

WELDING 1

26-27

Instructor: Samuel Rangel
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3:45 pm – 5:00 pm



Class Description:

Welding 1 is an introductory course that combines technical classroom instruction with supervised hands-on shop experience. Students begin by learning welding and shop safety, required personal protective equipment (PPE), safe material handling, and the proper use of hand tools, power tools, and shop equipment. They also develop foundational skills in welding math, measurement, layout and fit-up, blueprint reading, welding symbols, joint design, and Welding Procedure Specifications (WPSs). Students learn to inspect, set up, and operate Oxy-Fuel Cutting (OFC) and Plasma Arc Cutting (PAC) equipment. They use these processes to complete straight, shaped, and beveled cuts while developing skills in thermal cutting, gouging, material preparation, and cut-quality inspection.

The primary welding process taught in this course is Shielded Metal Arc Welding (SMAW), commonly called stick welding. Students learn equipment setup, electrical current and polarity, amperage and other welding variables, electrode classification, and the proper selection, use, and storage of E6010 and E7018 electrodes. Students then complete surfacing, fillet-weld, and groove-weld assignments in multiple welding positions while following a WPS.

Throughout the course, students inspect their work for required size, placement, appearance, defects, and discontinuities. They use scoring rubrics, technical vocabulary, instructor feedback, and repeated practice to improve their work. The course concludes with a final SMAW test plate, bend-test preparation, and an introduction to destructive weld testing. Successful completion prepares students for the advanced welding processes and expectations taught in Welding 2.

The Sand Devil Way:

Sand Devil Way	What It Looks Like in This Class
Be Kind	Treat people, tools, equipment, and the shop with respect.
Get Involved	Participate, ask questions, and contribute to classroom and shop activities.
Work Hard	Use class time well, practice safely, and produce quality work.

Classroom Culture: Our Social Contract and Behavior Process:

At Page High School, we believe that a positive, respectful learning environment is built collaboratively, not imposed. To support this, our classroom operates under two connected practices: a Social Contract and the Four Questions process.

This approach is part of a school-wide framework grounded in the belief that strong relationships are the foundation of learning and behavior. Students are far more likely to meet expectations they helped create, and to take accountability when they are guided through reflection rather than simply told what they did wrong. Parents and guardians can expect consistency in this process across classrooms at Page High School.

The Social Contract

At the start of the year, students and the teacher work together to define how we want to be treated and how we want to treat one another. This shared agreement — created *with* students rather than handed down *to* them — becomes the foundation for our classroom culture. Because students help write it, they take ownership of it, and it serves as our shared reference point throughout the year.

The 4 Questions

When a student's behavior does not align with our Social Contract, the teacher will not default to an immediate consequence. Instead, the teacher will guide the student through a brief, respectful conversation using four questions:

1. What are you doing?
2. What are you supposed to be doing?
3. Are you doing it?
4. What are you going to do about it?

This process is designed to build self-awareness and responsibility rather than compliance out of fear. It gives students the chance to reflect, take ownership of their choices, and identify their own path back to expected behavior — with the teacher's support. Consequences may still follow when necessary, but the goal is always growth and repair, not punishment alone.

Course Content:

1. Welding, shop, tool, and personal protective equipment (PPE) safety
2. Welding math, measurement, layout, blueprint reading, welding symbols, joint design, fit-up, and Welding Procedure Specifications (WPSs)
3. Oxy-Fuel Cutting (OFC), Plasma Arc Cutting (PAC), gouging, and material preparation
4. Shielded Metal Arc Welding (SMAW) equipment, electrical variables, E6010 and E7018 electrodes, and welding in multiple positions
5. SMAW surfacing, fillet-weld, groove-weld, and final test-plate assignments
6. Weld quality, visual inspection, bend-test preparation, and destructive testing

Learning Outcomes:

By the end of Welding 1, students will be able to:

1. Follow Welding Program safety requirements, use required personal protective equipment (PPE), and safely operate assigned tools and equipment.
2. Apply welding math, measurement, layout, fabrication drawings, welding symbols, joint design, and Welding Procedure Specifications (WPSs) to prepare and fit metal parts.
3. Set up and operate Oxy-Fuel Cutting (OFC) and Plasma Arc Cutting (PAC) equipment, complete assigned cuts, and evaluate cut quality.
4. Explain and apply basic Shielded Metal Arc Welding (SMAW) theory, including equipment setup, current, polarity, amperage, welding variables, and the selection and care of E6010 and E7018 electrodes.
5. Complete SMAW surfacing, fillet-weld, groove-weld, and final test-plate assignments in the required welding positions while following a WPS.
6. Inspect welds for required size, placement, appearance, defects, and discontinuities, and explain how destructive bend testing evaluates weld quality.
7. Demonstrate dependable work habits by following directions, using time and materials responsibly, caring for equipment, responding to feedback, and completing assigned cleanup.

