

Career Readiness Online Challenge

North London Cybernetics Squad Entry

Participants



Team Number

74454E

Location

London, UK

**North London
Collegiate School**

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Career VEX IQ Challenge

The STEM career our team chose, is a mechanical engineer working for SpaceX.

Our team chose this profession because if we were mechanical engineers working for SpaceX, we would be contributing to the exploration of different planets (specifically Mars) which could enable human life on Mars and even more. Choosing this profession would mean contributing to the design, the build, and the tests run on the project we are working on. This career also requires you to work in a team, so that there is have a variety of ideas and iterations of several designs which can improve the project's outcome significantly. The final reason we would like to work for SpaceX is that the rockets sent to space all contribute to a future where human life can explore a variety of planets in the universe, and this could all be based on a simple design, showing how crucial one design or an iteration of that design could be the reason we have people living on Mars or Jupiter.



Source:

<https://www.nasa.gov/perseverance/images>

A hypothetical image of water on Mars in Jerezo Crater



Source:

<https://www.techeblog.com/video-spacex-successfully-launches-falcon-1-rocket/>

Working as a mechanical engineer means the engineering design process is applied in everything you do, especially working for a company that sends rockets into outer space. The engineering design process first makes you define and identify the problem, as a mechanical engineer your problem would be to build a rocket within restrictions, like a certain period with a certain amount of money and even a limitation of how many tests (for example SpaceX's first rocket, the Falcon 1 was limited to only four tests due to the amount of money SpaceX had) to complete a task out of space e.g. dropping a payload then landing in a specific area safely or achieving a certain amount of thrust as the rocket launches.

Secondly, as an engineer working with a team, you would start designing ideas to fix your problem (launching a rocket into space to achieve a certain task), you would all come together and share your ideas and pick up on weaker aspects of a particular design and stronger aspects in other people's designs; your team would make a design that they believe incorporates the best aspect of each design and would work effectively.

Source: <https://www.cbsnews.com/pictures/spacex-rocket-successfully-launches/>

Image of SpaceX rocket launching





Thirdly, you and your team would have to build the prototype-based of your design; this could take longer and costs a lot of money, so you keep in mind your budget and resources. Your team would then test the prototype in a safe launching facility, for example, the rocket development and test facility in McGregor Texas, and your team would then evaluate the first iteration of the design to improve it.

Source:
<https://www.spaceflightinsider.com/organizations/space-exploration-technologies/spacex-expands-mcgregor-tx-test-site/>
 Image of McGregor, Texas facility

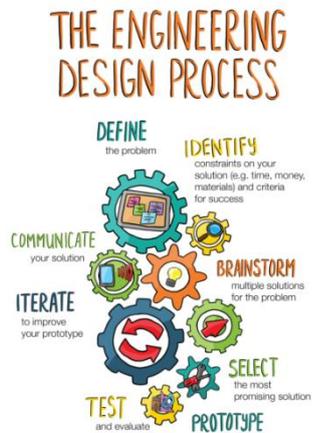


Source:
<https://wccftech.com/spacex-dragon-falcon-9-nasa-administrator/>
 The build process of the Falcon 9 rocket

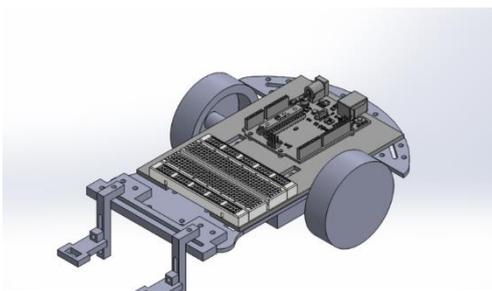
Finally, you would repeat this process till your outcome has little to no flaws and has achieved what your rocket/shuttle is required to do. Being a mechanical engineer at any company involves the engineering design process because taking up this career means you are involved with the build, design, and tests that are involved with your project.

The professional approach to the engineering design used in mechanical engineering is similar to the approach used in our team as we start with multiple designs and research on which

design, we think is the most effective. We would then execute our design and test it on the field and under time pressure, once we have tested, we would make a brand-new design with improvements and notes from our first iteration and videos of other robots on YouTube and other sources. We have attempted to build our second design and test that robot to see if we have improved from our first iteration. Even though we follow the professional approach closely we take much longer as a team to execute certain designs, unlike a mechanical engineer whose builds need to be faster as they're time-pressured and must be built in a specific amount of time within a certain budget.



Source:
<https://www.kqed.org/quest/267100/engineering-for-good>
 Cycle of the Engineering Design Process



Source:
<https://www.diegoportfolio.com/projects/linefollow/>
 Image of Space X's Line Following Robot CAD Design

Finally, participation in VEX IQ has prepared us for a career in mechanical engineering as we must work as a team and work with each other's ideas which a mechanical engineer or an engineer working in a team project would learn from VEX IQ. VEX IQ also requires you to maintain a notebook that is full of our team's designs and research on Pitching In, a mechanical engineer would document the research and design used for their project, similar to how a VEX IQ team would on a certain challenge. The usage of the engineering design process is commonly used in most VEX IQ teams to build their robots and is always used in any project any mechanical engineer is involved in.

Thank you for reading our Career Readiness Submission

Source:

<https://www.vexrobotics.com/vexproducts/overview>

VEX IQ Logo

