Bench Work
Course Outcome Summary

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. 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 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,
14. **Broach internal key ways**

**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