ATMT-2700: MANUFACTURING TECHNOLOGY SKILLS III

Cuyahoga Community College

Viewing: ATMT-2700 : Manufacturing Technology Skills III

Board of Trustees:
1999-07-22

Academic Term:
Spring 2019

Subject Code
ATMT - Appd Ind Tech-ManufacturingTec

Course Number:
2700

Title:
Manufacturing Technology Skills III

Catalog Description:
Advanced study of manufacturing methods, processes, related equipment, and tools of industry, requiring student to understand standard requirements to being a Journeyman Tool and Diemaker, Moldmaker, Precision Machinist, Precision Screw Machine operator, or Precision CNC operator. Topics include practices of job planning, maximum use of shop supplies, and how to work independently, efficiently and effectively. Scope is to demonstrate thin margin that is required to making a job profitable, helping student to troubleshoot problems that may occur with effective problem solving methods and technique.

Credit Hour(s):
4

Lecture Hour(s):
4

Requisites

Prerequisite and Corequisite
ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

Outcomes

Course Outcome(s):
N/A

Objective(s):
1. Describe failure mechanisms and mold and die troubleshooting.
2. Design factors for nondestructive test methods, and destructive test methods.
3. Describe advanced CAD drawing procedures for re-design of mold and die components.
4. Design a simple die, mold or fixture.
5. Describe process planning, computations, and sketches.

Methods of Evaluation:
1. Quizzes
2. Exams
3. Classroom participation
4. Demonstration project evaluated on site

Course Content Outline:
1. CAD procedures
   a. Scripts
   b. Edlin and batch files

   c. Cross hatching
   d. Isometric drawings using ellipse
   e. Slides (Mslide, Vslide)
   f. Entities (Elevation, 3Dline, 3dface)
2. Failure mechanisms
   a. High stress areas in mold and die construction
   b. Structure and chemical make-up of steels
   c. Proper heat treating and handling processes
   d. Tempering and drawing steels
3. Materials criteria
   a. Strength of materials
   b. Heat-treatment of tool steels
   c. Properties
   d. Proper material usage
4. Nondestructive / destructive test methods
   a. Eddy current testing
   b. Die penetrate
   c. X-ray
   d. Rockwell
   e. Brindell
   f. Sharpie
   g. Izoid
5. Practical mold and die repair
   a. Industrial production working
   b. Machine and tool drawing
   c. Die assembly drawings
   d. Mold assembly drawings
6. Process planning
   a. Producing a plan that includes milling, drilling, turning, grinding
   b. Calculating angular functions for an operation sheet
   c. Producing a plan for quality control
   d. Tool list
   e. Part process time
7. Design
   a. Tonnage
   b. Capacity
   c. Balanced systems
   d. Die shoe and mold base selection
8. Measurement
   a. Contour calculations
   b. Form tool calculations
   c. Inspection procedure using a sine bar
   d. Template calculations
   e. Angle plate sine charts and methods
   f. Gauging
   g. Matching taper seals
9. Group skills
   a. Communicating ideas to co-workers
   b. Job system planning
   c. Working in cooperation with a team concept
   d. Creative job system approach
   e. Project flow (getting parts done in a practical sequence)
   f. Troubleshooting

Resources

Hardman, William. *Basic Machine Shop Theory.* Washington: NTMA Textbook Series, 1982.

Krar, Steve and Check Albert. *Technology of Machine Tools.* Westerville: Glencoe/McGraw-Hill, 1997.

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

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

Walker, John. *Machining Fundamentals.* South Holland: Goodheart-Wilcox, 1993.

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