

Mount Baker High School
Advanced Agriculture Mechanics
Semester course, may be repeated.

.5 Fine Arts for ornamental projects or .5 occupational credit (not both)

Mr. Rightmire

2007-2008

Course Description:

This course will review MIG welding and SMAW welding in a variety of positions. Students will also learn advanced welding techniques and fabrication. Student will use skills learned in Ag Mech I and Ag Mech II courses to build a large project. Projects are available through the career and technical education department and can also be done individually. Trailer projects are the most common with a student also completing a vertical star for the BTC Welding program.

This course is *College Tech Prep* approved and articulated with Bellingham Technical College's *Welding Technology* program. During the first semester, students will begin to cover the content and skill standards included in the following BTC courses: (*list only those that apply*)

WELD 125 Shield Metal Arc Welding I (6 credits) (along with successful completion of competencies in Beginning and Advanced) – a star must be completed in both flat and vertical positions and pass Mr. Rightmire's approval.

During the Intermediate Ag Mechanics students will continue practicing skills and competencies related to WELD 101 and WELD 125.

Students who are ready, may begin work on the skill standards for:

WELD 133 Gas Metal Arc Welding I (4 credits) – competencies listed below which will be a continuation of competencies not yet attained in **Intermediate Ag Mechanics**. **Students must complete Advanced Ag Mechanics to complete the WELD 133!!**

Students who demonstrate proficiency of the identified BTC course competencies (skill standards) with a 'B' or better grade, *may* earn college credit through the *College Tech Prep* application process. The Competency Profile for each college course is attached to this syllabus. To gain college credit, students must complete all of the competencies listed for each course (B grade level). It will take most students two high school semesters to demonstrate competency. During the semester most of the competencies will be covered in class...some may require additional independent work by the student.

To earn credit, you will also have to schedule a test with Mr. Don Anderson at Bellingham Technical College to receive credit for WELD 125 and WELD 133 only. Approximately 2 hours.

Course Outline

ALL STUDENTS WILL DEMONSTRATE THE FOLLOWING:

I. Safety Tests and Review

Students will demonstrate the safe and proper use of the following items.

- a. Introduction of rules and safety pledge
- b. Carbon Arc Gouging
- c. Cutoff saw
- d. O-A stand alone system
- e. Grinder
- f. Drill press
- g. Plasma cutter

II. Review of GMAW – This is continuation of competencies not yet attained in **Intermediate Ag Mechanics**

- Demonstrate safe and effective welding and shop working practices.
- Demonstrate use of proper welding-related terminology.

- Demonstrate proper equipment set-up and trouble-shooting techniques.
 - ✓ Proper polarity selected
 - ✓ Proper work clamp placement used
 - ✓ Safe handling of compressed shielding gas bottles is demonstrated
 - ✓ Compressed gas bottle is properly secured
 - ✓ Regulator is correctly installed and set at proper flow rate
 - ✓ Correct shielding gas is being used
 - ✓ Gas is turned "on" for welding
- Demonstrate that proper welding wire is being used for welding material selected.
- Demonstrate proper roller size used in wire feeder.
- Demonstrate ability to change wire, rollers, tips, diffusers, nozzles, and set proper tension on rollers for welding.

- Demonstrate ability to set proper welding parameters (voltage and wire feed speed).
- Demonstrate understanding of simple layout and fit-up practices on 1/4" mild steel plate.
- Demonstrate competency in GMAW techniques with solid wire on mild steel in the Flat Fillet position:
 - ✓ Weld deposited with complete fusion
 - ✓ Bead shape is slightly convex and uniform in appearance
 - ✓ Weld is free from slag, undercut, cracking & porosity
 - ✓ Proper overlapping with a uniform appearance

V. Project Completion

Each student will complete at least one project where they will prepare a drawing, bill of materials, steps, and complete the project. Students who do not have a plan or a project will need to take Ag Mech 2 instead of Ag Mech 3. Trailer plans will be used for a responsible and capable group of 3 students. This will be sold about 15-25% above cost to be paid to the school district for consumables.

VI. Star Welding

Students will be able to finish completion (if needed) of a star for the flat fillet position using 6010 welding and in the vertical fillet position using 6010 rod. Students wishing to enter Bellingham Technical College's Welding Technology program need to contact their instructor to set up a test at the college with the college instructor.

VII. Fine Arts Option – students seeking Fine Arts Credit

- Complete two smaller projects using the Ornamental Iron Working DVD or book and Ornamental Pro 2004 Drawing software
- Complete a plan on Ornamental Pro 2004 Drawing Software and complete a bill of materials and cost estimate for a larger instructor approved project.
- Complete a project using Plasma Cam

Course topics:

Safety and Review

Project planning

Project completion (trailer, equipment, or art)

Skill completion (star welding)

Grading and Evaluation:

Students will be graded on the completion of their objectives and at the level at which they complete them, such as excellent, good, fair, poor, unacceptable. This translates to a 90,80,70,60 percent grading scale.

Grades will be based on quality of finished project, attendance, and workmanship throughout the project.

60% on projects and completion (to be graded at the end by the instructor)

25% on participation (attendance, tardies, work ethic, etc)

15% on SAE project and record book

Participation Points

5 points each day are possible. Each week students must complete a yellow journal sheet that will be graded. 0 points for each absence (excused or unexcused)

-2 points for tardy, safety infraction, not wearing safety glasses, coveralls.

-1 to -4 points for not cleaning area assigned or workstation, and not working on assigned project.

SAE Project and Record Book

Students are also required to complete a SAE Record Book for in class projects and out of class projects. Failure to do so will result in an incomplete grade. This will include a career research paper done outside of class and will include interviews. Hours spent and the report is all that is required. This can include one of the following:

1. Exploratory – career research paper, apply small gas engine skills at home, report on a welding process
2. Placement – paid or unpaid work experience in an agriculturally related field. Natural resources, mechanics, yard maintenance, lawn mowing, volunteer community service, building projects outside of normal class time.
3. Entrepreneurship – raising an animal, owning your own lawn mowing business, etc.

Portfolio Items:

Ag Mechanics Safety Record

Ag Mechanics project pictures