



## **Mechatronics Contest Information**

**Tentative-Information is subject to change, check back often.**

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**NO SUBSTITUTIONS WILL BE ALLOWED AFTER FRIDAY, March 28th, 2025 THERE WILL BE NO SUBSTITUTIONS ALLOWED ON-SITE AT THE CONFERENCE\***

### **Purpose**

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of mechatronics.

### **Times/locations**

Contestants will need to arrive to the Arvest Business Center (formerly known as the Cox Business Center) on Monday, April 28, 2025 and check in the Robotics & Automation Technology contest area at 8am.

### **Testing**

Contestants will be judged on their SkillsUSA knowledge through Professional Development test and a knowledge test. Testing will be completed online and proctored through their technology centers. Online testing opens March 14, 2025, and closes April 4, 2025.

### **RESUME- Change to submission type please for 2025 please read**

All contestants will submit a digital resume prior to contest day. Contestants will receive an email to the address used to register the contestant for contest with instructions and link to access the SkillsUSA Competitor Portal page. The email will contain contestant's username and contestant number, which are required to login to the Competitor Portal.

Deadline to submit resume is April 22, 2025

### **Clothing Requirements**

All students will be required to wear appropriate clothing representative of their occupation. No school logos or anything that shows your name allowed on clothing. Safety glasses are required at all times while in the contest area.

## **CELLPHONES AND OTHER SMART DEVICES**

Cellphones, electronic watches and/or other electronic devices not approved by a competition's technical committee are NOT allowed in the competition area.

### **At the option of the Technical Committee**

There may be a contestant meeting at 6 p.m. the evening **before** the event to get your contestants oriented to the equipment, go over the format of the contest, and hand out documentation they will need to study to be prepared for the contest. This meeting will be held in the Mechatronics contest area and should only take an hour or so.

Question and answer time will be allowed.

See the Festo web site for examples of the modules you may be working on.

[https://www.festo.com/us/en/e/technical-education/learning-systems/stem/meclab-r-id\\_32631/](https://www.festo.com/us/en/e/technical-education/learning-systems/stem/meclab-r-id_32631/)

## **Industry Awards**

**Prizes are the responsibility of the individual contests. Prizes are not guaranteed and are not supplied at the SkillsUSA Oklahoma state level.**

As agreed at Summit each instructor is requested to secure a minimum of \$50.00 in prizes for each student that you bring to the State SkillsUSA Championships. Please contact your chair for details and to let him/her know of industry awards you have secured. 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.

Please bring prizes to the industry awards area at the Arvest Convention Center Conference Hall, Sunday, April 27<sup>th</sup> between 12-4pm or Monday, April 28<sup>th</sup> between 8am-4pm.

## **Awards Ceremony**

Winners will be recognized at the General Session on Tuesday morning, April 29<sup>th</sup> at 9am. **All competitors must wear official SkillsUSA dress to the Awards Session, where winners are announced. Competitors who are not dressed appropriately or lack official attire will be denied access to the awards stage. Students must be present when their contest is announced. If a student is improperly dressed, absent, or misses their contest being called, the production will not be paused for any reason, and they will forfeit their opportunity to go on stage to receive the award. No exceptions will be made. No hats or sunglasses will be allowed to be worn on stage.**

Official dress for men: Official blazer, jacket or sweater; black dress slacks; white dress shirt; plain black tie with no pattern or SkillsUSA black tie; black socks and black shoes.

Official dress for women: Official blazer, jacket or sweater; black dress slacks or knee-length skirt with business like white, collarless blouse or white blouse with small, plain collar that may not extend onto the lapels of the blazer, and black dress shoes.

### **Tools and Supplies**

Contestants will need to bring the tools and components listed below. Each

team must bring their own tools:

- Metric combination hex key
- #2 lead pencils
- Safety glasses

PLC's required for PS Students only:

- Postsecondary students will need to bring a PLC they are familiar with and a computer to program with.
- Minimum configuration: 24 V, 8 digital inputs, 8 digital outputs
  - They will be connecting it to the Festo Air Logic station using a Festo-supplied cable and programming it to accomplish the task assigned.
  - Screwdrivers set and needle nose pliers

### **Activities**

Students will work with Festo Mechatronics Stations. Tasks may include:

- Assembling hardware based on schematics
- Connect pneumatic components
- Connect electrical components
- Build circuits in Simulation Software (provided by Festo)
  - Each team of two must bring their own laptop to run software with Windows.
- Postsecondary will have an added task of programming a PLC to control the station.
  - Each postsecondary team of two must bring their own PLC with programming cables and computer with programming software.
- Students will perform troubleshooting activities on an electrical-control device.

### **Contest Description and Scoring**

Through this competition, we are selecting a secondary and postsecondary contestant to represent Oklahoma at the SkillsUSA Championships. We will follow the national rules,

regulations, and contest content as closely as possible. We want our contestants to be prepared to compete at the national level. Additional rules and regulations may be provided in order to insure a fair and rewarding competition at the contest site.

The contest will consist of:

1. An online SkillsUSA (PDP) knowledge test 2.5%.
2. 10%: On-line written test covering knowledge of electrical, electronic, mechanical, and fluid competencies, and hands-on practical work in designing, constructing and troubleshooting typical manufacturing work cells;
3. 15% Oral Interview covering questions about typical symbols and circuits for electrical systems and air logic;
4. 57.5% Electro-Pneumatics Machine. Given equipment and a problem statement, contestants will assemble the required hardware to implement. Secondary contestants will be provided with a pre-programmed PLC to interface. Postsecondary contestants must bring their own and will be required to program it.
5. 15% Troubleshooting skills. Contestants will be presented with stations with defects and will be asked to troubleshoot to locate the faults.

The following links may be helpful as students prepare by becoming familiar with the Siemens STEP 7 software and the COSMIR software.

[http://www.automation.siemens.com/simatic/industriesoftware/html\\_76/produkte/software-step7.htm](http://www.automation.siemens.com/simatic/industriesoftware/html_76/produkte/software-step7.htm)

<http://www.ttintl.com/english/s7w.html>

<http://www.festo-didactic.com/didactic/news.asp?action=detail&home=1&newsid=2339&nation=us&lang=en>

<http://www.festo-didactic.com/didactic/news.asp?action=detail&back=search&actpage=1&newsid=2418&sid=50a6cece8d55b0f268903e54f1b129ef&nation=us&lang=en>

