

Ordnance Disposal Robot Design Challenge

Ordnance disposal robots are being used in both the military and for homeland security. By the year 2009 all accredited bomb disposal squads in the United States will need to have an ordnance disposal robot. Your team is required to design and build an ordnance disposal robot.

In the Ordnance Disposal Robot Design challenge participants are expected to build a remote controlled device that is capable of travelling 20 feet, picking up a simulated bomb (a tennis ball) and dropping it into a 6" high receiving jig located near the starting point. An additional 50% will be added to the overall team score if your robot can complete the challenge out of line of site of the bomb. An additional 25% will be added to the overall score if the robot is semi-autonomous.

Rules

1. Teams consist of 2-4 students.
2. Each ordnance disposal robot must be designed and constructed by students.
3. Teams can use Vex or other controllers.
4. Teams may supplement Vex parts with store bought or student fabricated parts. The cost of additional parts may not exceed \$100. A completed bill of materials with cost should accompany the student presentation.
5. Teams must provide bring a copy of their engineering design workbook with them for the judges to review.
6. The initial travel surface shall be twenty (20') feet long and four (4') feet wide with no sides. There may be obstacles
7. The simulated bomb is a standard tennis ball.
8. Scoring is based upon:
 - Quality of the design
 - Safety design considerations
 - Performance/Operation
 - Workmanship
 - Proof of planning
(Engineering design portfolio)
 - Bill of Materials with cost
 - Team presentation
9. Each team has five (5) minutes to explain the design and construction of their Vex robot.
10. Decision of the judges is final and binding.

Assessment Rubric

JUDGING AREAS	Possible Points	Team Evaluation
Quality of the design	50pts	
Safety design consideration	50pts	
Performance / Operation	50pts	
Workmanship	50pts	
Proof of planning (Engineering Design Workbook)	100pts	
Team Presentation	50pts	
Bill of Materials	50pts	
Total	400pts	

Teams competing in this event are required to perform a self evaluation before they present to the competition judges. Use the following as a reference when self assessing:

- 0 - **Not attempted**
- 10 - **Incomplete:** The task was not completed
- 20 - **Needs Improvement:** Task was completed, but not done very well
- 30 - **Adequate:** Task works, but is of average quality
- 40 - **Good:** Complete, high quality, works consistently
- 50 - **Industry Standard:** Complete, excellent craftsmanship, visually appealing, marketable.