

**JAMESTOWN COMMUNITY COLLEGE**  
**State University of New York**

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**INSTITUTIONAL COURSE SYLLABUS**

**Course Title:** Production Processes & Maintenance Awareness

**Course Abbreviation and Number:** MCT 1320

**Credit Hours:** 2

**Course Type:** Lecture

**Course Description:** Students will learn the basics of production processes and the operational maintenance operations within typical industrial settings. This course will cover knowledge needed to successfully complete a national certification test on production and maintenance offered through the Manufacturing Skills Standards Council (MSSC).

No prerequisites.

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**Student Learning Outcomes:**

Students who demonstrate understanding can:

1. Identify key aspects of production systems and processes including understanding customer needs, resource availability, setting up and verifying production processes, production goals, job assignments, workflow coordination, communication of production requirements, process monitoring and documentation, compliance with requirements, and preparation for shipping among others.
2. Recall terminology and other key aspects of industrial maintenance including preventative maintenance, predictive maintenance, condition monitoring, proper tool storage, electrical system basics, pneumatic system basics, hydraulic system basics, machine automation system basics, lubrication, bearings, couplings, belt and chain drives among others.

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**Topics Covered:**

**Manufacturing Process and Production**

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Principles of Manufacturing  
Automation  
Industry 4.0 Technologies  
Advanced Manufacturing  
Materials  
Advanced Manufacturing  
Processes  
Mechanical Power  
Basic Mechanical Elements  
Power Efficiency  
Hand Tools

Band Saw Operation  
Introduction to the Drill Press  
Machine Operations 1  
Machine Operations 2  
Introduction to CNC Machining  
CNC Workspace  
CNC Programming and Operation  
Automated System Operations  
Machine Adjustments  
Machine Troubleshooting  
Manufacturing Metrics

Production Planning and  
Workflow  
Introduction to Lean  
Manufacturing  
Lean Manufacturing Organization  
Lean Manufacturing Operations  
Inventory Management  
Production Control  
Material Quality Control

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**Maintenance Awareness**

Total Productive Maintenance  
(TPM)  
Mechanical Power Transmission  
Gear Drives  
Belt Drives  
Chain Drives  
Oil Lubrication  
Grease Lubrication  
Introduction to Fluid Power  
Pneumatic Power  
Basic Cylinder Circuits

Hydraulic Power  
Basic Hydraulic Cylinder Circuits  
Fluid Power Speed Control  
Hydraulic Filtration  
Basic Electrical Circuits  
Electrical Voltage and Current  
Concepts  
Electrical Resistance Measurement  
Power in Electrical Circuits  
Control Logic Circuits  
Electrical Control Diagrams  
Relay Control Circuits

Automation Sequence Circuits  
Introduction to Electronic Sensors  
Programmable Controller  
Operation  
Basic PLC Programming  
PLC Motor Control  
Basic Robot Operation  
Introduction to Welding  
Welding Operations  
Weld Types

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## Information for Students

- Expectations of Students
    - [Civility Statement](#)
    - [Student Responsibility Statement](#)
    - [Academic Integrity Statement](#)
  - [Accessibility Services](#)

Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
  - [Get Help: JCC & Community Resources](#)
  - [Emergency Closing Procedures](#)
  - Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0
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  - Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.
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**Effective Date:** Fall 2024