



WELDING SCULPTURE



SkillsUSA Championships Technical Standards

PURPOSE

To evaluate each competitor's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of welding or metal trades.

ELIGIBILITY

Open to active SkillsUSA members enrolled in career and technical programs with welding or metal trades as an occupational objective.

CLOTHING REQUIREMENTS

Class I: Competition Specific — Welding | Welding Fabrication

- Official SkillsUSA khaki long-sleeve work shirt (100% cotton as per OSHA regulations)
- Khaki pants (100% cotton as per OSHA regulations)
- Black, brown, or tan work shoes

Note: Safety glasses must have side shields or goggles. (Prescription glasses may be used only if they are equipped with side shields. If not, they must be covered with goggles.)

These regulations refer to clothing items that are pictured and described at www.skillsusastore.org. If you have questions about clothing or other logo items, call 1-888-501-2183.

Note: Competitors must wear their official competition clothing to the competition orientation meeting.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
 - a. A minimum 28" x 28" table space per competitor
 - b. Welding station to complete part of the skilled portion of the competition.
2. Supplied by the competitor:
 - a. Competitor-designed and -produced sculpture
 - b. Binder documenting the sculpture project and processes submitted in an official SkillsUSA three-ring binder
 - c. Digital copy (PDF) of binder contents saved on a USB flash drive turned in at orientation and submitted deadline published on the state competition updates page.
 - d. Hearing and/or ear protection
 - e. Welding gloves — full length (gauntlet) for SMAW, GMAW and FCAW
 - f. Welding gloves — appropriate for GTAW
 - g. Welding cap/beanie
 - h. Welding helmet with appropriate filter plate/lens and protective cover lens for tacking and welding; auto darkening filter plate/lens permissible. Spare filter plate and cover lens.
 - i. Cutting goggles — with shade 5 lens/cover lens for OFC/PAC; helmet with shade 5 capability permissible; face shield head gear with shade 5 permissible. Spare filter and cover lens.
 - j. All competitors must create a one-page resume. See “Resume Requirement” below for guidelines.

RESUME REQUIREMENT

Competitors must create a one-page resume to submit online. SkillsUSA South Carolina competitors should submit their resume by the deadline published on the competition updates page of our website. Failure to submit a resume will result in a 10-point penalty.

Your resume must be saved as a PDF file type using file name format of “Last Name_First Name.” For example, “Amanda Smith” would save her resume as Smith_Amanda. If you need assistance with saving your file as a PDF, visit the Adobe website for more information.

Note: Check the Competition Guidelines and/or the updates page on the state website.

PROHIBITED DEVICES

Cellphones, electronic watches and/or other electronic devices not approved by a competition’s national technical committee are **NOT** allowed in the competition area. Please follow the guidelines in each technical standard for approved exceptions. Technical committee members may also approve exceptions onsite during the SkillsUSA Championships if deemed appropriate.

Penalties for Prohibited Devices

If a competitor’s electronic device makes noise or if the competitor is seen using it at any time during the competition, an official report will be documented for review by the Director of the

SkillsUSA Championships. If confirmed that the competitor used the device in a manner which compromised the integrity of the competition, the competitor's scores may be removed.

ONLINE SUBMISSION REQUIREMENTS

SkillsUSA national competitors should submit electronic documents by the deadline published on the state competition updates web page. The link and deadline for online submissions will be published on this page. Failure to submit any of the required documents will result in a penalty.

1. Resume
2. Digital copy (PDF) of the binder contents. This requirement is in addition to submitting the actual binder during orientation.

SCOPE OF THE COMPETITION

The scored competition consists of four parts:

1. Evaluation of the sculpture
2. Binder Documentation
3. Interview (All competitors will be asked the same questions, determined by the judges, before the start of the competition).
4. On-site Welding Component

KNOWLEDGE PERFORMANCE

There will be a skill-related written test to evaluate student knowledge of basic welding and cutting processes. General questions about GMAW, GTAW, SMAW, PAC and OFC will be included on this test. Competitors are also required to take the SkillsUSA Professional Development Test.

SKILL PERFORMANCE

The competition evaluates the ability of the competitor to design and produce a welding sculpture. The skill performance includes an interview for competitors to answer questions related to all aspects of their creation of the design. Competitors will also be required to set up and operate machines to appropriately weld/cut in any of the following processes: GMAW, SMAW, GTAW, FCAW, PAC, OFC.

COMPETITION GUIDELINES

Note: No modifications may be made to sculptures after regional/state competitions, except polishing and clear coat.

On-Site Welding Component

Set up and operate machines to appropriately weld/cut in any of the following processes: GMAW, SMAW, GTAW, FCAW, PAC, OFC.

Sculpture Design and Workmanship

1. Materials used must be ferrous or nonferrous metals. The sculpture must be an original and creative work of the competitor.
2. Sculptures shall be welded, brazed or soldered, depending on the material used. This is a welding competition. Please keep in mind each competitor's sculpture should be representative of a welder's skills and ability.
3. Projects are to be left unpainted, including primers and other coatings. (Exception: sculptures may be clear coated.) Naturally achieved patinas shall be limited to air, water or heat, or any combination thereof. (No chemically enhanced finishes are permitted).
4. All copyright laws must be followed in the creation of the design.
5. The sculpture must be one continuous piece, not multiple pieces unconnected. Movement is allowed but not required. Moving parts are permitted provided they do not affect the size parameters or integrity of the piece or create a safety hazard.
6. The sculpture cannot exceed the maximum size of 18" tall x 12" wide x 18" long and cannot exceed a weight of 100 lbs. At orientation, competitors will place a box with said dimensions over their sculpture so that judges may verify the sculpture meets the size requirement. Sculptures will also be weighed. (A penalty will be assessed for oversize or overweight sculptures).
7. No additional appurtenances can be used (mirrors, stands, etc.). The sculpture shall stand alone. No presentation pieces are permitted.
8. **Note:** Binders are *not* considered presentation pieces and are required to be present with the sculpture.

