Correlation of

Industrial Maintenance and Mechatronics,

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to

NIMS (National Institute for Metalworking Skills)

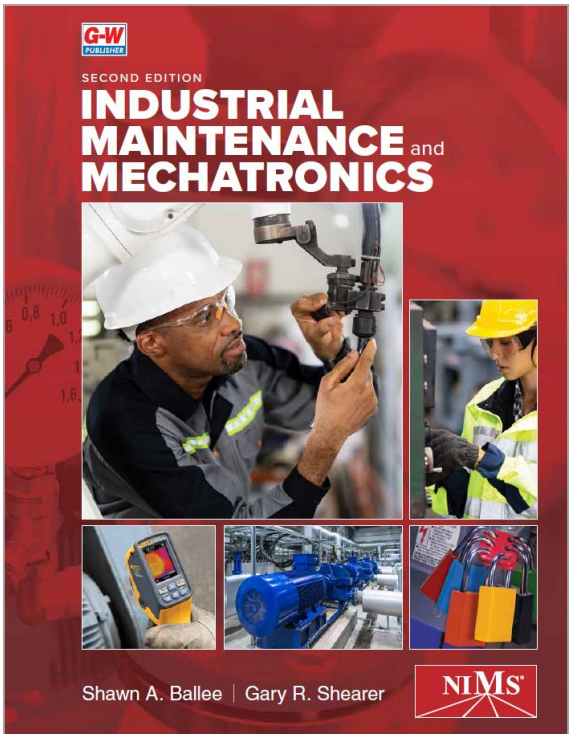
Smart Standard:

Electrical Systems Specialist

Industrial Maintenance and Mechatronics carries NIMS' exclusive endorsement and supports attainment of NIMS credentialing in Industrial Technology Maintenance (ITM).

The textbook is designed to work hand-in-glove with the NIMS Smart Standards for Industrial Technology Maintenance. The standards-based learning package will help students pass the testing and performance requirements for NIMS credentialing.

The correlation below lists the knowledge and performance requirements for a specific NIMS Smart ITM Credential. The ITM areas covered in *Industrial Maintenance and Mechatronics* include Maintenance Operations, Mechanical Systems, Hydraulic Systems, Pneumatic Systems, Electrical Systems, Electronic Control Systems, Process Control Systems, and Maintenance Piping.



Standards	G-W Content
Knowledge Area: Safety	
Roles and Responsibilities	Textbook: pg. 16, 17, 18
Bloodborne Pathogens	Textbook: pg. 24–25
OSHA, NIOSH, EPA Safety Requirements	Textbook: pg. 24–25, 44
Fire Prevention/Suppression	Textbook: pg. 25, 28, 42–43
Hazardous Material Identification System (HMIS)	Textbook: pg. 27

Standards	G-W Content
Industrial Hazards: Ergonomics Lasers NFPA Arc Flash Confined Spaces Gases and Combustibles Steam and Compressed Air	Textbook: pg. 24–27, 29, 32, 35, 39–41, 43, 424 Textbook: pg. 26 Textbook: pg. 31 Textbook: pg. 32, 35, 40, 41 Textbook: pg.37–39 Textbook: pg. 42–43, 424 Textbook: pg. 146
Fall Protection Equipment	Textbook: pg. 36–37
Personal Protective Equipment (PPE)	Textbook: pg. 32–36, 44 Lab Workbook: Activity 2-2, Personal Protective Equipment
Safety Data Sheets (SDS)	Textbook: pg. 24–27
Lock Out/Tag Out	Textbook: pg. 28–32 Lab Workbook: Activity 2-1, Lockout/Tagout Procedure
Fuel Sources and Extinguishers	Textbook: pg. 42–43
Material Handling	Textbook pg. 18, 25
Job Safety Analysis	Textbook pg. 43 Lab Workbook: Activity 2-3, Job Safety Analysis
Knowledge Area: Applied Math	
Arithmetic	Textbook: pg. 924–942
Coordinate Systems	Textbook: pg. 496, 762
Unit of Measurement Conversions	Textbook: pg. 349–350, 445, 475, 507
Pythagorean Theorem	Textbook: pg. 507–508, 512, 93–939
Right Angle Trigonometry	Textbook: pg. 937–939
Power Flow Calculations	Textbook: pg. 192–193
Knowledge Area: Technical Documents	
Schematics and Diagrams: Power Electrical Control Ladder Logic	Textbook: pg. 126, 671–673 Textbook: pg. 130 Textbook: pg. 126, 620, 877 Textbook: pg. 129, 620–622, 758, 877 Lab Workbook: Activity 6-3, Electrical Diagrams
Knowledge Area: Measuring and Test Equipment	
Terminology and Definitions	Textbook: pg. 79–80, 148–149, 151–152, 447–450, 674–677

