

**MACHINE/METALS TECHNOLOGY  
EUREKA HIGH SCHOOL**

1. **COURSE TITLE:**       **Machine/Metals Technology**
  
2. **CBEDS TITLE:**       **Machine Tool Operation/Machine Shop**
  
3. **CBEDS NUMBER:**     **5607**
  
4. **JOB TITLES/DOT CODES:**   **Machine Tool Operator, General   601.280-054**
  
5. **COURSE DESCRIPTION:**   **HROP Advanced Metals/Machine Tool Technology is an instructional program that prepares individuals to shape metal parts on machines such as lathes, grinders, drill presses, milling machines and shapers. This program includes instruction in safety, making computations related to work dimensions, testing feeds and speeds of machines using precision measuring instruments such as lay out tools, micrometers and gauges; machining and heat-treating various metals; and in laying out machine parts.**
  
6. **HOURS:**   **180 hrs**
  
7. **PREREQUISITES:**     **16 yrs of age and older**
  
8. **DATE:**    **November, 2002.**
  
9. **COURSE OUTLINE**
  - A. **ESSENTIAL EMPLOYABILITY SKILLS:**
    - a.     **Job Search Skills**
    - b.     **Resume Writing**
    - c.     **Interviewing**
    - d.     **Job Maintenance - how to keep your job**
  
  - B. **CONTENT AREA SKILLS:**
    1.     **SAFETY - General shop safety with emphasis on safety section for each of the following: engine lathes, vertical and horizontal mills, foundry equipment and welding equipment.**
  
    2.     **PRECISION MEASUREMENT: TOOLS AND TECHNIQUES - Use of precision**

**equipment for setup and project production with mills and lathes. Product quality control will be strongly emphasized.**

- 3. DESIGN, DRAFTING, LAYOUT, FABRICATION - Students will be involved from initial design concept through drafting and final plan preparation. Layout procedures follow final plan approval prior to actual fabrication of the final project.**
- 4. ENGINE LATHES - ADVANCED SETUP AND TECHNIQUES - Students will safely set up and operate a lathe using both three and four jaw chucks plus various other work component housing devices. Perform cutting, drilling boring and threading operations, both on and off center turning techniques plus taper cutting will be included. Precision set up and product quality will be stressed.**
- 5. VERTICAL AND HORIZONTAL MILLING MACHINE - ADVANCED SETUP AND TECHNIQUES - Students will safely set up and operate horizontal and vertical milling machines, calculate correct cut and feed speeds, perform various cutting, drilling and boring operations, and produce spur gears in addition to practical production projects as designed.**
- 6. STEEL ALLOYS AND METALLURGY - Metallurgy with emphasis on carbon steel and its alloys, stainless, aluminum, brass and cast iron will also be included along with basics in metal heat treating techniques.**
- 7. WELDING: MATERIALS AND TECHNIQUES - Emphasis on SMAW, GMAW, OAW and cutting systems, plasma cutting systems and GTAW will also be included with one week at HROP Welding Fabrication shop as an initial training experience.**
- 8. FOUNDRY - Mold production and casting with aluminum and brass instruction on advanced casting techniques.**