# **Core Curriculum 5th Year Syllabus**

Unnamed





#### **Core Curriculum: Course Selection Per Year**

5th Year Core	
Orientation, Level III - 2nd Ed.	1
Instrumentation Introduction - Module 1	2
Instrumentation Introduction - Module 2: Basics	5
Intrusion Detection, Level I - 1st Ed.	1.5
Code, Standards, and Practices 5, Based on the 2020 NEC	2
Torque, Level I	0.5
Building Automation 1: Control Devices and Applications, Level I	1.5
Building Automation 2: System Integration with Open Protocols, Level I B	2
Distributed Generation, Level I	0.5
Photovoltaic Systems Workbook SW	3
Power Quality, Level I	2

	Credits	Page	Date
Orientation, Level III - 2nd Ed. J200LM.I3a	1.0	1	
Instrumentation Introduction - Module 1 J126LM	2.0	2	
Instrumentation Introduction - Module 2: Basics J134LM	5.0	3	
Intrusion Detection, Level I - 1st Ed. J146LM	1.5	4	
<b>Code, Standards, and Practices 5, Based on the 2020 NEC</b> J235LM.L	2.0	5	
Torque, Level I J242LM.1	0.5	6	
Building Automation 1: Control Devices and Applications, L J238LM.H1	<b>evel I</b> 1.5	6	
Building Automation 2: System Integration with Open Proto	ocols. Level I B		
J239LM.I1B	2.0	7	
<b>Distributed Generation, Level I</b> J229LM.I1	0.5	8	
Photovoltaic Systems Workbook SW E J230SW.J	3.0	9	
Power Quality, Level I J228LM.I1	2.0	10	

#### Orientation, Level III - 2nd Ed.

*Item Code:* J200LM.I3a Core Curriculum Year: 5

Core Credits 1.0

**Advanced Credits** 

Course Prerequisite(s): None

#### **Other Prerequisites: None**

#### Notifications:

Course coming soon.

#### Required Material(s):

Lesson 1 The National Electrical Benefit Fund (NEBF)

- Lesson 2 After Apprenticeship
- Lesson 3 Soon To Be A Journey-Level Worker
- Lesson 4 This is a National Program
- Lesson 5 Keys to Success-Motivation and Leadership
- Lesson 6 The National Labor Relations Board
- Lesson 7 The Economics of Unemployment
- Lesson 8 The Realities of Construction

Instrum	entation Introduction - Mod	lule 1	
ltom C			
nem o			
Core Curr	iculum Year: Advanced	Core Credits	Advanced Credits
			2.0
Course Pre	erequisite(s): Blueprints, Level I; Electric	cal Safety-Related Work Pra	ctices, Level I; AC Theory
Other Prer	equisites: None		
Required I	Material(s):		
Lesson 1	Math Pre-Test Assessment		
Lesson 2	Math		
Lesson 3	Science Pre-Test Assessment		
Lesson 4	Science		
Lesson 5	Electrical Theory Pre-Test Assessment		
Lesson 6	Electrical Theory		
Lesson 7	Meters and Measurements Pre-Test Ass	sessment	
Lesson 8	Meters and Measurements		
Lesson 9	Instrumentation Vocabulary Pre-Test As	sessment	
Lesson 10	Instrumentation Vocabulary		
Lesson 11	Process and Instrumentation Diagram In	terpretation Pre-Test Assess	ment
Lesson 12	Process and Instrumentation Diagram In	Iterpretation	
Lesson 13	Final Exam		

<b>Instrum</b> Item C	<b>Tentation Introduction - Mo</b> Tode: J134LM	dule 2: Basics	
Core Curi	riculum Year: Advanced	Core Credits	Advanced Credits 5.0
Course Pre Control, Le	erequisite(s): Blueprints, Level I; Electr vel II; Transformers, Level I	ical Safety-Related Work Pra	actices, Level I; Motor
Other Prer	equisites: None		
Required I	Material(s):		
• Applied	Science of Instrumentation Textbook (S600)		
Lesson 1	Review		
Lesson 2	Introduction to Instrumentation		
Lesson 3	Fundamentals of Process and Control	Systems	
Lesson 4	Instrumentation Symbols and Diagrams	3	
Lesson 5	Calibration Procedure and Documentat	ion	
Lesson 6	Principles of Pressure		
Lesson 7	Principles of Level		
Lesson 8	Principles of Flow		
Lesson 9	Principles of Temperature		
Lesson 10	Principles of Smart Instrumentation and	Communication	
Lesson 11	Control Valves, Actuators, and Accesso	ories	
Lesson 12	Final Exam		

<b>Intrusio</b> Item C	on Detection, Level I - 1st Ed. ode: J146LM		
Core Curi	iculum Year: Advanced	Core Credits	Advanced Credits
			1.5
Course Pre	erequisite(s): DC Theory, Level I/IV		
Other Prer	equisites: None		
Notificatio	ns:		
Archive	d on August 7, 2018		
Required I	Material(s):		
• GE/Sent	rol Reference Guide (S312-06)		
Lesson 1	Terms and Definitions		
Lesson 2	Introduction to Security Systems		
Lesson 3	Specific Applications for Magnetic Contacts	S	
Lesson 4	Motion Sensors		
Lesson 5	Glassbreak Sensors		
Lesson 6	Control Panels, Keypads, and Modules		
Lesson 7	Security System Design		

