

Machine Tool Processes

Course Outcome Summary

Course Information

Total Credits 1

Description

Students learn to conduct a job hazard analysis for a machine tool group, analyze blueprints to layout parts and materials, select hand tools and common machine shop mechanical hardware for specific applications, prescribe cutting tools for assigned operations, calculate stock size to minimize drop, machine parts to specifications outlined in machine handbooks, summarize preparations for machining operations, and apply precautions to minimize hazards for work with lathes, mills, drills and grinders.

Prerequisites

OSHA 10 or 30 Safety Course

Exit Learning Outcomes

Program Outcomes

- A. Operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines
- B. Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches
- C. Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking
- D. Apply safety principles in a work environment to minimize hazards and prevent losses to productivity
- E. Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields
- F. Use CAD and CAM programs to design parts and program manufacturing machines

Competencies

1. **Conduct a job hazard analysis for a machine tool shop**
Properties
Domain: Psychomotor
Linked Program Outcomes
Apply safety principles in a work environment to minimize hazards and prevent losses to productivity
2. **Analyze blueprints to layout parts to be machined**
Properties
Domain: Cognitive Level: Analysis
Linked Program Outcomes
Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

3. Select hand tools for assigned applications

Properties

Domain: Cognitive Level: Analysis

Linked Program Outcomes

Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

4. Calculate stock size for least amount drop

Properties

Domain: Cognitive Level: Application

Linked Program Outcomes

Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

5. Examine specifications in machinery handbooks needed to machine parts to size

Properties

Domain: Cognitive Level: Application

Linked Program Outcomes

Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches

Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

6. Summarize preparations for machining operations

Properties

Domain: Cognitive Level: Synthesis

Linked Program Outcomes

Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

7. Select common machine shop mechanical hardware for assigned applications

Properties

Domain: Cognitive Level: Analysis

Linked Program Outcomes

Operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines

Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches

Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

8. Apply precautions needed to minimize hazards for work with lathes, mills, drills and grinders

Properties

Domain: Cognitive Level: Application

Linked Program Outcomes

Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

9. Prescribe cutting tools for assigned operations and applications

Properties

Domain: Cognitive Level: Evaluation

Linked Program Outcomes

Operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines

Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields