

Core Curriculum

2nd Session Syllabus

None



Core Curriculum: Course Selection Per Session

2nd Session Core	
** Coming Soon ** IBEW Orientation - CML	1
Conduit System Fabrication 2 - CML	4
Electrical Theory 2: AC Systems - CML	3
Electrical Theory 3: Alternating Current - CML	12
Fundamental Code Calculations, Based on the 2023 NEC - CML	2.5
Code, Standards, and Practices 3, Based on the 2023 NEC - CML	2.5
Code, Standards, and Practices 6, Based on the 2023 NEC - CML	1.5
Electrical Safety-Related Work Practices, Based on the 2024 70E - CML	4
Transformer Principles and Applications 1 - CML	3
Transformer Principles and Applications 2 - CML	3
Transformer Code Calculations, Based on the 2023 NEC - CML	2
Electrical Industry Applications Manual, Lesson 5 - Proper Device Installation Techniques, GFCI Rough-In	0.25
Electrical Industry Applications Manual, Lesson 6 - Using Anchors to Install a Metal Enclosure	0.25
Electrical Industry Applications Manual, Lesson 10 - Erecting an Extension Ladder	0.25
Electrical Industry Applications Manual, Lesson 13 - Cutting a Hole in a Metal Enclosure for an EMT Connector	0.25
Electrical Industry Applications Manual, Lesson 15 - Threading Conduit (Tapered Thread)	0.25
Electrical Industry Applications Manual, Lesson 16 - Installing Flexible Metallic Conduit	0.25
Electrical Industry Applications Manual, Lesson 17 - Installing Armor Clad and Metal Clad Cables	0.25
Electrical Industry Applications Manual, Lesson 20 - Wire Pulling Techniques	0.25

Core Curriculum: 2nd Session Core Courses

	Credits	Page	Date
** Coming Soon ** IBEW Orientation - CML			
J200LM.K3	1.0	1	
Conduit System Fabrication 2 - CML			
J204LM.I2	4.0	2	
Electrical Theory 2: AC Systems - CML			
J103LM.M	3.0	2	
Electrical Theory 3: Alternating Current - CML			
J203LM.M	12.0	3	
Fundamental Code Calculations, Based on the 2023 NEC - CML			
J227LM.N1	2.5	4	
Code, Standards, and Practices 3, Based on the 2023 NEC - CML			
J233LM.N	2.5	5	
Code, Standards, and Practices 6, Based on the 2023 NEC - CML			
J236LM.N	1.5	6	
Electrical Safety-Related Work Practices, Based on the 2024 70E - CML			
J444LM.N	4.0	6	
Transformer Principles and Applications 1 - CML			
J205LM.J1	3.0	7	
Transformer Principles and Applications 2 - CML			
J205LM.J2	3.0	8	
Transformer Code Calculations, Based on the 2023 NEC - CML			
J227LM.N4	2.0	8	

Core Curriculum: 2nd Session Core Courses

	Credits	Page	Date
Electrical Industry Applications Manual, Lesson 5 - Proper Device Installation			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 6 - Using Anchors to Install a Metal			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 10 - Erecting an Extension Ladder			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 13 - Cutting a Hole in a Metal Enclosure			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 15 - Threading Conduit (Tapered			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 16 - Installing Flexible Metallic Conduit			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 17 - Installing Armor Clad and Metal			
≡ J300.K	0.25	9	
Electrical Industry Applications Manual, Lesson 20 - Wire Pulling Techniques			
≡ J300.K	0.25	9	

Core Curriculum: Curriculum Compass

**** Coming Soon ** IBEW Orientation - CML**

Item Code: J200LM.K3

Core Curriculum Session: 2

Core Credits

1.0

Course Prerequisite(s): Introduction to Apprenticeship

Other Prerequisites: None

Notifications:

Course coming soon.

Required Material(s):

- Lesson 1 The IBEW Constitution
- Lesson 2 Understanding Your Local Union Meeting
- Lesson 3 A Career in the IBEW

Conduit System Fabrication 2 - CML

Item Code: J204LM.I2

Core Curriculum Session: 2

Core Credits

4.0

Course Prerequisite(s): Conduit Fabrication, Level I

Other Prerequisites: None

Required Material(s):

- *Conduit Bending and Fabrication Textbook (\$495)*

- Lesson 1 Mechanical and Electric Benders
- Lesson 2 Hydraulic Benders
- Lesson 3 Advanced Bending Techniques
- Lesson 4 Resources
- Lesson 5 Support - Labs

Core Curriculum: Curriculum Compass

Electrical Theory 2: AC Systems - CML

Item Code: J103LM.M

Core Curriculum Session: 2

Core Credits

3.0

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

Other Prerequisites: None

Required Material(s):

- *AC Theory Textbook (S641)*
- *DC Theory Textbook (S640)*
- *TI-30X IIS Solar Calculator (S159)*
- *Student Notebook 2 (N203)*

