

Civil Engineering

In modern usage, civil engineering is a broad field of engineering that deals with the planning, construction, and maintenance of fixed structures, or public works, as they related to earth, water, or civilization and their processes. Most civil engineering today deals with roads, structures, water supply, sewer, flood control and traffic. In essence civil engineering is the profession which makes the world a more habitable place to live.

Engineering has developed from observations of the ways natural and constructed systems react and from the development of empirical equations that provide bases for design. Civil engineering is the broadest of the engineering fields. In fact engineering was once divided into only two fields—military and civil. All the engineering specialties have derived from civil engineering. Civil engineering is still an umbrella field comprised of many related specialties.

http://en.wikipedia.org/wiki/Civil_engineering

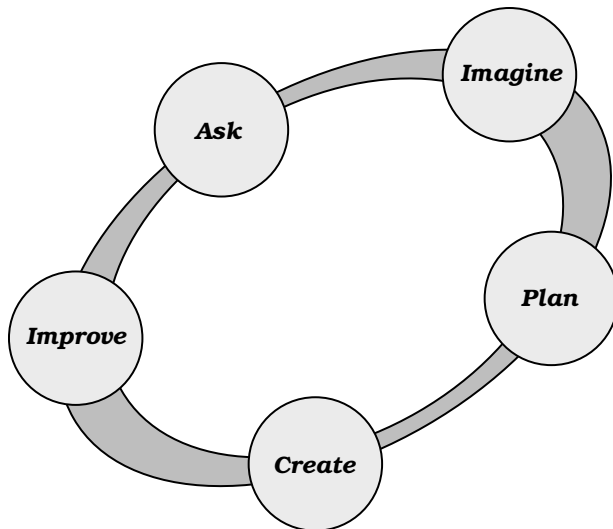
Surveying

Surveying is the art and science of accurately determining the position of points and the distances between them. These points are usually, but not exclusively, associated with positions on the surface of the Earth, and are often used to establish land boundaries for ownership or governmental purposes.

In order to accomplish their objective, surveyors use elements of engineering, physics, mathematics and law.

<http://en.wikipedia.org/wiki/Surveying>

The Engineering Design Process



The Engineering Design Process is a series of steps that engineers use to guide them as they solve problems. Many variations of the model exist. While having a guide is useful for novices who are learning about engineering, it is important to note that practicing engineers do not adhere to a rigid step-by-step interpretation of the process. Rather there are as many variations of the model as there are engineers. The engineering design process is cyclical and can begin at any step. In real life, engineers often work on just one or two steps and then pass along their work to another team.

Ask

What do I want to do?
What is the problem?
What have others done?

Imagine

What could be some solutions?
Brainstorm ideas.
Pick one to start with that you think will work the best.

Plan

Draw a diagram of your idea.
Make lists of materials you will need to make it.
Decide how it works. How will you test it?

Create

Build a prototype.
Test it.
Talk about what works, what doesn't, and what could work better.

Improve

Talk about how you could improve your product.
Draw new designs.
Make your product the best it can be!

The Engineering Process for Children
<http://www.mos.org/doc/1559>