

Design and Fabrication 1202

Unit 1 - Introduction to Design

- Topic 1-1: History of Design (1 hour)
- Topic 1-2: The Design Process (4 hours)
- **Topic 1-3: Social/Environmental Considerations (2 hours)**
- Topic 1-4: Design in Fabrication (2 hours)
- Topic 1-5: Careers in Design (1 hour)
- This unit introduces students to the engineering design process and provides the basis for the remaining units.
- Students will review the history of the design process and examine how it has evolved. You will also examine various fabrication techniques and discover how design and fabrication are interrelated.

Topic 3 – Social/Environmental Considerations

The production of common consumer products can have a considerable impact on society (health and the environment). These impacts can begin from the moment the raw materials are harvested, then processed into a finished product and to the point when the product is eventually disposed.

Some questions to consider:

Where do the materials to produce a common product such as a Tim Hortons coffee cup, used tire or cell phone, come from?

What happens to the products after it is worn out?

How could an improved design reduce negative environmental impacts.

Example: Discarding a computer

The computer you're using to read this will one day be nothing more than a pile of garbage, contaminated with heavy metals and toxic plastic. There's lead in the keyboard, toxic flame retardants and antimony in the circuit boards, cadmium in the battery and the chips, all wrapped up in a casing of plastic that will release more deadly substances – furans and dioxins – when it's burned.

Environment Canada estimates that computer waste in Canada – totalling more than 67,000 tonnes in 2005 – put 1.1 tonnes of mercury, 4.5 tonnes of cadmium and 3,012 tonnes of lead into landfills.

The Alternatives

An improved design could minimize the negative impacts:

- The newer flat screen monitor designs, for example, consist of fewer smaller components.
- Batteries can be redesigned to last longer.

Can you think of some more options?

What else can be done to reduce waste?

APEGN

APEGN (Association of Professional Engineers and Geoscientists of Newfoundland) members work as part of a team. An APEGN member should strive to influence the work in an environmentally responsible direction.

Environmental degradation is recognized as a risk to public welfare, The long-term objectives are to sustain the viability of our ecosystems, and to ensure that the well being of future generations is not compromised by our activities today.

To ensure this the association follows an Environmental Guideline when completing all projects.