- Lesson 1 Electrical Theory Review
- Lesson 2 Effects of Electromagnetism
- Lesson 3 DC Theory Review
- Lesson 4 Circuit Calculations for Basic Two-Wire Systems
- Lesson 5 Understanding Vectors
- Lesson 6 Elements of AC Generation
- Lesson 7 Resources
- Lesson 8 Support - Labs

Core Curriculum: Curriculum Compass

Electrical Theory 3: Alternating Current - CML

Item Code: J203LM.M

Core Curriculum Session: 2

Core Credits

12.0

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

Other Prerequisites: None

Required Material(s):

- *AC Theory Textbook (S641)*
- *TI-30X IIS Solar Calculator (S159)*
- *Student Notebook 2 (N203)*

- Lesson 1 Introduction to Alternating Current
- Lesson 2 Inductors, Inductance, X_L , L, and RL
- Lesson 3 Capacitors, Capacitance, X_C , C, and RC
- Lesson 4 Series LC and RLC Circuits
- Lesson 5 Parallel RL, RC, RLC, and LC Circuits
- Lesson 6 Comparing Series and Parallel RLC Circuits and Analyzing Combination RLC Circuits
- Lesson 7 Introduction to AC Applications
- Lesson 8 Resources
- Lesson 9 Support - Labs

Core Curriculum: Curriculum Compass

Fundamental Code Calculations, Based on the 2023 NEC - CML

Item Code: J227LM.N1

Core Curriculum Session: 2

Core Credits

2.5

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

Other Prerequisites: None

Required Material(s):

- *National Electrical Code - 2023 (S1150)*
- *Code Calculations Textbook - 2023 (S00823)*
- *Electrical Systems Textbook (S1170)*

- Lesson 1 Beginning to Calculate Conductor Ampacity
- Lesson 2 Determining Conductor Ampacity
- Lesson 3 Special Ampacity Considerations
- Lesson 4 Finalizing Ampacity Calculations
- Lesson 5 Calculating Voltage Drop in Feeders and Branch Circuits
- Lesson 6 Identifying Boxes and Fittings as Defined by the *NEC*
- Lesson 7 Performing Box Size and Fill Calculations
- Lesson 8 Calculating Raceway Fill

Core Curriculum: Curriculum Compass

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

Item Code: J233LM.N

Core Curriculum Session: 2

Core 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 (\$1150)***

- 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 6, Based on the 2023 NEC - CML

Item Code: J236LM.N

Core Curriculum Session: Advanced

Advanced Credits

1.5

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

Other Prerequisites: None

Required Material(s):

- ***National Electrical Code - 2023 (\$1150)***

- Lesson 1 Motor Branch-Circuit Devices and Protection – NEC Article 430
- Lesson 2 Motor Branch Circuits and Air-Conditioning and Refrigeration Equipment
- Lesson 3 Transformer Protection—Article 450
- Lesson 4 Interrupting Rating: Fully Rated and Series Rated Systems
- Lesson 5 Equipment Short-Circuit Protection
- Lesson 6 Selective Coordination
- Lesson 7 Ground-Fault Protection of Equipment

Core Curriculum: Curriculum Compass

Electrical Safety-Related Work Practices, Based on the 2024 70E - CML

Item Code: J444LM.N

Core Curriculum Session: 2

Core Credits

4.0

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

Other Prerequisites: None

Required Material(s):

- *Electrical Safety-Related Work Practices Textbook (S1044)*

- Lesson 1 Electrical Safety Culture
- Lesson 2 Electrical Hazard Awareness
- Lesson 3 Introduction to OSHA and the Control of Hazardous Energy
- Lesson 4 Introduction to *NFPA 70E*®
- Lesson 5 Work Involving Electrical Hazards
- Lesson 6 Fault Current Fundamentals
- Lesson 7 Identifying Overcurrent Protective Device Types
- Lesson 8 Methods to Select Arc Flash PPE
- Lesson 9 Maintenance Considerations
- Lesson 10 Eliminating or Reducing Hazards by Design and Upgrades

Core Curriculum: Curriculum Compass

Transformer Principles and Applications 1 - CML

Item Code: J205LM.J1

Core Curriculum Session: 2

Core Credits

3.0

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

Other Prerequisites: None

Required Material(s):

- *Transformer Principles and Applications Textbook (S576)*

- Lesson 1 Transformer Operation
- Lesson 2 Transformer Classification
- Lesson 3 Single-Phase Transformer Connections
- Lesson 4 3-Phase Transformer Connections
- Lesson 5 Resources
- Lesson 6 Support - Labs

Transformer Principles and Applications 2 - CML

Item Code: J205LM.J2

Core Curriculum Session: 2

Core 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

Core Curriculum: Curriculum Compass

Transformer Code Calculations, Based on the 2023 NEC - CML

Item Code: J227LM.N4

Core Curriculum Session: 2

Core Credits

2.0

Course Prerequisite(s): Elect. Code Calc., Lvl I or FCC CML; Transformers 2 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: Curriculum Compass

Applications Manual

Item Code: J300.K

Core Curriculum Year: 1 and 2

Level I/II

Credits

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 session, and four out of the remaining Applications to be presented to students during the second session. Any Applications presented above the four per session must be matched with additional classroom time beyond 180 hours.