



## Who We Are

MPACT Maintenance & Reliability Solutions (formerly Mpack Learning Center) provides high quality assessments, education and training in industrial and facility maintenance that increases employee knowledge, performance and productivity.



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## MPACT Lecture/Lab Core Courses

### INTRODUCTORY COURSES:

- Blueprint Reading and Sketching
- Systematic Troubleshooting
- Precision Methodology/ NASCAR Racing...A Model for Equipment Reliability & Teamwork
- PC's For Maintenance Mechanics
- Industrial Math & Measures

### MECHANICAL COURSES:

- Basic Mechanics
- Practical Mechanics
- Hydraulics
- Mechanical Pneumatics
- Electro-Mechanical Fluid Power
- Sheet Metal Layout

### ELECTRICAL COURSES:

- National Electrical Code
- Basic Electricity
- Basic Electronics
- Electrical Control Troubleshooting
- DC Drives
- AC Inverters
- AC Inverter Programming & Setup
- Programmable Logic Controllers I
- Programmable Logic Controllers II

### Series:

1. Digital Electronics I-IV
2. Microprocessors I-IV
3. Microprocessor Troubleshooting I-IV

### OTHER COURSES:

- Pneumatic Instrumentation
- Basic Process Control

- Maintenance Management
- Maintenance Planning
- Maintenance Management for Manufacturing Managers
- Pay-for-Skills Workshop
- Leadership & Supervision of Maintenance Activities
- Shutdown Planning & Management

## Online/Classroom Core & Specific Competencies Courses

### CORE COMPETENCIES Fundamentals

- Reading Blueprints
- Reading Schematics & Symbols
- Mathematics in the Plant
- Making Measurements
- Metals in the Plant
- Non-Metals in the Plant
- Hand Tools
- Portable Power Tools
- Industrial Safety & Health
- Troubleshooting Skills

### Electrical Systems

- Basic Electricity & Electronics
- Batteries & DC Circuits
- Transformers & AC Circuits
- Electrical Measuring Instruments
- Electrical Safety & Protection
- DC Equipment & Controls
- Single-Phase Motors
- Three-Phase Systems
- AC Control Equipment
- Electrical Troubleshooting

### Mechanical Systems

- Basic Mechanics
- Lubricants & Lubrication
- Power Transmission Equipment
- Bearings

- Pumps
- Piping Systems
- Basic Hydraulics
- Hydraulic Troubleshooting
- Basic Pneumatics
- Pneumatic Troubleshooting

### SPECIFIC COMPETENCIES Air Conditioning & Refrigeration

- The Refrigeration Cycle
- Refrigerants & Refrigerant Oils
- Compressors
- Evaporators & Metering Devices
- Condensers & Cooling Towers
- Piping
- Control Systems
- Air-Handling Systems
- System Troubleshooting
- Absorption Chillers
- Heat Pumps
- Heating System Basics
- Heating System Equipment

### Ammonia Refrigeration

- Ammonia Refrigeration Basics
- Positive-Displacement Compressors
- Evaporators, Condensers and Controls
- Purging, Piping, & Safety

### Building & Grounds Maintenance

- Introduction to Carpentry
- Constructing the Building Shell
- Finishing the Building Interior
- Structural Painting
- Flat Roof Maintenance
- Plumbing System Maintenance
- Locks & Key Systems
- Landscaping Maintenance

### Custodial Maintenance

- Cleaning Chemicals
- Floor & Floor Care Equipment
- Maintaining Floors & Other Surfaces
- Restroom Care
- Carpet & Upholstery Care

### Electronics

- Semiconductors
- Power Supplies
- Amplifiers
- Oscillators
- Digital Logic Systems

### Energy Conservation

- Energy Conservation Basics
- Energy Losses in Buildings
- Heating/Cooling System Efficiency
- Mechanical Energy Conservation
- Electrical Energy Conservation

### Foundations of Technology

- Force & Motion

### Industrial Hazard Control

- Chemical Hazards

### Machine Shop Practices

- Machine Shop Practices
- Machine Shop Turning Operations
- Machine Shop Shaping Operations
- Machine Shop Job Analysis
- Lathe-Turning Work Between Centers
- Machine Work in a Chuck
- Basic Milling Procedures
- Indexed Milling Procedures
- Multiple-Machine Procedures

### Machine Tool Series

- Measurements
- Basic Hand Tools
- Work Planning & Setup
- Metal Cutting Fundamentals
- Cutting Tools I&II

### Materials Handling Systems

- Bulk-Handling Conveyors

### Mechanical Maintenance Applications

- Mechanical Drives Maintenance
- Mechanical & Fluid Drive Systems
- Bearings & Shaft Seal Maintenance
- Pump Installation & Maintenance
- Maintenance Pipefitting
- Tubing & Hose System Maintenance
- Valve Maintenance & Piping System Protection

### Microprocessors

- Introduction to Computers (for users)
- Input/Output Devices I (for users)
- How Computers Function (for technicians)
- Input/Output Devices II (for technicians)
- Maintaining/Troubleshooting Computer Systems (for technicians)

### Packaging Machinery

- Introduction to Packaging
- Packaging Machinery
- Casing Machinery

### Power Plant Operations

- How Power Plants Work
- Generating Steam in the Power Plant
- Using Steam in the Power Plant
- Waste-to-Energy Fundamentals

