



## Electronics Technology

### 2024 SkillsUSA Michigan State Championships Contest Description Task and Materials List

#### CONTEST LOCATION:

Grand Rapids Community College  
Applied Technology Center (ATC)  
151 Fountain NE  
Grand Rapids, MI, US  
(616) 234-GRCC  
<http://www.grcc.edu/>

#### RESUME:

Each student must submit a one-page printed resume before the contest start at the contest site (present to contest coordinator, not judges). The resume is no longer submitted online. This is the only time that resumes can be turned in. Failure to do so will result in a 10 point penalty.

#### TASKS THAT MAY BE PERFORMED

1. Components identification
  - A) Through Hole
  - B) SMT
2. Technical and SkillsUSA Professional Development Test
3. Proper use of test equipment
  - A) DMM
  - B) OSCOPE
  - C) Funcgen - Global 2206
4. Apply troubleshooting techniques, within design
5. Breadboarding techniques
6. DC circuit design, construction and testing
7. AC circuit design, construction and testing
8. Transistor circuit design, construction and testing
9. Digital circuit design, construction and testing
10. Analog (op amp) circuit design, construction and testing
11. Analog to Digital/Digital to Analog Conversions, Memory Decoding
12. 555-Monostable, astable design/construction/testing
13. Soldering techniques/ Surface Mount Technology
14. Reading and understanding of manufacturer's spec sheets
15. Drawing circuit schematic from data sheets
16. PLD design

## **Testing Schedule - Friday, April 12, 2024:**

All Electronics Technology contestants need to take the following tests. ***Attendance is mandatory! Failure to take these tests will result in NO POINTS for that section of the contest!*** If a contestant misses the written exam, they will still be able to participate on Saturday at the practical exam. They will not be able to take the written exam on Saturday and will receive zero points for that section of the contest. Contestants will also be receiving their datasheets for Saturday's competition. They will need to return these sheets on Saturday or they will be docked points.

- 4:00 pm - Electronics Technology Test, Emerald A Room, Amway Grand Plaza Hotel

## **Saturday, April 13, 2024:**

**The competition will be held at 8:00 am at:**

Grand Rapids Community College  
Applied Technology Center (ATC)  
151 Fountain NE  
Grand Rapids, MI, US  
(616) 234-GRCC  
<http://www.grcc.edu/>

Revised 1/20/24

## 2024 SKILLSUSA MICHIGAN CHAMPIONSHIPS

*Electronics Technology* - Task that may be performed:

1. Component Identification
  - A) Through Hole
  - B) SMT
2. Proper use of test equipment
  - A) DMM
  - B) Oscilloscope
  - C) Function Generator (Global 2206)
3. Written technical test - 50 Questions technical  
25 Questions skills USA (tie breaker)
4. Apply troubleshooting techniques within design (circuit design)
5. **Breadboarding** techniques (construction, design, layout and neatness)
6. **DC circuits design**, construction and testing
7. **AC circuits design**, construction and testing (RCL circuits Peak and/or RMS)
8. **Digital circuits design**, construction and testing
9. Reading technical manuals (understanding spec sheets)
10. Transistor design, construction and testing (NPN, PNP, SCR's, or TRIAC's)
11. Analog to digital / digital to analog conversion /memory
12. Analog (Op amp) design, construction and testing - 741, 318, 358, or 4011
13. Soldering / Desoldering techniques - SMT (Surface Mount Technology)
14. 555 - Monostable, astable design / construction and testing or other oscillators
15. Part of the contest...Drawing out the circuit, showing pin # and connections
16. PLD design - design and construct internal circuitry of the IC

**Electronics Technology** — The contest will last approximately 4 hours and has been divided into three sections.

Section 1: Written exam consisting of 50 questions. Last year's covered basic topics from DC analysis to digital analysis. The last 10 Questions of the test will be on how to read data sheets.

***Performed on Friday***

Section 2: Design, construct, and analyze the operation of a predetermined circuit. The contestants will be furnished all pertinent data sheets. Troubleshooting was added to the contest.

***Performed on Saturday***

Section 3: Covers soldering techniques. The contestant will assemble a circuit. Neatness, safety, and circuit operation will be judged. ***Note: At State Surface Mount Soldering will be required.***

***Performed on Saturday***

## 2024 MICHIGAN SKILLS USA CHAMPIONSHIPS

### *Electronics Technology*

Students Must Supply:

Assortment of hand tools, minimum tools:

1. Soldering iron (variable wattage), holder and sponge
2. Desoldering - Manual solder extractor **ONLY**, solder wick or solder sucker.
3. Needle nose pliers
4. Diagonal cutters
5. Wire strippers
6. Solder - 60/40 resin core, 22 gauge (about, small solder)
7. Logic probe (optional)
8. Safety glasses with side shields or goggles (must)
9. Test leads (Banana to 1C, Banana to Alligator, and Banana to Banana) - 2 sets
10. Solderless breadboard (jameco JE 24 or similar)
11. Assortment of wire - 22gauge (different color and lengths) for bread boarding
12. Pencil and/or pen
13. Pocket scientific calculator (non programmable)
14. Oscilloscope probe leads (BNC connectors) - 2 sets
15. Grounding straps - Banana end (wrist)
16. Tweezers, Xacto knife, and/or dental pick (SMT soldering)
17. Meter - DMM Fluke 77 (optional)
18. Static Mat (for breadboarding)

# SCORECARD Electronics Technology\*

Contestant Number

Items Evaluated	Possible Points							
<b>Written Exam</b>	<b>200</b>							
<b>Soldering</b>	<b>200</b>							
<b>Bread Boarding/Trouble Shooting</b>	<b>600</b>							
<b>Résumé Penalty</b>	<b>0 or -10 only</b>							
<b>Clothing Penalty</b>	<b>0 to -50</b>							
<b>Total Possible Points</b>	<b>1000</b>							

\* Scoring may be different that what is shown.

**Date:**

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**Judges' Signatures:**

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