

# ATMT-1811: SPECIAL TOPICS: MANUFACTURING MACHINE TOOLS AND OPERATIONS

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## Cuyahoga Community College

**Viewing: ATMT-1811 : Special Topics: Manufacturing Machine Tools and Operations**

**Board of Trustees:**

JUNE 2026

**Academic Term:**

Fall 2026

**Subject Code**

ATMT - Appd Ind Tech-ManufacturingTec

**Course Number:**

1811

**Title:**

Special Topics: Manufacturing Machine Tools and Operations

**Catalog Description:**

This course is designed to look at the different tools used across various areas in the manufacturing and construction industry. The basic use of tools in assembly work, construction, and the manufacturing of parts for industry. Studying how these tools help to make work easier and make it possible to help industries thrive. Discussing and analyzing how math is infused the construction and manufacturing industry. Demonstrating how blueprint is used in assembly, construction and the manufacturing industry.

**Credit Hour(s):**

2

**Lecture Hour(s):**

1

**Lab Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

None.

## Outcomes

**Course Outcome(s):**

Apply safe and effective use of tools in manufacturing and construction settings.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Identify and properly name basic hand tools, power tools, and machine tools used in manufacturing and construction.
2. Demonstrate appropriate personal safety procedures and proper use of personal protective equipment (PPE).
3. Use tools correctly and safely to complete basic shop and assembly tasks.

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**Course Outcome(s):**

Use mathematics and technical information to support manufacturing operations.

**Objective(s):**

1. Perform basic shop mathematics related to measurement, layout, and part fabrication.
2. Apply mathematical calculations to achieve specific manufacturing or construction objectives.
3. Define and correctly use common manufacturing and construction terminology.

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**Course Outcome(s):**

Apply blueprints and technical drawings in manufacturing processes.

**Objective(s):**

1. Interpret basic blueprint symbols, dimensions, and notes.
2. Explain and apply blueprint information to manufacturing, construction, and assembly activities.
3. Use blueprints to complete a basic machined or fabricated project.

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**Methods of Evaluation:**

1. Attendance
2. Assignments
3. Participation
4. Labs
5. Exams

**Course Content Outline:**

1. **Personal Safety in Manufacturing and Construction**
  - a. Workplace safety rules and expectations
  - b. Proper use of personal protective equipment (PPE)
  - c. Safe handling and storage of tools and materials
  - d. Hazard recognition and injury prevention
2. **Tools Used in Manufacturing and Construction**
  - a. Identification and classification of tools
    - i. Basic hand tools (measuring, cutting, fastening, assembly)
    - ii. Power tools commonly used in industry
  - b. Purpose and proper application of tools
  - c. Tool care, maintenance, and inspection
3. **Manufacturing Machine Tools and Operations**
  - a. Introduction to basic machine tools
    - i. Machining tools used to manufacture parts
    - ii. Basic machine operations and functions
  - b. Setup and operation fundamentals
  - c. Completion of a basic machined project
4. **Applied Mathematics for Manufacturing and Construction**
  - a. Measurement systems and units
  - b. Calculations used in fabrication and assembly
    - i. Length, area, volume, and tolerances
    - ii. Basic shop math applications
  - c. Using math to achieve specific work objectives
5. **Blueprint Reading and Interpretation**
  - a. Introduction to basic blueprint components
  - b. Reading dimensions and symbols
  - c. Applying blueprints to:
    - i. Assembly tasks
    - ii. Construction activities
    - iii. Manufacturing processes
6. **Manufacturing Terminology and Concepts**

- a. Common industry terms and definitions
- b. Introduction to manufacturing processes
- c. Understanding how tools and processes support industry productivity

**Religious Accommodation**

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

**Religious Accommodation:**

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: [https://portal2.tri-c.edu/ReligiousAccommodation/Religious Accommodation Form](https://portal2.tri-c.edu/ReligiousAccommodation/ReligiousAccommodationForm). Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at [legal@tri-c.edu](mailto:legal@tri-c.edu).

**Other Required Instructional Policies:**

<https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf>

**Weekly Schedule**

	Topics
Week 1	Course Introduction and Manufacturing Safety Overview
Week 2	Personal Protective Equipment (PPE) and Shop Safety Practices
Week 3	Identification and Use of Basic Hand Tools
Week 4	Power Tools Used in Manufacturing and Construction
Week 5	Introduction to Machine Tools
Week 6	Basic Machine Tool Operations
Week 7	Applied Measurement and Shop Math Fundamentals
Week 8	Manufacturing Calculations and Layout Techniques
Week 9	Manufacturing and Construction Terminology
Week 10	Introduction to Blueprint Reading
Week 11	Blueprint Symbols, Dimensions, and Notes
Week 12	Applying Blueprints to Assembly and Fabrication
Week 13	Machined or Fabricated Project Planning
Week 14	Project Fabrication Using Blueprint Guidance
Week 15	Project Completion and Review
Week 16	Final Assessment and Course Review

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

**Required/Recommended Readings**

Instructor-provided materials

**Resources for the Instructor**

John R. Walker and Bob Dixon. *Machining Fundamentals*. 11th. Goodheart Wilcox, 2021.

**Additional Resources for the Instructor**

<https://ntma.org/>

<https://ntma.org/training-and-education/>