Student learning will be measured through classwork, assessments, skill demonstrations, welding and cutting assignments, and final evaluations. Successful completion prepares students for Welding 2.

Instructional Materials:

No textbook is required. The instructor will provide any required printed and digital materials. Students will use the class set of Chromebooks, school-approved platforms, and approved instructional media for assignments, safety instruction, technical learning, demonstrations, and career preparation.

Required Supplies, Shop Clothing, and PPE:

Students must have:

- Pen or pencil
- School-issued 3-ring binder
- Notebook paper, as needed
- Full-length denim jeans
- Closed-toe, closed-heel work boots
- Welding gloves
- Safety glasses rated Z87+

The Welding Program normally provides welding gloves and Z87+ safety glasses. Personal gloves or safety glasses must be approved by the instructor. Students needing help obtaining required shop clothing or PPE should contact the welding instructor or the CTE office. Shop clothing may become dirty, burned, or damaged during class.

Optional Personal or Upgraded Equipment:

The Welding Program provides the required tools, equipment, materials, welding gloves, and safety glasses needed for normal course activities. Students are not required to purchase upgraded equipment. Students who prefer to use their own equipment may bring:

- Steel-toe or safety boots
- Upgraded welding gloves
- Auto-darkening welding helmet
- Welding jacket
- Personal Z87+ safety glasses
- Personal hearing protection
- NIOSH-approved N95 or P100 particulate respirator
- Construction calculator
- Welding cap

All personal equipment must be clearly labeled with the student's name, inspected, and approved by the welding instructor before use.

Arizona CTE Standards Alignment:

Welding 1 is aligned with the Arizona Welding Technologies 48.0508.00 Technical Standards, including:

- Standard 1.0 — Maintain the Safety and Health of Welders
- Standard 2.0 — Lay Out and Fit Up a Project from a Blueprint
- Standard 3.0 — Set Up and Use Shielded Metal Arc Welding (SMAW) Equipment
- Standard 7.0 — Set Up and Use Thermal Cutting Equipment
- Standard 8.0 — Perform Weldment Testing
- Standard 9.0 — Use Auxiliary Equipment and Tools

Complete standards: <https://www.azed.gov/cte/weld>

Absence Policy:

Absence Intervention Chart	
Absence Count = UNV + TRU + VER (Does not include EXC, ACT, ONC)	
1 - 3 Absences (in a class)	• SchoolMessenger will notify parent/guardian by phone/email for period and/or all-day absence. • Teacher will engage in a one-on-one check-in conversation with student about absences. • Student will obtain missing work from the content teacher per teacher's missing work/make-up policy and expectation.
4 - 5 Absences (in a class)	• 4-day Attendance Notification Letter (includes attendance print-out of record to date) will be sent home to parents/guardians, delivered to student. • Student will receive the opportunity to recover missed learning through after school intervention time in the accordance of the course plan for success.
6-7 Absences (in a class)	• 6-day Final Attendance Notification Letter (includes print-out of record to date) will be sent home to parents/guardians and delivered to student.
8 absences (in a class)	• 8-day attendance notification letter requiring an administrative conference will be sent to parents/guardians. • The student may be placed on an attendance contract and/or referred to a district attendance hearing to address the root cause of absenteeism. Documentation for absences need to be submitted by parent/guardian. • Student will be assigned to after-school tutoring to recover missed learning through after school intervention time in the accordance of the course plan for success.
9+ absences	• If a student continues to be chronically absent after all interventions have been implemented/exhausted, a follow-up conference with the Parent/Guardian, student and Assistant Principal/Designee will be held.
10 consecutive absences	• Student will be automatically withdrawn pursuant to ARS 15-901. Re-enrollment will require an administrative conference and attendance contract.

The following could be used for intervention/remediation due to excessive absences:

- After-school tutoring
 - Offered Monday, Tuesday, and Wednesday 3:50 - 5:15 pm
- Summer school
 - Offered the month of June each summer
- Additional academic courses in lieu of elective courses

In Welding 1, an absence may result in missed safety instruction, equipment demonstrations, or supervised shop work that cannot be replaced by written work. Before using affected equipment or beginning the related shop activity, the student must complete the missed instruction and receive authorization from the welding instructor. Makeup shop work must be completed during an approved supervised time as staffing, equipment, and materials allow.

