

ENGG1320

Notes for HKU · Spring 2024

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MORE notes on my [website!](#)

1 Project introduction

1.1 CS / Triple E

1.2 Civil

1.3 IMSE

1.4 ME

2 Product design & development

A primary duty of Engineers is to innovate and invent *products* that improve the way we live and work. Products can be services or tangible goods.

2.1 Product realization

The product realization involves multiple steps, but we only have to focus on the *product development* for the course. It includes 4 tasks:

1. **Marketing and sales analysis**
Business planning. Check this section.
2. **Industrial design**
Aims to improve aesthetics, ergonomics and usability of products for production and marketability
3. **Engineering design**
Aims to devise a system, component, or process to meet desired needs
4. **Manufacturing process design**
Determine the manufacturing process for making a product efficiently and cost-effectively

2.2 Product development technologies

We can use these technologies to increase the speed of our production:

- Computer Numerical Control (CNC) machining
- Laser Processing (Engraving and Cutting)
- Waterjet Cutting
- 3D Printing (also called rapid prototyping or additive manufacturing)
- Virtual prototyping (VP)
- Virtual manufacturing (VM)

- 3 Market needs analysis
- 4 Product conceptualization and Product search
- 5 Patent, Copyright, Trademark, Contract
- 6 SWOT analysis
- 7 Engineering business plan
- 8 Project management
- 9 Product launch and marketing
- 10 Risk management
- 11 Health, safety and sustainability
- 12 Demand forecasting