Standards	G-W Content
(Types of) Measuring Instruments	Textbook: pg. 79–80, 117, 148, 447–450, 674–677 Lab Workbook: Activity 4-2, Vernier Measurements Lab Workbook: Activity 4-3, Micrometer Measurements Lab Workbook: Activity 20-1, Basic Digital Micrometer Measurements
Environmental Influences	Textbook: pg. 243, 448, 526
Documentation and Traceability	Textbook: pg. 143-144, 456
Knowledge Area: Computer Operations	
Organizing and Managing Files	Textbook: pg. 56
Digital File Types (e.g., txt, docx, xlsx)	Textbook: pg. 56
File Naming Conventions	Textbook: pg. 56
Digital Storage Methods (e.g., local, network, cloud)	Textbook: pg. 54, 56
Copy and Paste Functions	Textbook: pg. 56
Knowledge Area: Software Technologies	
Management System (CMMS)	Textbook: pg. 56
Performance Duty: Maintenance	
Adjusting: Switches Sensors	 Textbook: pg. 600, 652–653 Textbook: pg. 291, 720–727 Lab Workbook: Activity 27-1, Adjusting Switches Lab Workbook: Activity 33-1, Capacitive, Inductive, Hall Effect, and Magnetic Reed Sensors Lab Workbook: Activity 33-2, Photoelectric Sensors
Repairing: Wiring and Machine Grounds Transformers	 Textbook: pg. 622, 628, 735, 757 Textbook: pg. 567–569 Lab Workbook: Activity 25-3, Troubleshooting Transformers
Installing: Fuses and Circuit Breaker Electrical Control Components	 Textbook: pg. 531–535 Textbook: pg. 530, 532, 756
Performance Duty: Troubleshooting	

Standards	G-W Content
Exercising Equipment	Textbook: pg. 142–143 Lab Workbook: Activity 25-3, Troubleshooting Transformers Lab Workbook: Activity 38-1, Calibrating a Pneumatic Thermostat Lab Workbook: Activity 38-3, Boiler/Hydronic Heating Units
Checking Inputs and Outputs	Textbook: pg. 413, 751–756, 765–767 Lab Workbook: Activity 34-2, Basic PLC Troubleshooting
Documenting Findings	Textbook: pg. 145–146, 152–154, 666
Performance Duty: Planning	
Documenting Maintenance Procedures	Textbook: pg. 56, 143 Lab Workbook: Activity 3-1, Maintenance Planning
Performance Duty: Improvements	
Researching New Technologies	Textbook: pg. 6, 292
Documenting and Presenting Proposed Changes	Textbook: pg. 8, 15, 43, 60, 64, 727
Performance Duty: Standardizing	
Taking Measurements in Accordance with Standardization Procedure	Textbook: pg. 456
Cleaning and Adjusting M&TE	Textbook: pg. 148, 151–152, 439, 451
Performance Duty: Measurements	
Taking Measurements	Textbook: pg. 80, 151–152, 439, 443–456, 674–677 Lab Workbook: Activity 4-1, Using a Machinist's Rule Lab Workbook: Activity 4-2, Vernier Measurements Lab Workbook: Activity 4-3, Micrometer Measurements Lab Workbook: Activity 11-1, Micrometer Use Lab Workbook: Activity 20-1, Basic Digital Micrometer Measurements
Recording Results of Measurements	Textbook: pg. 51, 61, 151, 303 Lab Workbook: Activity 4-1, Using a Machinist's Rule Lab Workbook: Activity 4-2, Vernier Measurements Lab Workbook: Activity 4-3, Micrometer Measurements Lab Workbook: Activity 11-1, Micrometer Use Lab Workbook: Activity 20-1, Basic Digital Micrometer Measurements