

Bench Work

Course Outcome Summary

Updated November 2022

Course Information

Total Credits 1

Description

Students will be provided the opportunity to learn and practice bench work skills such as filing, drilling, tapping, deburring and layout for projects. They will gain valuable practical experience in the use of various hand tools by producing basic bench work projects. Topics will include safety, print reading, job planning, and quality control.

Prerequisites

OSHA 10 or 30 Safety Course (may be taken concurrently)

Exit Learning Outcomes

Program Outcomes

- A. Students will perform bench work skills such as filing, drilling, tapping, reaming horizontal and vertical band saws, off-hand grinding of cutting tools using the pedestal grinder, and deburring and layout for projects.
- B. The student will demonstrate practical knowledge in the use of various hand tools by producing basic bench work projects.
- C. Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings, and shop sketches
- D. Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking
- E. Apply safety principles in a work environment to minimize hazards and prevent losses to productivity
- F. Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

Competencies

1. Conduct job hazard analysis for hand tools

Properties

Domain: Cognitive Level: Application

Linked Program Outcomes

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

2. Conduct job hazard analysis for power tools

Properties

Domain: Cognitive Level: Application

Linked Program Outcomes

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

3. Select hand tools for assigned tasks

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

4. Select power tools for assigned tasks**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

5. Lay out parts for machining using semi-precision and precision lay out practices**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

6. Drill holes using electric and pneumatic drills**Properties**

Domain: Psychomotor Level:

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

7. Maintain pedestal grinders**Properties**

Domain: Psychomotor Level:

Linked Program Outcomes

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

8. Saw stock to length**Properties**

Domain: Psychomotor Level:

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

9. Sharpen drill bits and lathe tools

Properties

Domain: Psychomotor Level:

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

10. Use free hand saws to cut angles and remove material

Properties

Domain: Psychomotor Level:

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

11. Maintain radial arm and sensitive drill press

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

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

12. Finish parts using electrical and pneumatic tools

Properties

Domain: Psychomotor Level:

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

13. Use a press to insert bushings, bearings and pins

Properties

Domain: Psychomotor Level:

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

14. Broach internal keyways

Properties

Domain: Psychomotor Level:

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