Tardy Policy:

A student who is not in their assigned location when the bell rings at the end of class change is considered tardy. Students who are tardy should report directly to class; the teacher should administer the following consequences:

Tardies are disruptive to the learning environment. They break the momentum of learning in the classroom. Likewise, they often make the teacher stop and change the completed attendance. If you are tardy to class, it will be treated as a minor incident and following steps will be taken by both the teacher and the student:

Tardy Intervention Chart	
1 - 2 Tardies (in a class)	• Teacher records the tardy (include the tardy #), • Teacher communicates expectation to the student (re-teach) and utilizes classroom management procedures to reinforce expectation. • Teacher may call home. • Student assigned to lunch detention.
3-4 Tardies (in a class)	• Referral (tardy ODR) completed by teacher. • Student participates in a truancy round-up. • Student assigned to lunch detention.
5+ Tardies (in a class)	• Referral (tardy ODR) completed by the teacher. • Students assigned to lunch detention and/or After-School Detention (ASD) to make-up missing academics.
Excessive Tardies (15+ minutes)	• Student receives lunch detention. Any unexcused tardy over 30 minutes may be determined a truancy.
Habitual tardiness	• Students who are deemed habitually tardy despite interventions will then receive multiple days of lunch detention and/or after school detention. • Parent conference with administration.
<i>The tardy count starts at zero at the beginning of each semester.</i>	

In Welding 1, tardiness may also affect a student's ability to participate in shop activities when required safety instruction, equipment demonstrations, or setup procedures are missed. Before using the affected tool or equipment, the student must complete the missed instruction and receive authorization from the welding instructor.

Late and Missing Work Policy:

Assignments, projects, quizzes, and assessments will have posted due dates. Eligible late work will receive the following adjustment after it is graded:

- **1–8 school days late:** 75% of the score earned
- **9 or more school days late:** 50% of the score earned

Work missed because of an approved absence will follow the makeup period provided by the current Page High School Student Handbook before a late adjustment applies. Work marked **Missing (MIS)** may still be completed within the applicable window; a numeric zero is final.

Final Completion Windows

- **Computer-based and written work:** Due by 12:00 p.m. on the final school day of the semester unless an earlier deadline is posted.
- **Lab and shop work:** Due by the end of the final instructional day of the week before finals week.
- **Quizzes:** Available for one calendar week unless a different closing date is posted.

Lab and shop assignments must be completed during class, office hours, or another approved supervised time. Welding, cutting, grinding, and equipment-operation work may not be completed without appropriate supervision. Work or quizzes not completed before the applicable closing deadline will no longer be accepted and will be recorded as a final zero. Approved accommodations and special circumstances will be handled according to school requirements.

Grades and assignment information are maintained in PowerSchool according to the current Page High School grading scale. Students and families should review PowerSchool regularly and contact the instructor with questions.

CTE Field Trip Eligibility:

Participation in CTE-sponsored field trips and travel is a privilege. To be eligible, students must have a grade of **70% or higher in every class**.

Grades will be checked in PowerSchool at **12:00 p.m. on the school day before the scheduled trip or departure**. A student with a grade below 70% in any class at that time will not be eligible to attend unless an exception is approved by school administration.

Students must also submit all required permission forms and travel documents by the stated deadlines and meet applicable Page High School and Page Unified School District behavior and travel expectations.

Welding CTSO events and competitions may have additional eligibility requirements established by the current Welding CTSO Constitution.

Acknowledgment of Risk and Safety Responsibilities:

Welding, cutting, grinding, fabrication, and related shop activities involve recognized hazards that cannot be completely eliminated. Safety instruction, personal protective equipment (PPE), ventilation, equipment safeguards, supervision, and established procedures are used to reduce these risks.

Students must complete and follow the separate Welding Program Student Safety Agreement before participating in shop activities. Students are responsible for following safety directions, using required PPE, remaining within authorized work, and stopping to ask for help when they are unsure. Failure to meet safety requirements may restrict shop participation and will be addressed according to the Safety Agreement and applicable school and district procedures.

Signing the Environmental Plan acknowledgment confirms receipt and review of this notice. It does not waive legal rights or replace requirements established by law, district policy, the Student Handbook, an approved student accommodation or health plan, or the separate Welding Program Student Safety Agreement.

Welding Locker Agreement:

Each student will be assigned a welding locker and a Welding Program combination lock. Students must use only their assigned locker and the program-issued or instructor-approved lock, keep the locker secured, and immediately report a damaged locker, missing or damaged lock, or compromised combination. A lost, missing, or damaged program-issued lock will result in a \$5 replacement fee.

Personal or unauthorized locks may not be placed on welding lockers and may be removed by authorized school personnel. Welding lockers remain school property and may be opened, inspected, or searched according to Page Unified School District policy and the current Page High School Student Handbook. Students are responsible for the contents of their assigned lockers and must report any item that does not belong to them.

Students must completely clean and empty their lockers, return Welding Program property and the program-issued lock, and remove all personal belongings by the announced deadline or when leaving the course. Items left behind will be handled according to current school or district procedures.

