



# Robotics & Automation Technology Contest Information

by Renee Reed — last modified February 3/11/2024

**The contest is subject to a last-minute change depending upon the industry technical committee setting up each station.**

## **Times/locations and general information**

Contestants will need to arrive to the Cox Convention Center on Monday, April 22, 2024 and check in the Robotics & Automation Technology contest area at 8am.

Written testing will be held ON-LINE through your school's testing centers. Testing will be open March 13<sup>th</sup>- April 9th. No provisions are being made for make-up testing on-site.

**NO Substitutions will be allowed this year after April 5th**

Print the General Instructions for each of your competitors and have them become acquainted with the competition BEFORE arriving at the conference.

## **Resume**

Each contestant will be required to bring his or her printed resume. It will be presented to the judges upon entry to the contest area. A deduction will be applied to your overall score if you do not have a resume.

**PLEASE NOTE: Contestants will need to move in to the Conference Hall at 2 p.m. on Sunday to set up equipment and allow maximum time for the contest on Monday. No guarantee of equipment safety can be made, but a security guard will be on hand all night with orders to allow no one in until state staff arrive.**

**Present this memo to security or state staff as your pass to accompany your contestants to the Robotics and Automation Technology contest area only.**

## **INDUSTRY AWARDS**

As agreed at Summer Conference each instructor is requested to secure a minimum of \$50 in prizes for each student that you bring to the State SkillsUSA Championships. These awards should be labeled with the name, address and contact person for the donating industry so that the contestant they are awarded to can send an appropriate expression of his or her appreciation.

## **TOOLS, EQUIPMENT and SUPPLIES**

Rather than require exact equipment (some suggestions are presented below), the Technical Committee will specify a list of capabilities and functions the teams may be required to demonstrate. This list should remain consistent from year to year and represent typical process to be performed and general capabilities and let each participant bring sufficient equipment to complete the process to given specifications. Exact performance required at the competition will vary yearly but will be drawn from the capabilities specified.

## **SUPPLIED BY THE TECHNICAL COMMITTEE**

- 2 - 6' x 2 1/2" folding tables
- Manufacturer's specifications for the process to be performed.



## **PROCESS SPECIFICATIONS**

Parts will be delivered to a starting point without regard to orientation (cell must manipulate part as necessary to determine orientation).

Parts will be manipulated by the robot. The robot may be used to manipulate parts more than once (i.e., may be used to simulate the presence of more than one robot).

Parts will be inspected, manipulated and sorted based on variables stated in specifications (not all variables may be used each year, but variables used will be drawn from this list).

The cell must be able to distinguish between metallic and non-metallic parts, and parts with no holes. The cell must be able to detect when a part has been placed by the parts feeder.

Outputs, shall be available for processes yet to be determined, and their status (on or off) will be indicated by clearly visible industrial lamps supplied by ATC.

Inputs shall be available for processes yet to be determined, and their state will be determined by ATC.

### **SUPPLIED BY CONTESTANT TEAMS:**

Equipment sufficient to fulfill the manufacturer's requirements. Required equipment will vary with the individual abilities of specific equipment, but a suggested list is presented below.

1 Industrial / Collaborative robot

~ Appropriate tools

- VOLT-OHM-MILLIMETER (VOM OR DMM)
- MANUALS FOR EQUIPMENT
- EYE PROTECTION WITH SIDE SHIELDS
- #2 LEAD PENCILS

### **CONTEST DESCRIPTION AND SCORING**

The contest will consist of an online SkillsUSA (PDP) knowledge test, online written test covering knowledge of manufacturing processes and robotics. Contestants will be given a manufacturing function to be performed. The contestants will be required to implement the best available solution to the assignment presented

The contestant will be graded on the following: 10% - Written Test score; 87.5% - execution of skill component.

Operation considerations:

- proper initialization
- successful testing of properties of materials
- successful detection of the presence of completed
- sorting of parts dependent upon features described above
- notification of external processes when workcell process is complete
- correct action based on input from external processes
- decisions required of the cell
- time taken to prove operation
- length of program

The SkillsUSA (PDP) knowledge test 2.5% to the total score only, which is consistent with the National SkillsUSA competition.