Core Curriculum

3rd Year Syllabus

Commercial Curriculum 2021

electrical training ALLIANCE
IBEW - NECA

electrical training ALLIANCE
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Core Curriculum: Course Selection Per Year

3rd Year Core	
AC Theory, Level III - 3rd Ed.	3
Blueprints, Level III	1
Code and Practices 3, Level I, Based on the 2017 NEC	2
Electrical Safety-Related Work Practices, Level II, Based on the 2015 70E	2
Grounding and Bonding, Level I, Based on the 2017 NEC	2
Preparing for Leadership: Personal Qualities, Level 1	2
Rigging, Hoisting, and Signaling, Level I	2
Structured Cabling, Level I	3
Fiber Optics, Level I	1
Fire Alarm Systems, Level I, Based on the 2017 NEC	2
Lighting Essentials, Level I - 2nd Ed.	1.5
Lighting Essentials, Level II - 2nd Ed.	1.5
Applications Manual, Lesson 5 - Proper Device Installation Techniques, GFCI Rough-In	0.25
Applications Manual, Lesson 16 - Installing Flexible Metallic Conduit	0.25
Applications Manual, Lesson 20 - Wire Pulling Techniques	0.25
Applications Manual, Lesson 23 - "Trimming Out" an Electrical Panel	0.25

Core Curriculum: 3rd Year Core Courses

Notes:

	Credits	Page	Date
AC Theory, Level III - 3rd Ed.			
J203LM.K3	3.0	1	
Blueprints, Level III			
J244LM.I3	1.0	2	
Code and Practices 3, Level I, Based on the 2017 NEC			
J233LM.K1_CP	2.0	2	
Electrical Safety-Related Work Practices, Level II, Based on the 2015 70E			
J444LM.K2	2.0	3	
Grounding and Bonding, Level I, Based on the 2017 NEC			
J210LM.K1	2.0	4	
Preparing for Leadership: Personal Qualities, Level 1			
J900LM	2.0	5	
Rigging, Hoisting, and Signaling, Level I			
J241LM.J1	2.0	6	
Structured Cabling, Level I			
J271LM.I1	3.0	7	
Fiber Optics, Level I			
J277LM	1.0	8	
Fire Alarm Systems, Level I, Based on the 2017 NEC			
J211LM.K1	2.0	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	11	
Applications Manual, Lesson 5 - Proper Device Installation Techniques, GFCI Rough-In			
Ξ J300.K	0.25	12	
Applications Manual, Lesson 16 - Installing Flexible Metallic Conduit			
Ξ J300.K	0.25	12	
Applications Manual, Lesson 20 - Wire Pulling Techniques			
Ξ J300.K	0.25	12	
Applications Manual, Lesson 23 - "Trimming Out" an Electrical Panel			
Ξ J300.K	0.25	12	

Core Curriculum: Course Level and Credit Summary

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 Textbook (S471)***
- ***Test Instruments Applications Manual (J285AM)***

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

Blueprints, Level III

Item Code: J244LM.I3

Core Curriculum Year: 3	Core Credits	Advanced Credits
	1.0	

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

Core Curriculum: Course Level and Credit Summary

Code and Practices 3, Level I, Based on the 2017 NEC

Item Code: J233LM.K1_CP

Core Curriculum Year: 3	Core Credits	Advanced Credits
	2.0	

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

Other Prerequisites: None

Required Material(s):

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

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 Fault Currents
Lesson 9	Ground-Fault Protection of Equipment

Core Curriculum: Course Level and Credit Summary

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

Item Code: J444LM.K2

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 (S744)***
- ***NFPA 70E Textbook (S35915)***

Lesson 1	Introduction to *NFPA 70E*®
Lesson 2	Justification, Assessment, and Implementation of Energized Work
Lesson 3	Bolted and Arcing Fault Current and Reading Time-Current Curves
Lesson 4	Methods to Accomplish the Arc Flash Risk Assessment
Lesson 5	Maintenance Considerations and OCPD Work Practices
Lesson 6	Electrical System Design and Upgrade Considerations

Core Curriculum: Course Level and Credit Summary

Grounding and Bonding, Level I, Based on the 2017 NEC

Item Code: J210LM.K1

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 (S36817)***
- ***National Electrical Code - 2017 (S950)***

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

Preparing for Leadership: Personal Qualities, Level 1

Item Code: J900LM

Core Curriculum Year: 3	Core Credits	Advanced Credits
	2.0	

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

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

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

Required Material(s):

- ***National Electrical Code - 2008 (S550)***
- ***Structured Cabling Textbook (S581)***

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

Required Material(s):

- ***NJATC Reference Guide to Fiber Optics (S480)***

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

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

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

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 (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

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.