

Core Curriculum

4th Session Syllabus

Unnamed



Core Curriculum: Course Selection Per Session

4th Session Core		
	Code, Standards, and Practices 6, Based on the 2023 NEC - CML	1.5
	Motor Code Calculations, Based on the 2023 NEC - CML	1
	Photovoltaic System Installation - CML	3
	Fire Alarm Systems, Based on the 2022 NFPA 72 and the 2023 NEC - CML	4
	Structured Cabling Systems and Power-Limited Technologies - CML	4
	Load and Service Calculations, Based on the 2023 NEC - CML	3
	Lightning Protection - CML	1
	Physical Intrusion Detection Systems and Electronic Access Control - CML	3
	Introduction to Programmable Logic Controllers - 2nd Ed.	4.5

Core Curriculum: 4th Session Core Courses

	Credits	Page	Date
Code, Standards, and Practices 6, Based on the 2023 NEC - CML			
J236LM.N	1.5	1	
Motor Code Calculations, Based on the 2023 NEC - CML			
J227LM.N5	1.0	2	
Photovoltaic System Installation - CML			
J230LM.K	3.0	2	
Fire Alarm Systems, Based on the 2022 NFPA 72 and the 2023 NEC - CML			
J211LM.N	4.0	3	
Structured Cabling Systems and Power-Limited Technologies - CML			
J271LM.K	4.0	4	
Load and Service Calculations, Based on the 2023 NEC - CML			
J227LM.N2	3.0	5	
Lightning Protection - CML			
J276LM.K	1.0	6	
Physical Intrusion Detection Systems and Electronic Access Control - CML			
J146LM.B	3.0	6	
Introduction to Programmable Logic Controllers - 2nd Ed.			
J162LM.A	4.5	7	

Core Curriculum: Curriculum Compass

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

Motor Code Calculations, Based on the 2023 NEC - CML

Item Code: J227LM.N5

Core Curriculum Session: 4

Core 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 (\$1150)***
- ***Code Calculations Textbook - 2023 (\$00823)***

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

Core Curriculum: Curriculum Compass

Photovoltaic System Installation - CML

Item Code: J230LM.K

Core Curriculum Session: Advanced

Advanced Credits

3.0

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

Other Prerequisites: None

Required Material(s):

- *Photovoltaic Systems Textbook, 3rd Ed. (S674)*

Lesson 1	Introduction to Photovoltaic Systems
Lesson 2	PV System Safety Concerns
Lesson 3	Components and Configurations
Lesson 4	PV Construction Drawings and Plans
Lesson 5	Mechanical Installation Requirements
Lesson 6	Electrical Installation Requirements
Lesson 7	System Installation Procedures
Lesson 8	Preparing for System Commissioning and Initial Start-Up

Core Curriculum: Curriculum Compass

Fire Alarm Systems, Based on the 2022 NFPA 72 and the 2023 NEC - CML

Item Code: J211LM.N

Core Curriculum Session: Advanced

Advanced Credits

4.0

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

Other Prerequisites: None

Required Material(s):

• *Fire Alarm Systems Textbook (S1046)*

• *National Electrical Code - 2023 (S1150)*

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	Advanced Detection Topics
Lesson 8	Emergency Communications Systems and Emergency Voice/Alarm Communications Systems
Lesson 9	Public Emergency Alarm Reporting Systems and Supervising Stations
Lesson 10	Single- and Multiple-Station Alarms and Household Fire Alarm Systems
Lesson 11	Plans and Specifications
Lesson 12	Inspection, Testing, and Maintenance
Lesson 13	IPSI Sample Exam Fire Alarm Certification Program Level 1 Interior
Lesson 14	Sample NICET Exam

Core Curriculum: Curriculum Compass

Structured Cabling Systems and Power-Limited Technologies - CML

Item Code: J271LM.K

Core Curriculum Session: Advanced

Advanced Credits

4.0

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

Other Prerequisites: None

Notifications:

The NEC is now optional for this course (removed as a required material).

