Core Curriculum

3rd Session Syllabus

class of 2027 3rd and 4th year

electrical training
IBEW - NECA
ALLIANCE

electrical training
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electrical training ALLIANCE

Core Curriculum: Course Selection Per Session

3rd Session Core	
Torque for the Electrical Industry - CML	1
Applied Grounding and Bonding, Based on the 2023 NEC - CML	5
Code, Standards, and Practices 3, Based on the 2023 NEC - CML	2.5
Code, Standards, and Practices 4, Based on the 2023 NEC - CML	1.5
Rigging for the Electrical Industry - CML	3.5
Code, Standards, and Practices 5, Based on the 2023 NEC - CML	2
Transformer Principles and Applications 2 - CML	3
Transformer Code Calculations, Based on the 2023 NEC - CML	2
Motors for Electricians - CML	4
Motor Code Calculations, Based on the 2023 NEC - CML	1
Construction Documentation - CML	3.5
Preparing for Leadership: Personal Qualities - 2nd Ed.	2

Core Curriculum: 3rd Session Core Courses

Notes:

	Credits	Page	Date
Torque for the Electrical Industry - CML			
J242LM.A	1.0	1	
Applied Grounding and Bonding, Based on the 2023 NEC - CML			
J210LM.N1	5.0	2	
Code, Standards, and Practices 3, Based on the 2023 NEC - CML			
J233LM.N	2.5	3	
Code, Standards, and Practices 4, Based on the 2023 NEC - CML			
J234LM.N	1.5	4	
Rigging for the Electrical Industry - CML			
J241LM.K1	3.5	4	
Code, Standards, and Practices 5, Based on the 2023 NEC - CML			
J235LM.N	2.0	5	
Transformer Principles and Applications 2 - CML			
J205LM.J2	3.0	6	
Transformer Code Calculations, Based on the 2023 NEC - CML			
J227LM.N4	2.0	6	
Motors for Electricians - CML			
J206LM.K1	4.0	7	
Motor Code Calculations, Based on the 2023 NEC - CML			
J227LM.N5	1.0	8	
Construction Documentation - CML			
J244LM.J2	3.5	9	

Core Curriculum: 3rd Session Core Courses

Notes:

	Credits	Page	Date
Preparing for Leadership: Personal Qualities - 2nd Ed.			
J900LM.A	2.0	9	

Core Curriculum: Course Level and Credit Summary

Torque for the Electrical Industry - CML

Item Code: J242LM.A

Core Curriculum Year: 3	Core Credits	Advanced Credits
	1.0	

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

Lesson 1	Torque Theory
Lesson 2	Hardware—Threaded Fasteners, Bolts, Nuts, and Washers
Lesson 3	Torque Wrenches and Their Uses
Lesson 4	Torque Tightening
Lesson 5	Electrical Torque Applied
Lesson 6	Resources
Lesson 7	Support - Labs
Lesson 8	Final Torque Assessment

Core Curriculum: Course Level and Credit Summary

Applied Grounding and Bonding, Based on the 2023 NEC - CML

Item Code: J210LM.N1

Core Curriculum Year: 3	Core Credits	Advanced Credits
	5.0	

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

Other Prerequisites: None

Required Material(s):

- ***Applied Grounding and Bonding Textbook (S36823)***
- ***National Electrical Code - 2023 (S1150)***

Lesson 1	Introduction to Grounding
Lesson 2	Grounding Electrodes and the Grounding Electrode System
Lesson 3	Grounding Requirements for Services and Grounded Conductors
Lesson 4	Grounding Electrode Conductors
Lesson 5	Bonding Requirements
Lesson 6	Equipment Grounding Conductors
Lesson 7	Grounding Electrical Equipment
Lesson 8	Isolated/Insulated Grounding Circuits and Receptacles
Lesson 9	Grounding at Separate Buildings or Structures
Lesson 10	Grounding Electrical Systems
Lesson 11	Grounding and Bonding for Separately Derived Systems
Lesson 12	Grounding and Bonding for Special Occupancies
Lesson 13	Grounding and Bonding for Special Equipment
Lesson 14	Grounding and Bonding for Special Systems

Core Curriculum: Course Level and Credit Summary

Code, Standards, and Practices 3, Based on the 2023 NEC - CML

Item Code: J233LM.N

Core Curriculum Year: 3	Core Credits	Advanced Credits
	2.5	

Course Prerequisite(s): Elect. Code Calc., Lvl I or FCC CML; Code, Standards, and Practices 2, Level II

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2023 (S1150)***

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

Code, Standards, and Practices 4, Based on the 2023 NEC - CML

Item Code: J234LM.N

Core Curriculum Year: 3	Core Credits	Advanced Credits
	1.5	

Course Prerequisite(s): Code, Standards, and Practices 3

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2023 (S1150)***
- ***Electrical Systems Textbook (S1170)***

Lesson 1	Special Occupancies
Lesson 2	Electrical Equipment
Lesson 3	Special Equipment
Lesson 4	Introduction to Cable Tray Systems
Lesson 5	Installing Surface Metal Raceway

