Correlation of

Industrial Maintenance and Mechatronics,

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to

NIMS (National Institute for Metalworking Skills)

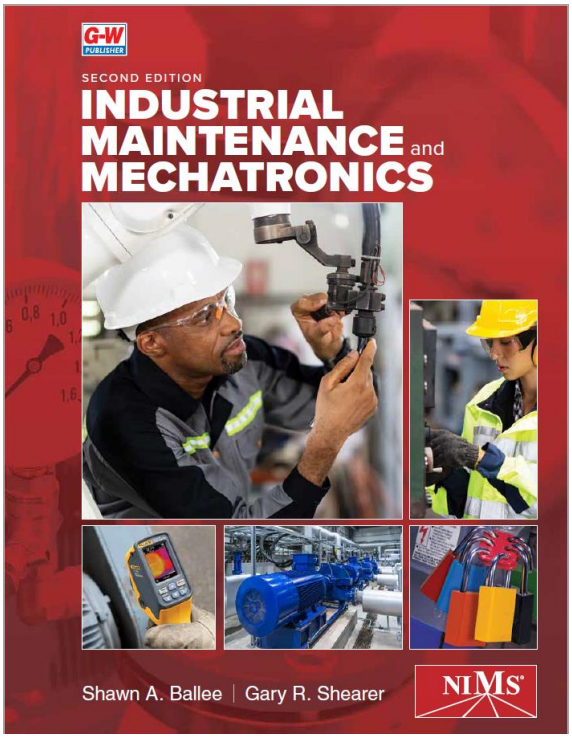
Smart Standard:

Maintenance Operations 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. 450-451, 496, 505, 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
Knowledge Area: Technical Documents	
Drawings (ASME Y14): Assembly Detail	 Textbook: pg. 122–123, 147 Textbook: pg. 118, 120, 121. Lab Workbook: Activity 6-2, Print Reading
Knowledge Area: Geometric Dimensioning and Tolerancing (ASME Y14.5)	
Features With and Without Size	Textbook: pg. 123–125
Tolerance Zones	Textbook: pg. 125
Basic Dimensions	Textbook: pg. 125
Geometric Tolerancing Categories	Textbook: pg. 123–125
Geometric Tolerancing Characteristics and Symbols	Textbook: pg. 123–124 Lab Workbook: Activity 6-2, Print Reading

Standards	G-W Content
Symbols Associated with Feature Control Frames	Textbook: pg. 123–124 Lab Workbook: Activity 6-2, Print Reading
Maximum Material Condition	Textbook: pg. 124
Calculating Actual Position	Textbook: pg. 124–125
Datum Reference Frame: 6 Degrees of Freedom Datums Datum Features Datum Simulators	 Textbook: pg. 123 Textbook: pg. 124 Textbook: pg. 124 Textbook: pg. 124 Lab Workbook: Activity 6-2, Print Reading
Placement of Datum Symbols	Textbook: pg. 124 Lab Workbook: Activity 6-2, Print Reading
Knowledge Area: Measuring and Test Equipment	
Terminology and Definitions	Textbook: pg. 79–80, 148–149, 151–152, 447–450, 674–677
(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	

Standards	G-W Content
Executing Maintenance Procedures	Lab Workbook: Activity 3-1, Maintenance Planning Lab Workbook: Activity 3-3, Reactive Maintenance Lab Workbook: Activity 15-2, Hydraulic Filter Servicing Lab Workbook: Activity 15-3, Sampling and Servicing Hydraulic Fluid Lab Workbook: Activity 16-2, Hydraulic Component Replacement Lab Workbook: Activity 17-1, Pneumatic Filter Maintenance Lab Workbook: Activity 17-2, Pneumatic Lubricator Maintenance Lab Workbook: Activity17-4, Pneumatic Conductors and Fittings Lab Workbook: Activity 38-2, Rooftop Cooling Unit Maintenance Lab Workbook: Activity 39-1, Centrifugal Pump Teardown, Inspection, and Repair
Monitoring Operations	Textbook: pg. 54, 60, 302, 308, 796 Lab Workbook: Activity 3-1, Maintenance Planning Lab Workbook: Activity 17-3, System Start-Up and Operational Checks Lab Workbook: Activity 20-2, DC Power Supply Investigation Lab Workbook: Activity 24-1, Reading Potentiometers Lab Workbook: Activity 37-1, A/C Operational Check Lab Workbook: Activity 37-2, Heating System Operational Check
Performance Duty: Troubleshooting	
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

Standards	G-W Content
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