

## Video MEDIA SPOTLIGHT

### NASA for Kids: Intro to Engineering

For the complete videos with media resources, visit:  
<http://education.nationalgeographic.com/media/nasa-kids-intro-engineering/>

Anything that is built must first be engineered, or planned out. An engineer is a person who designs and builds complex products, machines, systems, or structures. Engineers want to know how and why things work. They have scientific training that they use to make practical things. Engineers often specialize in a specific branch of engineering. The field of engineering is divided into branches such as civil, electrical, mechanical, and chemical engineering. Many types of engineering must be performed to design and build a complicated system such as a spacecraft. For example, a spacecraft has electrical, mechanical, and propulsion systems. All those different systems must be designed before the whole spacecraft can work. The engineering design process is a series of steps that engineers use to guide them as they solve problems. During the design process, engineers:

- Identify the problem or challenge.
- Identify design requirements and limitations on the design due to available resources and the environment.
- Brainstorm possible solutions to the problem or challenge.
- Generate ideas and develop the most promising ones.
- Explore possibilities and the pros and cons of each.
- Select an approach by identifying the design that appears to solve the problem best.
- Build a model or prototype.
- Refine the design by identifying changes that need to be made and improving the model or prototype.

#### QUESTIONS

- What is an engineer?  
Engineers are people who design and build the things we use every day.
- How do engineers decide what they need to build?  
They start with a question, generate ideas for ways to solve the problem, pick several that make sense, and then start drawing a plan.
- What are the characteristics of a good engineering plan?  
A good plan helps engineers focus on what they're making and why.
- Why is experimentation important for engineers?  
It's during experimentation that engineers learn what works and what does not.
- What does the narrator mean when he says that it's good for engineers when things don't work in the first trial?  
Failure gives engineers a chance to go back and improve on their original idea until they solve the problem.

### For Further Exploration

#### Websites

- National Geographic Science: Space
- National Geographic Science: Solar System
- Nat Geo Movies: Wildest Weather in the Solar System
- National Engineers Week Foundation
- National Engineers Week Foundation: Discover Engineering
- NASA: Engineering & Safety Center (NESC)
- NASA: Engineering Design Process

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