Core Curriculum: Course Level and Credit Summary

Rigging for the Electrical Industry - CML

Item Code: J241LM.K1

Core Curriculum Year: 3	Core Credits	Advanced Credits
	3.5	

Course Prerequisite(s): None

Other Prerequisites: None

Required Material(s):

- ***Rigging for the Electrical Industry Textbook (S761)***

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

Code, Standards, and Practices 5, Based on the 2023 NEC - CML

Item Code: J235LM.N

Core Curriculum Year: 3	Core Credits	Advanced Credits
	2.0	

Course Prerequisite(s): Code, Standards, and Practices 4

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2023 (S1150)***

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

Transformer Principles and Applications 2 - CML

Item Code: J205LM.J2

Core Curriculum Year: 3	Core Credits	Advanced Credits
	3.0	

Course Prerequisite(s): Transformers 1 CML

Other Prerequisites: None

Required Material(s):

- ***Transformer Principles and Applications Textbook (S576)***

Lesson 1	Power Generation and Distribution
Lesson 2	Harmonics
Lesson 3	Autotransformers
Lesson 4	Buck-Boost Transformers
Lesson 5	Special Transformers
Lesson 6	Resources
Lesson 7	Support - Labs

Transformer Code Calculations, Based on the 2023 NEC - CML

Item Code: J227LM.N4

Core Curriculum Year: 3	Core Credits	Advanced Credits
	2.0	

Course Prerequisite(s): Elect. Code Calc., Lvl I or FCC CML; Transformers 1 CML

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2023 (S1150)***
- ***Code Calculations Textbook - 2023 (S00823)***

Lesson 1	Understanding the Basics
Lesson 2	Understanding Transformer Overcurrent Selection
Lesson 3	Transformer Overcurrent Protection with Associated Secondary Conductor Rules
Lesson 4	Special Scenarios in Transformer Protection and Conductor Sizing

Core Curriculum: Course Level and Credit Summary

Motors for Electricians - CML

Item Code: J206LM.K1

Core Curriculum Year: 3	Core Credits	Advanced Credits
	4.0	

Course Prerequisite(s): Code, Standards, and Practices 3; ET3: AC Theory or AC II

Other Prerequisites: None

Required Material(s):

- ***Motors Textbook (S649)***

Lesson 1	Magnetism and Induction Review
Lesson 2	Motor Nameplates
Lesson 3	AC Alternators
Lesson 4	Three-Phase Motors
Lesson 5	Motor Types
Lesson 6	Single-Phase Motors
Lesson 7	Motor Protection
Lesson 8	DC Motors
Lesson 9	Starting and Stopping Motors
Lesson 10	Motor Alignment
Lesson 11	Troubleshooting Motors
Lesson 12	Resources
Lesson 13	Support - Labs

Motor Code Calculations, Based on the 2023 NEC - CML

Item Code: J227LM.N5

Core Curriculum Year: 3	Core Credits	Advanced Credits
	1.0	

Course Prerequisite(s): Elect. Code Calc., Lvl I or FCC CML; Motors CML

Other Prerequisites: None

Required Material(s):

- *National Electrical Code - 2023 (S1150)*
- *Code Calculations Textbook - 2023 (S00823)*

Lesson 1	General Rules and Part I of Article 430
Lesson 2	Sizing Motor Branch-Circuit Conductors
Lesson 3	Selecting Single Motor Branch-Circuit Short-Circuit and Ground-Fault Protection
Lesson 4	Sizing Motor Overload Protection
Lesson 5	Sizing Motor Branch-Circuit Disconnecting Means
Lesson 6	Calculations for Multi-Load Branch Circuits and Feeders
Lesson 7	Calculations for Air-Conditioning and Refrigeration Motors
Lesson 8	Special Applications

Construction Documentation - CML

Item Code: J244LM.J2

Core Curriculum Year: 3	Core Credits	Advanced Credits
	3.5	

Course Prerequisite(s): Construction Drawings

Other Prerequisites: 4000 Hours of OJT

Required Material(s):

- *Construction Documentation Textbook (S749)*
- *electrical training ALLIANCE Architectural Scale (S187)*

Lesson 1	Moving Beyond Construction Drawings
Lesson 2	Introduction to Construction Estimating
Lesson 3	Project Delivery Methodologies
Lesson 4	Construction Project Communication
Lesson 5	Project Detailing
Lesson 6	Prefabrication
Lesson 7	Project Closeout and Building Operation

Preparing for Leadership: Personal Qualities - 2nd Ed.

Item Code: J900LM.A

Core Curriculum Year: 3	Core Credits	Advanced Credits
	2.0	

Course Prerequisite(s): None

Other Prerequisites: None

Notifications:

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

Required Material(s):

- ***Effective Leadership Skills Textbook (S197)***

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	Communications: Effective Communication
Lesson 7	Planning: The Importance of Planning
Lesson 8	Planning: Planning Challenges
Lesson 9	Communications: Crew Support and Morale
Lesson 10	Communications: Disruptive Behaviors