



Robotics: Urban Search and Rescue

Career Competition

Career Cluster: Manufacturing/STEM

State Qualifying Event: No

National Contest: Yes

Participation: Teams of 2

Competition Description

To evaluate team members' skills and preparation for employment in fields related to and including robotics, engineering, automation, manufacturing, electronics, and emergency services.

Tasks To Be Evaluated

A two-member team builds its robot and arm mechanism prior to the competition and then, during the competition, there will be two separate but related challenges. The first will be a demonstration of proficiency in three (3) specific skill trials (omitting Navigation & Drive Chassis Skills). The second is a simulated urban search and rescue mission to traverse a course and locate, secure, and properly dispose of ordnances. Each team will perform one round of the three (3) skill trials and one round of the simulated mission to locate and dispose of two ordnances. In both challenges, teams will be under time constraints to complete the objective. In addition, there will be a 5 minute technical presentation and a 30 question written test.

Clothing Requirement

National Requirement:

Class E: Competition Specific — Business Casual

- Official SkillsUSA white polo shirt
- Black dress slacks or black dress skirt (knee-length minimum)
- Black closed-toe dress shoes

State Requirement:

National Requirement OR

- White polo shirt or button-down dress shirt (other colored polo/dress shirt will be subject to deductions)
- Black dress slacks or black dress skirt (knee-length minimum)
- Black, closed-toe dress shoes.
- Any embroidered names or school patches must be covered, if applicable.

Provided by Competitor

- Eye protection
- Laptop (optional) for technical presentation only. Not to be used for robot operation.
- Fully assembled, tested, and operational conforming to guidelines and parts restrictions (see “Bill of Materials”)
- Team letter affixed to robot
- Presentation software for oral presentation (optional)
- CAD/CAM software for blueprint design (optional)
- Completed Engineering Notebook (technical drawing/blueprint of robot drive chassis must be included in notebook)
- Pens, pencils, and paper
- One 6’ multiple-outlet surge protector
- Tools:
 - Allen wrench set (English)
 - Clamping vise
 - Metal tin snips
 - Power strip
 - Calculator
 - Tape measure

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Additional Information:

Updated rubrics to reflect point values will be provided.

- Hammer
- Metal file
- Flat-head and Phillips-head screwdrivers
- Wire strippers (one set)
- Wire cutters/snips (one set)
- Roll of electrical tape
- 4” nylon wire ties (25 pack)
- Multimeter
- Multi-nut pliers
- Metal-cutting hacksaw (manual)
- Cordless drill with charger
- Set of standard drill bits
- Pliers (needle nose or regular)
- Set of box wrenches
- All competitors must create a one-page printed resume

Provided by Technical Committee

- Challenge field: 30’ x 40’ simulated neighborhood.
- Field elements: components of a residential area and obstacles
- A command center area equipped with a table, chair, spotter area, and video monitor
- General workspace for teams, including 1 table, two chairs, and access to power