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

5. **Lay out parts for machining using semi-precision and precision lay out practices**
   **Properties**
   Domain: Cognitive  Level: Analysis

6. **Drill holes using electric and pneumatic drills**
   **Properties**
   Domain: Psychomotor  Level:

7. **Maintain pedestal grinders**
   **Properties**
   Domain: Psychomotor  Level:

8. **Saw stock to length**
   **Properties**
   Domain: Psychomotor  Level:
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