Mechatronics Contest Information

Mechatronics
Contest Information

by Renee Reed — last modified February 2/23/2024

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 Monay, April 22, 2024 and check in the Robotics & Automation Technology contest area at 8am.

Written testing will be held ON-LINE through your schools' Testing Liaison. Testing will be open Monday, March 13th- Friday, April 9th. No provisions are being made for make-up testing on-site.

NO Substitutions will be allowed this year after April 5th

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.

At the option of the Technical Committee, (if they feel it warranted by the teams represented; check with Renee for confirmation) 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/

INDUSTRY AWARDS
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 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.

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.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