Welding Program Property:

Welding Program tools, equipment, personal protective equipment (PPE), materials, consumables, scrap, practice pieces, and projects remain school or district property unless the welding instructor authorizes their removal. Students must use program property only for approved work, follow all tool-tag, checkout, inventory, storage, and return procedures, use materials responsibly, and promptly report missing or damaged property.

Students may not take, hide, lend, trade, alter, damage, or remove Welding Program property without permission. Suspected theft, vandalism, unauthorized possession, or intentional damage will be addressed according to the current Page High School Student Handbook and Page Unified School District procedures.

No Cell Bell-to-Bell:

Negative Effects of Cellphone Use During Instructional Time

- Adolescents who use smartphones throughout the school day may spend about one-third of instructional time on their devices.
- Higher smartphone use during school is associated with reduced cognitive control.
- Students who have access to their cellphones during instructional time demonstrate lower attention and poorer recall of instructional material than students whose phones are removed.
- Simply having a cellphone available can reduce attention and memory.
- Learning can be impaired when attention is divided between instructional materials and distracting cellphone use.

Students will face the following consequences for violating cellphone expectations:

1st Offense: Staff will review the schoolwide expectation of no phones during instructional time, and the student will be directed to place the phone in the box.

2nd Offense: The phone will be confiscated and held by administration until the end of the day.

3rd Offense: The phone will be confiscated and held until the end of the day, the student will be assigned Lunch Detention, and the parent or guardian will be notified.

4th Offense: The phone will be confiscated, the student will be assigned After-School Detention (ASD), and a parent or guardian must pick up the phone.

5th Offense: The student will be required to turn the phone into the office upon arriving on campus each morning. The duration will be determined by administration.

A student found using a cellphone in the hallway during instructional time will have the device confiscated and held until the end of the day.

Additional shop-specific expectations for personal electronic devices will be addressed in the separate Welding Program Student Safety Agreement.

Welding 1 Environmental Plan Acknowledgment

2026–2027 School Year

Instructor: Samuel Rangel

Return and Shop-Clearance Requirements:

Please complete, sign, and return this page by the posted deadline.

Students may continue completing approved classroom assignments while required forms or safety requirements are outstanding. However, a student may not participate in welding lab/shop activities until:

- This acknowledgment has been signed and returned.
- The separate Welding Program Student Safety Agreement has been completed and returned with all required signatures.
- All required safety instruction and assignments have been completed.
- The student has earned 100% accuracy on each required safety quiz or test.
- The welding instructor has granted shop clearance.

Shop clearance does not authorize the use of every tool, machine, welding process, or cutting process.

Students must receive the required instruction, demonstration, and permission before beginning each new task or using specific equipment.

School and District Policy

This Environmental Plan was finalized before publication of the 2026–2027 Page High School Student Handbook and reflects the most current guidance available at that time. It remains subject to applicable law, Page Unified School District policy, the current Page High School Student Handbook, the PHS Academic Planning Guide, approved student accommodations or health plans, and the separate Welding Program Student Safety Agreement.

If any part of this Environmental Plan conflicts with a controlling requirement, the controlling requirement will take precedence. Course procedures may be updated when necessary, with reasonable notice provided to students and families.

Student Acknowledgment:

By signing below, I confirm that I have received and reviewed the Welding 1 Environmental Plan. I understand the course expectations, required supplies and personal protective equipment (PPE), attendance and tardy procedures, late-work requirements, cellphone expectations, locker requirements, and responsibilities for Welding Program property.

I understand that shop participation is also governed by the separate Welding Program Student Safety Agreement. I agree to follow classroom and shop expectations and to ask the welding instructor for help whenever I do not understand a direction, procedure, tool, machine, or assigned task.

Student name, printed: _____

Class period: _____

Student signature: _____

Date: _____

Parent or Guardian Acknowledgment:

By signing below, I confirm that I have received and reviewed the Welding 1 Environmental Plan. I understand that the course combines classroom instruction with supervised work involving welding and cutting equipment, tools, hot and sharp materials, electrical hazards, compressed gases, fumes, sparks, and other recognized shop hazards.

I understand the requirements the student must complete before receiving shop clearance and that additional safety requirements are provided in the separate Welding Program Student Safety Agreement. I may contact the welding instructor with questions about the course, the student's progress, or program expectations.

Parent or guardian name, printed: _____

Relationship to student: _____

Daytime phone number: _____

Email address: _____

Preferred communication method:

☐ Text message ☐ Email ☐ Phone call

Parent or guardian signature: _____

Date: _____

Signing this acknowledgment confirms receipt and review of the Environmental Plan; it does not waive legal rights or replace any controlling legal, school, or district requirement.