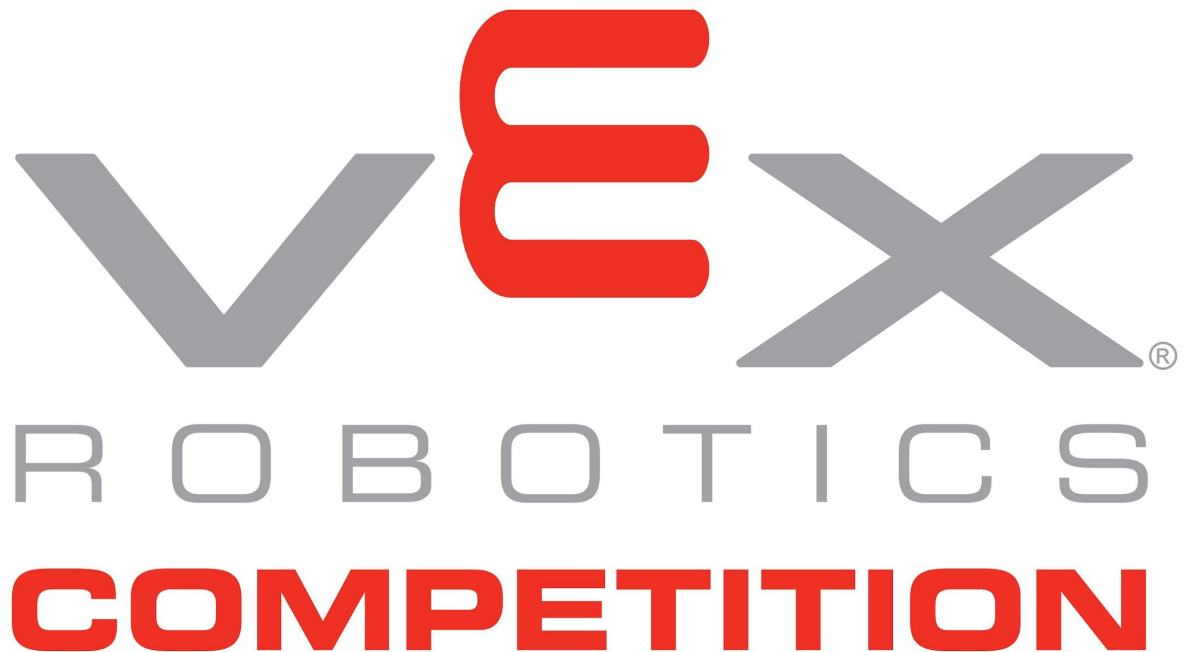# How Vex Robotics Prepares for STEM field Careers

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Vex robotics is a wonderful program that we are lucky to be a part of in our high school lives. This is because of the great memories, friendships, and experience with the scientific process and engineering process it provides. Through the robotics program, we have learned how to design robots to compete in very specific, certain situations, a skill which helps no matter what career you pursue, but helps extraordinary in the STEM program. Overall, the robotics program has molded us into informed individuals with knowledge of the design process, and how to work as a team to accomplish specific tasks, which help pursue careers in the STEM field.

The career we have chosen to analyze is an Autonomous Systems Engineer, as Autonomous programming is very prevalent in VEX VRC Robotics Competitions, and is a skill that our team emphasizes on in every tournament we attend. Autonomous Systems Engineers develop programs that allow a mechanical system to run without need of human labor. This is very helpful for tasks that are deemed too dangerous for humans to do.

Professionals in this field of work use the design process every day, as they start off researching a problem they can design an autonomous system to accomplish, then imagine a robot that could complete this task, and how it might do that through a code it follows. They then plan out the order of operations the robot must follow and what those steps are, create a code that attempts to command the robot to complete the task, and test this code and see what happens when it is utilized, but inevitably there will always be ways to improve, and the autonomous systems engineer will look for ways to improve it themselves, or by asking for help and thus starting the cycle again. This is the design process, having an idea, building it, testing it, and improving it over time.

This matches our team's approach to the design process, as we watch the games reveal trailers and think about designs we could build to accomplish the task, then build our ideas, test the robot, and improve upon it throughout the year. This experience from the robotics program will certainly help in pursuing a career in autonomous systems engineering, not only because of the similar design process. In robotics we use the design process for everything we do, from designing and improving the robot throughout the season, to building a code to use during matches and in the skills competition.

Being a part of robotics helps prepare us for a career in this field because in VEX robotics, coding autonomous programs is a major part of the game. Our team has spent countless hours programming the robots driving controls, but even more time was spent on the autonomous programming. In VEX robotics the autonomous programming sounds simple enough, in the first 15 seconds the robot is not able to be controlled by the driver, but rather by autonomous code given to the robot, which it follows and completes the tasks given. For this year's game that involves spinning the rollers, and launching two disks into your high goal to

obtain the autonomous win point. Our team has created an autonomous program that completes this goal, after much trial and error.
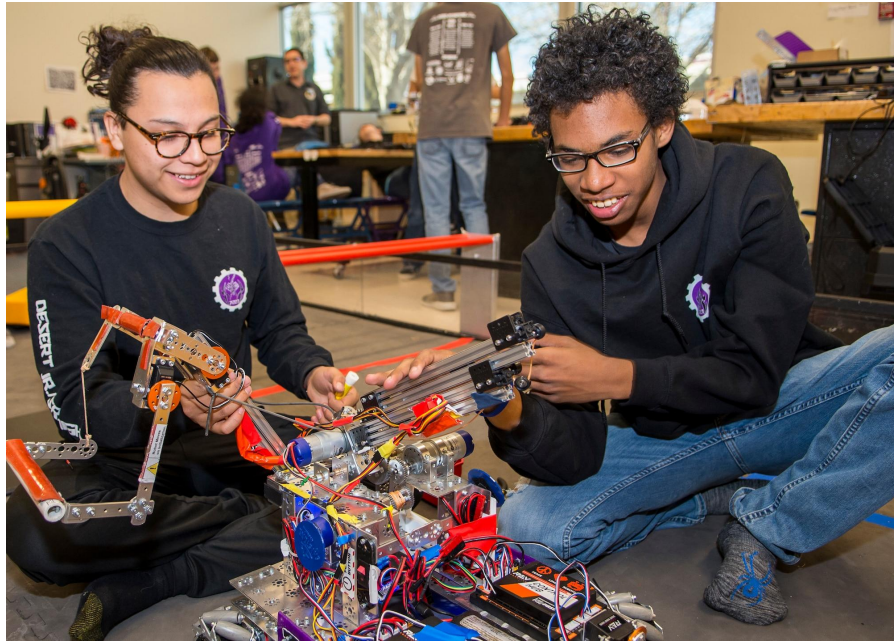
We believe this experience has made us more prepared to go into the field of Autonomous Systems Engineering. We believe this would prepare us for this career because of the extensive research we have done into this career. From looking at several college courses and interviews with students in the field that discuss their career and what they learn at length. Through this research we have concluded that the programming done in VEX robotics would prepare us for a career in Autonomous Systems Engineering.

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