**STUDENT ACTIVATION**

Product Design and Analysis Engineer



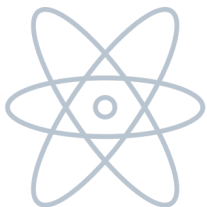
OVERVIEW

A product design and analysis engineer helps a company build off of its best ideas to create even better ones. This highly specialized engineer examines products that have already gone to market and have reached their “end of life” to see what aspects could be improved. This might include trying to determine if a product could function more efficiently, how it could be more cost-effective, and how its production could be optimized. A product design and analysis engineer literally takes something apart and figures out how it can be put back together to be even better than before. If you love tinkering, dreaming, and doing, you might make an excellent product design and analysis engineer.



EVALUATE YOUR INTEREST

- I always need to know how something works, and I’m not afraid to take it apart to find out.
- I’m constantly asking questions and searching for answers.
- When I find answers, I am adept at communicating them to others.
- I am able to see past what something looks like now and envision what it could be like in the future.
- I enjoy STEM subjects like algebra, physics, calculus, and computer science.
- I work well as part of a team.




Product Design and Analysis Engineer

STUDENT ACTIVATION (CONTINUED)



CAREER CONNECTION

How does this career affect me?	What are some other similar careers?	How does this career affect the world? 
<p>If you have a smart phone, it might have a “generation” or version number in double digits—that’s because the original smart phone, which was the most advanced piece of portable technology available when it launched, is already out-of-date just a few years later. The constant desire we all feel to have the very latest model is because we know that people like product design and analysis engineers are behind the scenes, constantly improving and expanding technology. The result is that your next generation smart phone might be faster, hold a charge longer, have a better camera, and so much more.</p>	<p>Materials engineers study the property and structures of substances such as metals, ceramics, and plastics. Their understanding of these materials allows them to create new substances that can be used for products and to accomplish new goals.</p> <p>Petroleum engineers work in the oil and gas industry and are concerned with developing innovative methods for extracting oil and gas from the earth. This includes extracting oil and gas from untapped sources like deposits below the earth’s surface, as well as finding new methods of extracting from older wells that are already in use.</p> <p>Agricultural engineers apply their skills to improving farming equipment and machinery. Similar to product design and analysis engineers, their work in the industry may involve studying equipment that is already in use and assessing how it could be used more efficiently or in new ways.</p>	<p>Innovation pushes the world forward, and there are likely product design and analysis engineers behind many of the innovations that led to the technology we know today. Consider, for instance, how advanced the airplane that you might ride today is, compared with the model that Wilbur and Orville Wright piloted in 1903. In fact, the two models look almost nothing alike. This is because generations of engineers have tinkered with the aircraft, changing the way the engine functions, the way the body of the plane and the wings are shaped, how takeoff and landing work, and much more. The massive jets we know today are able to fly further, faster, and more efficiently because of professionals like product design and analysis engineers.</p>

TAKE ACTION

- Identify a product that your family has recently purchased or that you would like to purchase. Brainstorm what the process of manufacturing and distributing that product might look like. Are there intricate pieces that had to be engineered separately? Once assembled, did it make its way to a local store in your community, or was it distributed by a large online company? How did it get from the origin to your home? Once you have a likely list, brainstorm ways that steps could be removed or simplified in order to make the process more efficient.
- Select a device that you use frequently in your home or school and make a step-by-step list of the process that a user takes to use it—from turning it “on” to fulfilling whatever need would bring someone to use the device. Analyze the process and brainstorm ways that it could be simplified or that the user’s experience could be improved. Is it loud or cumbersome to use? Does it take longer to complete the task than you think it should? Write a memo with recommended improvements and share it with your teacher.
- With the permission of your teacher or family, carefully disassemble a device that no longer functions, like an old calculator or a clock. Take it apart as fully as you can, making a list as you do of all the individual parts and what functions you believe they have. Are there any pieces whose function you can’t identify? Share your results with your family.