Blackhawk School District

CURRICULUM

Course Title:	**Metal Material Processing**
Course Number:	**1043**
Grade Level(s):	**9-12**
Periods Per Week:	**5**
Length of Course:	**1 semester**
Credits:	**.5**
Faculty Author(s):	**Tim Linkenheimer**
Date:	**January 2010**

COURSE DESCRIPTION:

This course is designed for students wanting to develop skills using machines basic to the metal manufacturing industry. Students will have an opportunity to learn the basics of soldering, propane torch work, oxygen-acetylene torch work, arc welding, mig welding, and brazing. Students will also learn basic sheet metal, forging and foundry processes. Some of the projects that students will make in this course include a tool tray, boot scraper and mailbox sign. **Metal Material Processing qualifies as a prerequisite for Engineering Materials & Product Design (1022).**

COURSE OUTLINE	**OBJECTIVES** (PA standard)	**PROPOSED TIME / ACTUAL TIME**	**RESOURCES**	**LESSON REFLECTION (for future revisions)**
1. Class Orientation	3.4.12.A3. Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM). 3.4.10.B1. Compare and contrast how the use of technology involves weighing the trade-offs between the positive and negative effects. 3.4.10.B2. Demonstrate how humans devise technologies to reduce the negative consequences of other technologies. 3.4.10.C1. Apply the components of the technological design process. 3.4.12.C3. Apply the concept that many technological problems require a multi-disciplinary approach. 3.4.10.D2. Diagnose a malfunctioning system and use tools, materials, and knowledge to repair it. 3.4.10.E6. Illustrate how manufacturing systems may be classified into types such as customized production, batch production, and continuous production.	2 days	Syllabus	
2. Introduction to Technology		3 days	Instructor Designed Power Point	
3. Measuring		2 days	Instructor Designed Handouts, Worksheets & Quizzes	
4. Machine Safety		6 days	PA Safety Guide	
5. Chisel Project		6 days	Instructor Designed Handouts Materials: ¾" Hex Stock Machines: Forge Grinder	
6. Soldering Patch Activity		3 Days	Instructor Designed Handouts Materials: Sheet Metal Propane Machines: Sheet Metal Shear Spot Welder Propane Torch	

7. Utility Tray Activity		6 days	Instructor Designed Handouts Materials: Sheet Metal Propane Rivets Machines: Sheet Metal Shear Spot Welder Propane Torch Pop-Rivet Guns Barfolder Box & Pan	
8. Tool Tray Activity		10 days	Instructor Designed Handouts Materials: Sheet Metal Propane Rivets Machines: Sheet Metal Shear Spot Welder Propane Torch Pop-Rivet Guns Barfolder Box & Pan	
9. Scoop Activity		6 days	Instructor Designed Handouts Materials: Sheet Metal Propane Rivets Machines: Sheet Metal Shear Spot Welder Sheet Metal Roller Pop-Rivet Guns	

10. Boot Scraper		12 days	Instructor Designed Handouts Materials: 1" Angle Iron 3/8" Round Stock Arc Welding Rod Mig Welding Wire Machines: Arc Welder Mig Welder Horizontal Band Saw Drill Press	
11. Initials Activity		8 days	Instructor Designed Handouts Materials ½" Flatstock Brazing Rod Shear Machines: Oxygen/Acetylene Torch	
12. Course Reading Activities		5 days	Wood Textbook and other resources	
13. Lab Reports for assigned projects		10 days	Computer Lab Facility, Microsoft Office	
14. Classroom Maintenance Activities		4 Days	Vacuums Pressurized Air Various Hand Tools	
15. Comprehensive Final		2 days	Instructor Designed Study Guide & Final	