### Process Control Instrumentation

- Introduction to Process Control
- Foundations of Measure-

- ment Instrumentation
- Pressure Management
- Force, Weight & Motion Measurement
- Flow Measurement
- Level Measurement
- Temperature Measurement
- Analytical Instrumentation
- Final Control Elements
- Safety, Calibration & Testing Procedures
- Working with Controllers
- How Control Loops Operate
- Data Transmission
- Computers in Process Control

### Programmable Logic Controllers

- Programmable Logic Controllers

### Rigging/Equipment Installation

- Industrial Rigging Principles & Practices
- Equipment Installation

### Robotics

- Introduction to Robotics

### Water/Wastewater Treatment

- Introduction to Water Technology
- Wastewater Treatment Processes
- Maintaining Wastewater Equipment

### Welding

- Welding Principles
- Oxyfuel Operations
- Arc Welding Operations

### Maintenance Management

- The Maintenance Supervisor's Role
- Work Authorization Techniques

- Implementing Preventive Maintenance
- Controlling Maintenance Resources
- Performance Improvement Strategies
- Effective Spoken Communication
- Effective Written Communication
- Improving Labor Relations
- Corrective Action with Employees
- Managing a Training Program

### Safety (we have a range of courses within each subject below)

- Regulatory Compliance (OSHA, HAZMAT, etc.)
- General Safety & Health (spills, fires, accidents, etc.)
- Laboratory Safety (materials handling, contamination, etc.)
- HAZWOPER (hazardous materials issues, procedures, etc.)

## Automation Courses

### FUNDAMENTAL SKILLS

- Introduction to Industrial Automation & Control
- Mathematics for Instrumentation Technicians
- Understanding Industrial Processes, Measurement, & Control

### AUTOMATION PROFESSIONAL SKILLS

- Basic Continuous Control
- Industrial Pressure & Level Measurement Engineering
- Industrial Flow Measurement Engineering
- Sizing, Selecting, &

- Applying Process Control Valves
- Designing & Applying Model-Based Control Strategies
- Understanding Distributor Processor Systems for Control
- Developing & Applying Standard Instrumentation & Control Documentation
- Process & Laboratory Analytical Technologies Overview
- Process Analyzer Sample Conditioning System Technology & Component Specifications

### Basic Discrete, Sequencing, & Manufacturing Control

- PLC Automation, PLC Structure, Programming, Installation, & Maintenance
- Understanding & Applying Motor Control Drives

### Advanced Control Topics

- Batch Control Using the ANSI/ISA88 Standards
- Continuous & Emissions Monitoring Systems: A Process Analytical Sample Conditioning Technologies Overview

### Reliability, Safety, & Electrical

- Understanding & Applying Instrumentation in Hazardous Locations
- Principles of DCS Alarm Management
- Safety Instrumented Systems-Design, Analysis, & Justification
- Advanced Safety Integrity Level (SIL) Selection
- Advanced Design & SIL Verification

### Integration & Software

- Boiler Control Systems Engineering
- Burner Management Systems Engineering
- Database Management for Industrial Automation & Control Systems
- SCADA Systems Integration
- Implementing Business to MES Integration Using the ANSI/ISA95 Standards
- Applying Manufacturing Execution Systems
- Using the ANSI/ISA99 Standard to Secure your Control System
- Industrial Data Communications (I&II)
- Introduction to Building Automation Systems
- Introduction to Human Machine Interface (HMI) for Industrial Automation
- Implementing an Open Control System Network
- Industrial Wireless Systems
- Application of Industrial Wireless Systems
- Developing a Draft ISA100.11a Wireless Standard Compliant Product
- Tracking Industrial Assets: RFID, ISA1000.21, RTLS
- Establishing a Standards-Based Calibration Program
- System Checkout, Testing, & Startup

### Work Structure

- Project Management for Automation & Control
- Advanced Project Management for Team Leaders

### Licensure & Certification Review Courses

- Control Systems Engineering (CSE) PE Exam Review Course
- Certified Automation Professional (CAP) Exam Review Course

### TECHNICAL SKILLS Instrumentation Maintenance

- Installing, Calibrating, & Maintaining Electronic Instruments
- Advanced Operations of Smart Field Devices
- Understanding Electrical Systems
- Industrial Electronics
- Grounding & Electrical Noise Considerations for Control Equipment & Computers
- Maintaining Pneumatic Components in Measurement & Control

### Industrial Data Communications

- Industrial Data Communications (I&II)

### Control Systems

- Understanding & Tuning Control Loops
- Troubleshooting Instrumentation & Control Systems

### Certification Review Course

- Certified Control Systems Technician (CCST) Exam Review Course

### Hoist & Crane Courses

- Crane & Hoist Operator I&II
- Rigging Operations

- Safe Lifting
- Crane & Hoist Frequent/Monthly Inspection
- Hoist Maintenance
- Static Stepless Crane Controls
- Crane & Hoist Inspection/Certification

In addition to our regular courses, we have the flexibility to develop custom training programs and classes to meet individual customer's specific needs. We can teach the classes at our NC training facility or at a convenient location to your facility. See our website for further information (full listing, detailed course descriptions, delivery options, etc.).

MPACT is proud to partner with:



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