BINDER

In addition to the physical binder, a digital copy (PDF) of the binder's contents will be required to be uploaded to a designated SkillsUSA competitions updates website. There will be no exceptions. Any additions to the physical binder may/may not be included in binder scoring.

1. A three-ring binder must be placed with the sculpture prior to judging. It must contain pictures and supporting evidence (i.e., receipts). It must include a brief description of the project and processes used to develop the sculpture.
2. The first page of the binder must be a table of contents. All subsequent sections must be clearly labeled and tabbed. The binder must include a letter certifying that the sculpture was designed and constructed by the competitor. The letter must contain an itemized list of all expenses. The letter must identify the school, city, state and local advisor. The letter must identify the student to be interviewed, division (high school or college/postsecondary), and the letter must be signed by the school administrator.
3. Any welds that are hidden or ground must be documented through photographs with captions in the binder. Note: documentation will be critical if welds are not visible on the completed sculpture.
4. A written statement from a school administrator must be submitted to the technical committee stating that the sculpture is the same one used throughout the local and state SkillsUSA competitions that lead to the national conference.
5. A digital copy (PDF) of the binder contents must also be provided at orientation on a USB drive; USB drives will be returned to students after the competition.

INTERVIEW

The competitor will participate in a three- to five-minute interview. Questions from the judges will be related (but not limited) to sculpture, creation, inspiration, materials, processes and workmanship.

ITEMS EVALUATED

On-Site Welding Component

Set up and operate machines to appropriately weld/cut in any of the following processes: GMAW, SMAW, GTAW, FCAW, PAC, OFC.

Sculpture

1. Metal Working (Fitting and Techniques)
2. Welding
 - a. Fit-up
 - b. Function of welds
 - c. Amount of welds
 - d. Quality of welds

Note: No extra credit or deductions for mechanical fasteners
3. Cutting
 - a. Function of cuts
 - b. Quality of cuts

Note: No extra credit or deductions for CNC cutting
4. Design/Creativity
 - a. Level of difficulty
 - b. Creative use material/process
 - c. Creativity
 - d. Original Design

Binder (1"-3" tabbed binder)

1. Tabbed table of contents
Note: Must be the first page
2. Verification letter
Note: All information must be included in one letter.
 - a. Must be on school letterhead and signed by school administrator
 - b. Includes name of advisor and statement that competitor constructed the sculpture
 - c. Itemized list of expenses with receipts
 - d. List of approximate time in each process

Note: actual receipts, photocopies of receipts, invoice or proof of donated materials required for expenses
3. Photographs with captions (minimum 10)
Note: Photos must include the competitor, who must be identifiable working on their sculpture throughout various stages of construction; captions must depict the process demonstrated.
Note: If welds are ground or removed, photo documentation of original welds must be provided.
4. Photographs: local and state competitions

Note: Competitor with sculpture, medal/certificate to verify the same sculpture has been used for all applicable qualifying SkillsUSA competitions.

5. Drawings.
 - a. Concept drawing(s)
 - b. Drawings — approximate dimensions
6. Supporting documents
(Examples: additional photos of process, design, cutting, welding, forming; explanation of creative use of process, etc.).

Interview

1. Greeting and Closing
2. Eye Contact
3. Knowledge of Project
4. Complete Answers
5. Level of Detail
6. Professionalism

PENALTIES

1. Workmanship: exceeds size limits: -100 points
2. Workmanship: exceeds 100 lbs.: -100 points
3. Workmanship: paint/finish: -50 points
4. Workmanship: copyright infraction: -50 points
5. Digital copy of binder contents not submitted online: -10 points
6. Resume Penalty: -10 points
7. Clothing Penalty: -10 points

STANDARDS AND COMPETENCIES

WS 1.0 — SkillsUSA Framework

The SkillsUSA Framework is used to pinpoint the Essential Elements found in Personal Skills, Workplace Skills, and Technical Skills Grounded in Academics. Students will be expected to display or explain how they used some of these Essential Elements. Please reference the graphic, as you may be scored on specific elements applied to your project. For more, visit: www.skillsusa.org/who-we-are/skillsusa-framework/.



COMMITTEE IDENTIFIED ACADEMIC SKILLS

The technical committee has identified that the following academic skills are embedded in this competition.

Math Skills

- Use fractions to solve practical problems.
- Convert fractions to decimals and vice versa.
- Measure angles.

- Construct three-dimensional models.

Science Skills

- Describe and recognize solids, liquids and gasses.
- Use knowledge of principles of electricity and magnetism.

Language Arts Skills

- Provide information in oral presentations.

CONNECTIONS TO NATIONAL STANDARDS

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- Geometry
- Measurement
- Problem solving
- Communication
- Connections
- Representation

Source: NCTM Principles and Standards for School Mathematics. For more information, visit: www.nctm.org.

Science Standards

- Understands the structure and properties of matter.
- Understands the sources and properties of energy.
- Understands forces and motion.
- Understands the nature of scientific inquiry.

Source: McREL compendium of national science standards. To view and search the compendium, visit: www2.mcrel.org/compendium.

Language Arts Standards

- Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.ncte.org/standards.