Required Material(s):

• ***Structured Cabling Textbook (S681)***

Lesson 1	The Need for Structured Cabling Systems
Lesson 2	Structured Cabling Standards and the <i>NEC</i> ®
Lesson 3	Cables and Connectors
Lesson 4	Structured Cabling System Performance
Lesson 5	Pathways and Spaces
Lesson 6	Telecommunications Cabling Administration
Lesson 7	Telecommunications Grounding and Bonding
Lesson 8	Configuring Structured Cabling Systems
Lesson 9	Residential Cabling Systems
Lesson 10	Testing Structured Cabling Systems
Lesson 11	Introduction to Fiber Optics
Lesson 12	Power over Ethernet and Class 4, Fault Managed Power

Core Curriculum: Curriculum Compass

Load and Service Calculations, Based on the 2023 NEC - CML

Item Code: J227LM.N2

Core Curriculum Session: 4

Core Credits

3.0

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

Other Prerequisites: None

Required Material(s):

• *National Electrical Code - 2023 (S1150)*

• *Code Calculations Textbook - 2023 (S00823)*

- Lesson 1 Introduction to Electrical Load Calculations
- Lesson 2 Range and Appliance Calculations
- Lesson 3 Calculating the Parameters of Residential Loads in Accordance with the *NEC*
- Lesson 4 Calculating the Parameters of Multifamily Dwelling Loads in Accordance with the *NEC*
- Lesson 5 Calculating the Parameters of Commercial Loads in Accordance with the *NEC*

Lightning Protection - CML

Item Code: J276LM.K

Core Curriculum Session: Advanced

Advanced Credits

1.0

Course Prerequisite(s): Grounding and Bonding, Level I

Other Prerequisites: None

Required Material(s):

- Lesson 1 Introduction to Lightning Protection Systems
- Lesson 2 Ground Work
- Lesson 3 Down Conductors
- Lesson 4 Bonding Requirements and Potential Equalization
- Lesson 5 Rooftop Lightning Protection
- Lesson 6 Surge Protective Devices
- Lesson 7 Inspection and Maintenance

Core Curriculum: Curriculum Compass

Physical Intrusion Detection Systems and Electronic Access Control -

Item Code: **J146LM.B**

Core Curriculum Session: Advanced

Advanced Credits

3.0

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

Other Prerequisites: None

Required Material(s):

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| Lesson 1 | Introduction to Security and Threats |
| Lesson 2 | Fundamentals of Physical Intrusion Detection Systems |
| Lesson 3 | Physical Intrusion Detection System Components |
| Lesson 4 | Fundamentals of Electronic Access Control Systems |
| Lesson 5 | EAC Credentials and Controls |
| Lesson 6 | Portals, Electrified Hardware, and Power Supplies |
| Lesson 7 | Codes, Standards, and Compliance |
| Lesson 8 | Commissioning PIDS and EAC Systems |
| Lesson 9 | Advanced Topics in PIDS and EAC Systems |
| Lesson 10 | Evaluating, Maintaining, and Updating PIDS and EAC Systems |

Core Curriculum: Curriculum Compass

Introduction to Programmable Logic Controllers - 2nd Ed.

Item Code: J162LM.A

Core Curriculum Session: Advanced

Advanced Credits

4.5

Course Prerequisite(s): Motor Control, Level I

Other Prerequisites: None

Required Material(s):

- ***Programmable Logic Controllers Textbook (S631)***

Lesson 1	Programmable Logic Controllers and Critical Safety Practices
Lesson 2	PLC Electrical Principles, Ratings, and Circuit Calculations
Lesson 3	PLC Programming Symbols, Diagrams, and Logic Functions
Lesson 4	PLC Hardware, Memory, and Operating Cycle
Lesson 5	PLC Systems, Circuits, and Interface Devices
Lesson 6	PLC Programming Diagrams, Addresses, and Bit Instructions
Lesson 7	PLC Programming Timer and Counter Instructions
Lesson 8	PLC Analog Device Installation, Programming, and Troubleshooting
Lesson 9	PLC Installations and Startup
Lesson 10	Troubleshooting Methods and Test Instrument Operation
Lesson 11	Testing and Troubleshooting Electrical Devices and PLC Hardware
Lesson 12	Troubleshooting with PLC Software
Lesson 13	PLC System Maintenance