

CLAWBOT

Technology & Engineering

VEX ClawBot – Build Rubric

Mr. Roth

Objective: The advent of new technologies in the area of robotics and automation technology has radically changed the landscape of some of the most difficult and dangerous professions. Planes can takeoff from one airport, fly to and land at another airport without any human input. Manufacturing and production line robots place, assemble, and move delicate parts with the speed and precision required of the most sensitive electronics. Police use robots to locate, identify, diffuse, and detonate suspicious devices.

This project allows students to design, prototype, and test robotics technology and learn about control and automation, while exploring topics related to the mechanical, computer, and electrical engineering professions.

Directions: Follow the instructions in the CLAWBOT manual (in print or online) to document and assemble the CLAWBOT exactly as shown in the booklet. Then, run your robot through the tests required by Mr. Roth to test your build.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 4 | 3 | 2 | 1 | 0 | Score |
| Vehicle Systems | | | | | | |
| Chassis | All required components are present, properly assembled, and function efficiently | All required components are present and function efficiently | Most required components are present and/or partially function | Some required components are present but do not function | Few required components are present and do not function |  |
| Drive Train | All required components are present, properly assembled, and function efficiently | All required components are present and function efficiently | Most required components are present and/or partially function | Some required components are present but do not function | Few required components are present and do not function |  |
| Motors / Electrical | All required components are present, properly assembled, and function efficiently | All required components are present and function efficiently | Most required components are present and/or partially function | Some required components are present but do not function | Few required components are present and do not function |  |
| Function and connection of components / subsystems | Individual subsystem components are properly connected, work together, and system functions properly when tested | Some subsystem components are improperly connected, causing sub-system to operate improperly but subsystem continues to function. | Some subsystem components are improperly connected, causing sub-system failure but no total system failure. | Some subsystem components are improperly connected, causing sub-system failure and partial system failure. | Many subsystem components are improperly connected, causing massive or total system failure or inoperability. |  |
| Claw/Arm Systems | | | | | | |
| Arm Structure | All required components are present, properly assembled, and function efficiently | All required components are present and function efficiently | Most required components are present and/or partially function | Some required components are present but do not function | Few required components are present and do not function |  |
| Claw Structure | All required components are present, properly assembled, and function efficiently | All required components are present and function efficiently | Most required components are present and/or partially function | Some required components are present but do not function | Few required components are present and do not function |  |
| Motors / Electrical | All required components are present, properly assembled, connected, and function efficiently | All required components are present and properly assembled, one or more connection issues. | Most required components are present and/or partially function | Some required components are present but do not function | Few required components are present and do not function |  |
| Function | Individual subsystem components are properly connected, work together, and system functions properly when tested | Some subsystem components are improperly connected, causing sub-system to operate improperly but subsystem continues to function. | Some subsystem components are improperly connected, causing sub-system failure but no total system failure. | Some subsystem components are improperly connected, causing sub-system failure and partial system failure. | Many subsystem components are improperly connected, causing massive or total system failure or inoperability. |  |
| Total System / Team Scores | | | | | | |
| Clawbot Systems | Specified system(s) function efficiently as a total system | Specified system(s) are present and function | Specified system(s) are present and partially function | Specified system(s) are present but do not function | Specified system(s) are not present |  |
| Clawbot Systems (double points) | Specified system(s) function efficiently as a total system | Specified system(s) are present and function | Specified system(s) are present and partially function | Specified system(s) are present but do not function | Specified system(s) are not present |  |
| Design Process | Design process consistently utilized and documented, contributing to and demonstrating team efficiency. | Design process consistently utilized and fully documented. | Design process consistently utilized and partially documented. | Design process inconsistently utilized and partially documented. | No evidence that design process was followed. |  |
| Utilization of Time and Resources | Resources properly used within constraints and time/efficiency maximized. | Resources properly utilized with minimal waste/redesign. Efficiency maximized. | Resources utilized with moderate waste/redesign and/or lack of efficiency. | Resources poorly utilized and/or poor use of time | No evidence of proper material usage or time considerations. |  |
| Team Score | Consistently functioned as a team. Always focused. | Consistently functioned as a team. Mostly focused. | Occasionally functioned as a team. Occasionally focused. | Seldom functioned as a team. Seldom focused. | Never functioned as a team. Never focused. |  |
| Average Individual Score From Team Evaluation | | | | | | /10 |
| Total Score | | | | | |  |
| Total Possible | | | | | | 62 |

