



Syllabus

ADM 210 Foundations in Advanced Manufacturing - Maintenance

General Information

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Course Prefix ADM

Course Number 210

Course Title Foundations in Advanced Manufacturing - Maintenance

Course Information

Catalog Description This course is designed to serve those interested in entering the workforce for advanced manufacturing, incumbent workers of local companies, secondary HS seniors for technical skills development and apprentices in the local area that are required to gain related instruction for their DOL Occupation. The content of this course prepares students to safely step into a production based workplace and enter into additional coursework for advanced manufacturing. The content for Maintenance Awareness includes: Performing preventative maintenance and routine repair, monitoring indicators to ensure correct operations, performing all housekeeping to maintain production schedule, recognizing potential maintenance issues with basic production systems, including knowledge of when to inform maintenance personnel about problems with electrical systems, pneumatic systems, hydraulic systems, machine automation systems, lubrication processes, bearing and coupling, belts and chain drives.

Credit Hours 3

Lecture Contact Hours 3

Lab Contact Hours 2

Other Contact Hours 0

Grading Scheme Letter

Prerequisites

None

Co-requisites

ADM 100

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed categories

None

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Inquiry, Perseverance, and Interconnectedness

Course Learning Outcomes

Course Learning Outcomes

1. Define the functions and applications of various electrical concepts (e.g. circuits, electrical measurement, power, machine control concepts, machine automation).
2. Describe the functions and applications of power systems (e.g. electrical, pneumatic and hydraulic).
3. Articulate concepts of lubrication, bearings and couplings, belt drives, chain drives, and alignment.
4. Perform calculations related to speed, torque, tension, drive components, and power transmission.

Outline of Topics Covered

- **Welding: Interpretation of specifications, work orders, and technical drawings**
- **Basic Electrical Circuits: Operation of basic electrical circuits, input devices, output devices; basic concept of AC and DC electricity; read and interpret an electrical schematic**
- **Electrical Measurement: Basic concepts of electrical resistance, voltage, current, series, circuits, parallel circuits; use of Multimeter to measure electrical signals**
- **Electrical Power: Basic concepts of power consumption in series and parallel electrical circuit; select and size circuit protection devices; reset circuit protection devices, operation of motor starters and overload protection; basic AC motor**

- operation, operate a motor control circuit
- **Pneumatic Power Systems:** Basic concepts of pneumatic system operation with linear actuators; adjust and read pressure; connect an air hose; operate pneumatic circuit; drain a filter, read and interpret a pneumatic schematic
 - **Hydraulic Power Systems:** Basic concepts of hydraulic power system operation with component identification, power unit operation, circuit connections, and basic cylindrical circuits
 - **Lubrication Concepts:** Types, properties and applications of grease and oil for lubrication; use of viscosimeter; use of grease gun; lubrication management, recycling
 - **Bearings and Couplings:** Types, operation and application of bearings and couplings; mechanical power transmission safety guidelines; importance of proper shaft alignment; additionally, gear drives components and calculations are covered
 - **Belt Drives:** Types, operation, and application of belt drives; calculate speed and torque ratios; align a belt drive and adjust tension
 - **Chain Drives:** Types, operation, and application of chain drives; calculate speed and torque ratios; align a chain drive and adjust tension
 - **Machine Control Concepts:** basic concepts of electrical relay logic; solenoid valve operation; connect a basic electrical logic control circuit; interpret a basic ladder diagram schematic
 - **Machine Automation:** Basic concepts of electrical relay control; limit switch and sensor operation; connect a basic cylinder reciprocation relay circuit, operation of automatic/manual machine modes; connect a basic timer control circuit.

Program Affiliation

This course is not required as a core course in any programs.