Code, S	<i>Standards, and Practices 5,</i>	Based on the 2020	NEC
Item C	<i>Code:</i> J235LM.L	Oowo Owodite	Advanced Oredite
Core Cur	riculum Year: 5	Lore Creaits	Advanced Greatts
		2.0	
Course Pr	erequisite(s): Code, Standards, and Pra	actices 4	
Other Prei	requisites: None		
Required	Material(s):		
• Nationa	l Electrical Code - 2020 (S1050)	• Significant Changes to the I	NEC (S1053)
Lesson 1	Installing Electrical Services		
Lesson 2	Swimming Pools, Fountains, and Simila	ar Installations	
Lesson 3	Understanding Emergency and Standb	y Systems Installation Require	ements
Lesson 4	Over 1,000-Volt Installations		
Lesson 5	Remote-Control, Signaling, and Power	-Limited Circuits	
Lesson 7	2020 NEC Changes – Part II		
Toraue.	. Level I		
Item C	Code: J242LM.1		
Core Cur	riculum Year: 5	Core Credits	Advanced Credits
Course Pr	erequisite(s): None		
Other Pre	requisites: 4000 Hours of 0.IT		
Required	Material(s):		
Lesson 1			
Lesson 2	Threaded Fasteners Basics		
Lesson 3	Introduction to Torque Applications		
Lesson 4	Torque Products		
Lesson 5	Real World Electrical Torque Application	ns	

Item Co	ode: J238LM.H1		
Core Curr	iculum Year: Advanced	Core Credits	Advanced Credits 1.5
Course Pre	requisite(s): None		
Other Prer	equisites: 4000 Hours of OJT		
Required N	laterial(s):		
• Building	Automation: Control Devices (S518)		
Lesson 1	Introduction to Building Automation		
Lesson 2	Electrical Systems		
Lesson 3	Lighting Sources and Controls		
Lesson 4	Lighting System Control Devices		
Lesson 5	HVAC Systems		
Lesson 6	HVAC System Applications		
Lesson 7	Automated Building Operation and App	olications	

Building	g Automation 2: System Inte	gration with Open l	Protocols, Level I B
Item C	ode: J239LM.I1B		
Core Curi	iculum Year: Advanced	<b>Core Credits</b>	<b>Advanced Credits</b>
			2.0
Course Pro	erequisite(s): Building Automation 1, Le	vel l	
Other Prer	equisites: None		
Required l	Material(s):		
• Building	Automation: System Integration (S519)		
Lesson 1	Building Automation Interoperability		
Lesson 2	Control Concepts		
Lesson 3	Communication Fundamentals		
Lesson 4	Introduction to BACnet		
Lesson 5	BACnet Transports and Interworking		
Lesson 6	BACnet Objects and Services		
Lesson 7	BACnet Alarming, Scheduling, and Tren	ding	
Lesson 8	BACnet Special Applications		
Lesson 9	BACnet Installation, Configuration, and	Froubleshooting	

Distribu	Ited Generation, Level I		
Item C	ode: J229LM.I1		
Core Cur	riculum Year: Advanced	Core Credits	Advanced Credits
			0.5
			0.5
Course Pr	erequisite(s): AC Theory, Level II/III		
Other Prei	requisites: None		
<b>Required</b>	Material(s):		
Lesson 1	Information Technology Sites and Critica	al Loads	
Lesson 2	UPS — Uninterruptible Power Supplies		
Lesson 3	Infrastructure Components		
Lesson 4	Critical UPS Systems Design Configurat	tions	
Lesson 5	UPS Installation		
Lesson 6	Critical Systems Service		
Lesson 7	Fuel Cell Basics and Applications		
Lesson 8	Fuel Cell Installation		

Photova	o <b>ltaic Systems Workbook SW</b> <sup>ode:</sup> J230SW.J	
Core Curr	riculum Year: Advanced Core Credits Advanced Credits 3.0	
Course Pre	erequisite(s): None	
Other Prer	requisites: None	
Required I	Material(s):	
Photovol	Itaic Systems Textbook, 3rd Ed. (S674)	
Lesson 1	Introduction to Photovoltaic Systems	
Lesson 2	Fundamentals of Solar Radiation	
Lesson 3	Sun-Earth Relationships	
Lesson 4	Solar Radiation Data and Measurements	
Lesson 5	Site Surveys and Planning	
Lesson 6	Photovoltaic Systems and Components	
Lesson 7	Fundamentals of Photovoltaic Devices	
Lesson 8	Photovoltaic Modules and Arrays	
Lesson 9	Batteries	
Lesson 10	Charge Controllers	
Lesson 11	Inverters	
Lesson 12	System Sizing	
Lesson 13	Mechanical Integration	
Lesson 14	Electrical Integration I	
Lesson 15	Electrical Integration II	
Lesson 16	Utility Interconnection	
Lesson 17	Permitting and Inspection	
Lesson 18	Commissioning, Maintenance, and Troubleshooting	
Lesson 19	Economic Analysis	

<b>Power Quality, Leve</b>	
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Item Co	ode: J228LM.I1		
Core Curr	iculum Year: Advanced	Core Credits	Advanced Credits 2.0
Course Prerequisite(s): AC Theory, Level II/III; DC Theory, Level II/V			
Other Prerequisites: None			
Required Material(s):			
• Power Quality Textbook (S569)			
Lesson 1	Why Care About Power Quality?		
Lesson 2	The Basics of Power Quality		
Lesson 3	Safety		
Lesson 4	Using the Right Tool		
Lesson 5	Monitor Setup		
Lesson 6	Data Collection and Analysis		
Lesson 7	Practical Examples		
Lesson 8	"Rules of Thumb"		
Lesson 9	Mitigation Equipment		