

# ATMT-2300: ADVANCED MANUFACTURING PROCEDURES

## Cuyahoga Community College

**Viewing:** ATMT-2300 : Advanced Manufacturing Procedures

**Board of Trustees:**

1999-07-22

**Academic Term:**

Spring 2019

**Subject Code**

ATMT - Appd Ind Tech-ManufacturingTec

**Course Number:**

2300

**Title:**

Advanced Manufacturing Procedures

**Catalog Description:**

Capabilities of computer aided design (CAD) systems are covered. Students will be required to produce working engineering drawings. Instruction in tool path generation, local CNC programming and 2D simulation, including capabilities of computer aided manufacturing (CAM) systems.

**Credit Hour(s):**

2

**Lecture Hour(s):**

0-1

**Lab Hour(s):**

0-2

### Requisites

**Prerequisite and Corequisite**

ATMT-1600 Introduction to CAD, and departmental approval.

### Outcomes

**Course Outcome(s):**

N/A

**Objective(s):**

1. Demonstrate standard modern engineering drawing practice for dies and molds.
2. Implement geometric tolerancing and dimensioning symbols on a part print.
3. Design a simple fixture, die, or mold .
4. Produce working engineering drawing that can be imported into a CAM program.
5. Demonstrate path generation, in 2 dimensional CNC simulation.
6. Demonstrate programming and 3D solid model generation in a Cam environment.
7. Demonstrate the ability to manipulate between CAM and CNC programs.
8. Combine part prints into a working mechanism and assembly drawing.
9. Explain a basic understanding of other design modeling packages.

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### Methods of Evaluation:

1. Quizzes
2. Exams
3. Classroom participation

**Course Content Outline:**

1. Engineering drawing for dies and molds
  - a. Standard practices on CAD
  - b. CAM programs
2. Design
  - a. Fixture construction design
  - b. Simple die construction design
  - c. Basic mold design
3. CAM
  - a. Job plan
  - b. Control panel
  - c. Tool box
  - d. Work bench
  - e. Edits
  - f. Applications
4. CNC
  - a. Manual part programming
  - b. Terms
  - c. Definitions
  - d. Editing a program
5. CAM and CNC programs
  - a. Relationships of programs
  - b. Maximum use of proper software/hardware
  - c. CIM cells
6. Working mechanism and assembly drawings
  - a. Incorporating a detailed part to an assembly drawing
  - b. Layer views of assembly drawings
7. Design modeling packages
  - a. Overview of various CAD and CAM programs
  - b. The impact of software on production of precision parts
8. Process engineering
  - a. Metallurgy and its practical use as applied in mold and die block construction
  - b. Stress points and raisers
  - c. Maximum tool usage
9. Tooling and fixturing
  - a. Design of tools and fixtures used in the manufacture of precision parts.
  - b. Knowledge of safety practices in fixture use
10. Programmable logic controllers
  - a. Industrial control applications
  - b. Control systems
  - c. Terminology
11. Industrial robots
  - a. Commands
  - b. Programming concepts
  - c. Offset command
  - d. Running a program multiple times
  - e. Looping
  - f. Teach pendant

**Resources**

Taylor, David. *Blueprint Reading for Machinists*. 5th ed. Albany, New York: Delmar, 1992.

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Taylor, David. *Machine Trades Blueprint Reading*. Albany, New York: Delmar, 1985.

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Olivo, Thomas P. *Blueprint Reading and Technical Sketching for Industry*. 2nd ed. Delmar Publishers, 1998.

Top of page

Key: 500