

ADVANCED WELDING/DRAFTING



SYLLABUS

Silverton High School
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COURSE OBJECTIVES

The course will: emphasize how to safely use welding equipment, machines, general shop equipment and power tools through demonstration of welding processes and projects. This course will also incorporate engineering drafting skills with CAD along with basic fundamentals of blue print understanding. College credit available after completion of course with a B or better.

The student will: learn and demonstrate advanced welding processes OAW, TIG, SMAW and GMAW along with developing welding techniques and welding in different positions with a variety of electrodes and cutting procedures used in metal fabrication. Student will also complete multiple projects assigned by the Instructor. In regards to safety, all students will be required to pass a written safety test on general shop safety and machinery. The student will also sign a safety contract which stresses the importance of proper conduct while in the metal shop.

Requirements:

All students must complete the following requirements before beginning to make a project:

1. Pass all safety tests.
2. Turn in a student safety contract.
3. Demonstrate machinery knowledge before beginning a project.
4. Wear safety glasses and observe all safety procedures while in the shop area.

Grades:

Grades will be earned with the following:

90%-100%=A; 80%-89%=B; 70%-79%=C; 60%-69%=D; < 59%=F

Points will be available in the following categories:

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| Academic (tests, projects, demonstrations) | 75% |
| Personal Management (safety, clean-up, notebooks, record keeping) | 25% |

Course Guidelines:

- 1. Attend regularly and on time**
- 2. Respect the rights of others, don't be distracting**
- 3. If absent for any reason, the student is responsible for all make up work**
- 4. Bring writing utensils and paper**
- 5. Dress appropriately for shop work**
- 6. Prepare to purchase safety glasses and gloves**

FFA:

Every student in an agricultural sciences course is able to be an FFA member. FFA is an intracurricular part of agricultural education, and provides numerous opportunities for applying classroom learning in the real-world. Every year Silverton FFA members travel the state and even the nation participating in leadership development, competing with applied career skills, and getting the experience that will make them successful after high school. In addition, FFA members are eligible for literally millions of dollars yearly in scholarships, including several thousand dollars awarded by our local FFA Alumni. Participation in FFA activities is worth up to 10% of extra credit per semester.

Student Expectations:

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| Be Safe! | Be Ready to Learn! |
| Be Respectful! | Work Together! |
| Be Responsible! | Seek Excellence! |

Student Name: _____ **Course:** Advanced Welding/Drafting

Assignment 1: Student and Parent Signatures

I have read and understand the expectations and requirements for being part of this course and will follow them in order to successfully complete this class.

Student Signature

Parent Signature

Date

Communication:

Email makes it very easy to communicate between teachers and parents. If you have an email address please put it down below. This email will be shared with no other group or person and will only be used to provide information about upcoming activities or opportunities in the CTE program. If there is a need for more urgent contact you will be called.

Parent Email Address:

| Weeks | Topics |
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| <i>Weeks 1-3</i> | Safety <ul style="list-style-type: none"> • General shop • GMAW • SMAW • OAW • Equipment |
| Quiz over safety. Students must pass with 85% accuracy. | |
| <i>Weeks 4-5</i> | Review the SMAW process/procedure <ul style="list-style-type: none"> • Machine set-up • Amperage information • Bead characteristics • Welding joints butt, lap, tee, corner, edge and pipe joints with E6011/E7018 • Welding positions 1G/F, 2G/F, 3G/F and 4G/F • Welding troubleshooting porosity, arc blow, spatter, penetration |
| Quiz will be given at the end of week 5. Quiz will cover SMAW process in which students will demonstrate with welds using different welding joints and welding positions. | |
| <i>Weeks 5-6</i> | Review the GMAW process/procedure <ul style="list-style-type: none"> • Machine set-up • GMAW process control settings • Bead characteristics • Welding joints butt, lap, tee, corner, tee and pipe joints with .045 wire and flux core • Welding positions 1G/F, 2G/F, 3G/F and 4G/F • Welding troubleshooting porosity, arc blow, spatter, penetration |
| Quiz will be given at the end of week 6. Quiz will cover GMAW process in which students will demonstrate with welds using different welding joints and welding positions. | |
| <i>Week 7</i> | Review the OAW welding and brazing <ul style="list-style-type: none"> • Torch and cylinder set-up • OAW and cutting regulator settings • Bead characteristics with rod and without • Welding joints butt, lap, and tee • Welding positions 1G/F, 2G/F • Welding and troubleshooting penetration, settings |
| Quiz will be given at the end of week 7. Quiz will cover OAW welding and brazing process in which students will demonstrate with different welding joints and positions. | |

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| <p><i>Weeks 8-10</i></p> | <p>Discuss the TIG process/procedure</p> <ul style="list-style-type: none"> • Machine set-up AC/DC • TIG process control settings and electrode selection • Holding and positioning welding gun • Bead characteristics • Welding joints butt and lap • Welding positions 1G/F and 2G/F • Welding troubleshooting porosity, arc blow, spatter, penetration |
| <p>Quiz will be given at the end of week 9. Quiz will cover TIG process in which students will demonstrate with welding joints.</p> | |
| <p><i>Week 11-16</i> <i>Choose 2 of 3 projects</i></p> | <p>Fabricate a mild steel vice project</p> <ul style="list-style-type: none"> • Read a set of blue prints • Create a bill of materials/plan for project • Measurements • Equipment used will be band saw, drill press, chop saw, and bender • Weld project together using E7018 and GMAW .035 wire • Prepare finished project |
| <p><i>Week 11-16</i></p> | <p>Fabricate John Deere tractor project mild steel</p> <ul style="list-style-type: none"> • Draw a set of blue prints using CAD • Create a plan for the project • Measurements • Equipment used will be band saw, drill press, chop saw, tap & die, and lathe • Welding GMAW and SMAW • Prepare finished project |
| <p><i>Week 11-16</i></p> | <p>Fabricate an aluminum drill bit sharpening tool</p> <ul style="list-style-type: none"> • Draw a set of blue prints using CAD • Transfer blue prints to a DXF file • Cut out project using plasma cam equipment |
| <p>Test will be given at the end of week 17-18. Test will cover GMAW/SMAW process in which students will demonstrate with welds using different welding joints and welding positions.</p> | |
| <p><i>Week 1-6</i></p> | <p>Fabrication of projects using previously developed skills</p> <ul style="list-style-type: none"> • Draw a set of blue prints using CAD • Create a plan for the project • Measurements • Utilize all necessary shop equipment • Welding using several process GMAW, GTAW and SMAW • Prepare finished project |

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| <i>Week 7-9</i> | Certification process <ul style="list-style-type: none">• Follow blue prints• Prepare and cut metal• E7018 fillet weld/multi pass positions of 1G, 2G, 3G, 4G |
| <i>Week 10-14</i> | Fabrication of school assigned projects using previously developed skills <ul style="list-style-type: none">• Work on projects (LAP) |
| <i>Week 15-18</i> | Tests will be given during weeks 15-18. Tests will cover GMAW/SMAW, TIG, plasma/OA cutting in which students will demonstrate with welds using different welding joints and welding positions as well as metal thicknesses. |