Machine Tool Processes

Course Outcome Summary

Updated November 2022

Course Information

Total Credits 1 - 2

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. Given the necessary materials and verbal instruction the student will develop a Job Hazard Analysis (JHA) for producing a part on a specified machine.

B. Given the necessary materials and verbal instructions the student will develop a Job Process Plan (JPP) for producing a part.

C. The student will develop a Job Inspection Report for the produced part.

D. The student will develop a Process Improvement Plan to improve the production of the produced part.

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

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

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

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

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

   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

   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

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