed.

Item Code: J202LM.K2

Core Curriculum Year: 1	Core Credits	Advanced Credits
	3.0	

Course Prerequisite(s): DC Theory, Level I - 2nd Ed.

Other Prerequisites: None

Required Material(s):

- *DC Theory Textbook (S640)*
- *Test Instruments Textbook (S471)*

Lesson 1	The Series Circuit
Lesson 2	Understanding and Calculating Resistance in DC Series Circuits
Lesson 3	How Current Reacts in DC Series Circuits
Lesson 4	How Voltage Functions in DC Series Circuits
Lesson 5	How to Calculate Power in DC Series Circuits
Lesson 6	Energized Circuits and the Potential Hazards They Possess
Lesson 7	How to Draw Basic Electrical Circuits Correctly
Lesson 8	Introduction to Test Instruments

DC Theory, Level III - 2nd Ed.

Item Code: J202LM.K3

Core Curriculum Year: 1	Core Credits	Advanced Credits
	2.0	

Course Prerequisite(s): DC Theory, Level II - 2nd Ed.

Other Prerequisites: None

Required Material(s):

- *DC Theory Textbook (S640)*
- *Building a Foundation in Mathematics (S665)*

Lesson 1	How Current Reacts in DC Parallel Circuits
Lesson 2	Understanding Resistance in DC Parallel Circuits
Lesson 3	Working with Ratios and Proportion
Lesson 4	How Voltage Functions in DC Parallel Circuits
Lesson 5	How to Calculate Power in DC Parallel Circuits

Core Curriculum: Course Level and Credit Summary

DC Theory, Level IV - 2nd Ed.

Item Code: J202LM.K4

Core Curriculum Year: 1 | **Core Credits** 2.0 | **Advanced Credits**

Course Prerequisite(s): DC Theory, Level III - 2nd Ed.

Other Prerequisites: None

Required Material(s):

- *DC Theory Textbook (S640)*
- *National Electrical Code - 2014 (S750)*

Lesson 1	Understanding Resistance in DC Combination Circuits
Lesson 2	How Current Reacts in DC Combination Circuits
Lesson 3	How Voltage Functions in DC Combination Circuits
Lesson 4	How to Calculate Power in DC Combination Circuits
Lesson 5	How Voltage and Current Dividers Work
Lesson 6	The Design and Operation of the 3-Wire, Single-Phase System

DC Theory, Level V - 2nd Ed.

Item Code: J202LM.K5

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

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

Other Prerequisites: None

Required Material(s):

- *DC Theory Textbook (S640)*
- *National Electrical Code - 2014 (S750)*

Lesson 1	Applying the Principle of Superposition to Circuit Calculations
Lesson 2	Kirchhoff's Laws
Lesson 3	Thevenin's and Norton's Theorems
Lesson 4	Understanding the Principles of Magnetism
Lesson 5	Understanding the Principles of Electromagnetism
Lesson 6	DC Generators and Motors
Lesson 7	Using DC Theory to Solve Real World Problems

Core Curriculum: Course Level and Credit Summary

Blueprints, Level I

Item Code: J244LM.I1

Core Curriculum Year: 1 | Core Credits: 2.5 | Advanced Credits

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

Other Prerequisites: None

Required Material(s):

- *Blueprint Reading for Electricians Textbook (S648)*
- *Residential Blueprints (S135)*

Lesson 1	The Fundamentals of Blueprint Drawing and How to Make Proper Sketches
Lesson 2	Understanding Architectural Views and How to Draw Them
Lesson 3	Recognizing and Understanding Common Scales Used on Blueprints
Lesson 4	ICP 1: Math for Blueprint Reading
Lesson 5	Using Blueprints Specifications, Elevations and Schedules Properly
Lesson 6	Understanding and Drawing Electrical Symbols Used on Blueprints
Lesson 7	Understanding and Drawing Mechanical Symbols Used on Blueprints
Lesson 8	Understanding How to Properly Use a Residential Blueprint
Lesson 9	Reading and Analyzing a Residential Blueprint

Conduit Fabrication, Level II - 2nd Ed.

Item Code: J204LM.H2

Core Curriculum Year: 1	Core Credits	Advanced Credits
	4.0	

Course Prerequisite(s): Conduit Fabrication, Level I - 2nd Ed

Other Prerequisites: None

Notifications:

This course replaces Conduit Fabrication, Level II - 1st Ed.

Required Material(s):

- ***Conduit Bending and Fabrication Textbook (S495)***

Lesson 1	Conduit Threading Techniques
Lesson 2	Push-Through Bending: 90° Bends
Lesson 3	Bending Kicks, Offsets and Saddles Using the Push-Through Method
Lesson 4	Segmented Bends

Core Curriculum: Course Level and Credit Summary

Applications Manual

Item Code: J300.K

Core Curriculum Year: 1 and 2 — **Core Credits** — **Advanced Credits**

Level I/II

Course Prerequisite(s): None — ***Required Material(s): None***

Lesson 1	Splicing Conductors	0.25
Lesson 2	Installing a Duplex Receptacle	0.25
Lesson 3	Installing a Single Pole Switch	0.25
Lesson 4	Installing a Switched Duplex Receptacle	0.25
Lesson 5	Proper Device Installation Techniques, GFCI Rough-In	0.25
Lesson 6	Using Anchors to Install a Metal Enclosure	0.25
Lesson 7	Installing a Retrofit "Old Work" Electrical Box	0.25
Lesson 8	Using a Hacksaw	0.25
Lesson 9	Lifting and Carrying Conduit	0.25
Lesson 10	Erecting an Extension Ladder	0.25
Lesson 11	Hand Bending a 90° Stub-up	0.25
Lesson 12	Hand Bending a Box Offset	0.25
Lesson 13	Cutting a Hole in a Metal Enclosure for an EMT Connector	0.25
Lesson 14	Installing a Raceway Support System (Trapeze)	0.25
Lesson 15	Threading Conduit (Tapered Thread)	0.25
Lesson 16	Installing Flexible Metallic Conduit	0.25
Lesson 17	Installing Armor Clad and Metal Clad Cables	0.25
Lesson 18	Installing a Luminaire (Recessed "Can" Fixture)	0.25
Lesson 19	Installing a Luminaire (2' x 4' Fluorescent)	0.25
Lesson 20	Wire Pulling Techniques	0.25
Lesson 21	Terminating a Category 5e or 6/6A Work Area Outlet	0.25
Lesson 22	Labeling and Marking	0.25
Lesson 23	"Trimming Out" an Electrical Panel	0.25
Lesson 24	Exothermic Welding of Copper Conductors	0.25
Lesson 25	Connecting a Dual-Voltage, Wye-Wound Motor	0.25

ATTENTION: Your JATC will choose four out of the 25 Applications Manual lessons to be presented to students during the first year, and four out of the remaining Applications to be presented to students during the second year. Any Applications presented above the four per year must be matched with additional classroom time beyond 180 hours.