ENGG1100 Introduction to Engineering Design I
Engineering Faculty
The Chinese University of Hong Kong

Tutorial 1: Computer Aided Drafting
(Concepts in Engineering Designs)

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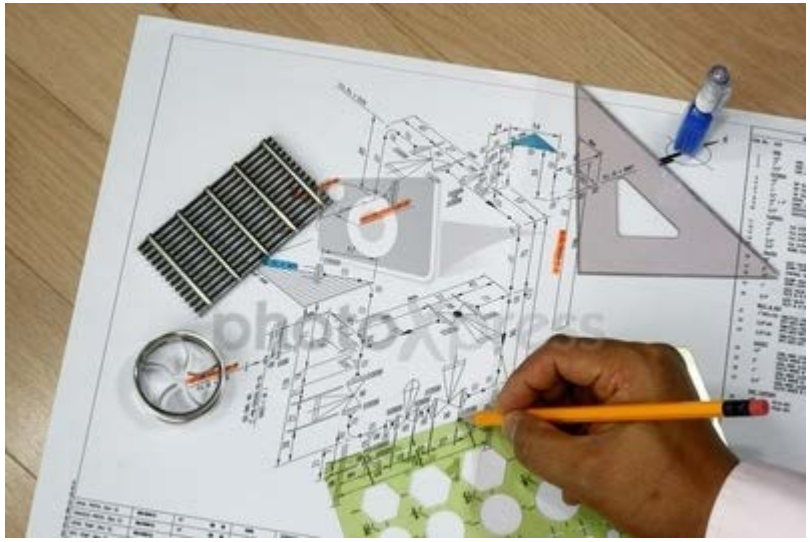
SolidWorks Reference (Online resources)

http://help.solidworks.com/HelpProducts.aspx

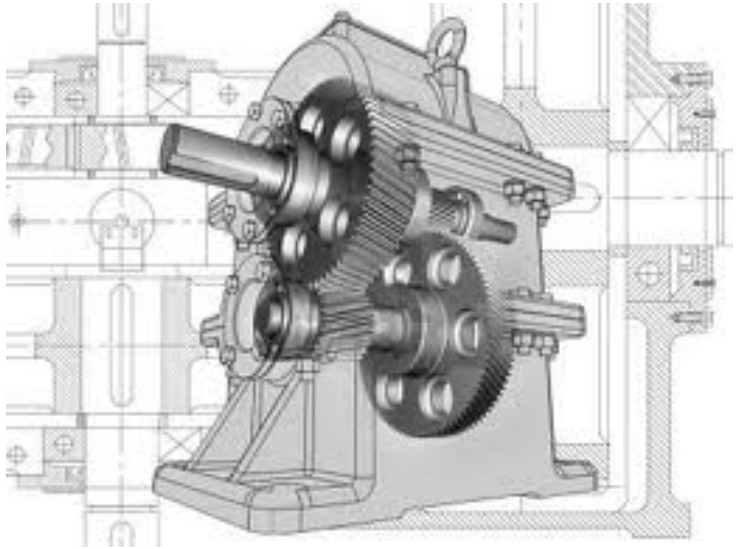
Computer-Aided Design (CAD)

- **Computer-aided design** (CAD), also known as **computer-aided design and drafting** (CADD), is the use of computer systems to assist in the creation, modification, analysis, or optimization of a design.

Engineering drawings in the past (by hand)

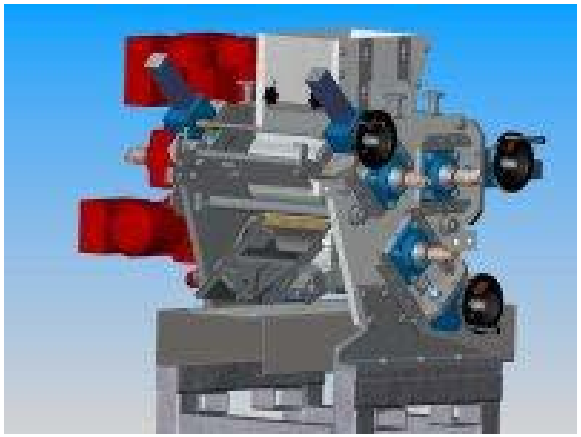


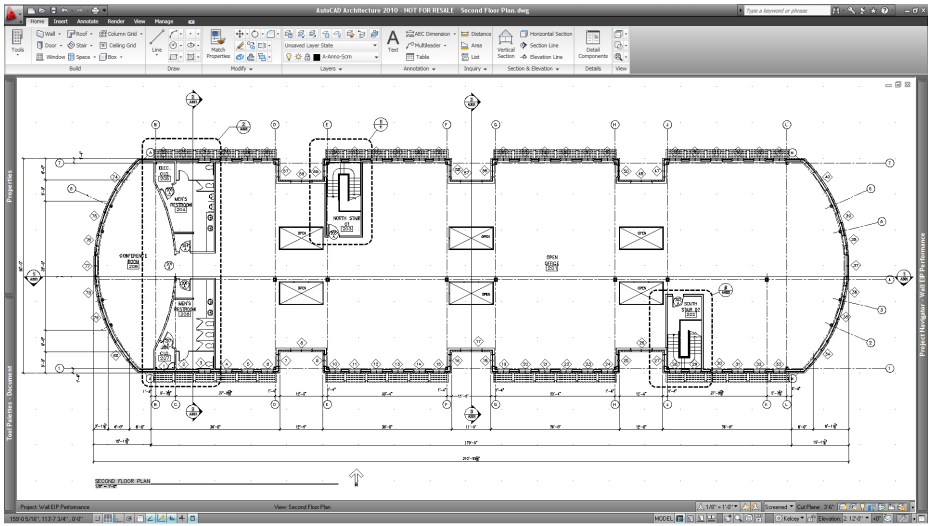
Engineering drawings now (CAD)



Computer-Aided Design (CAD)

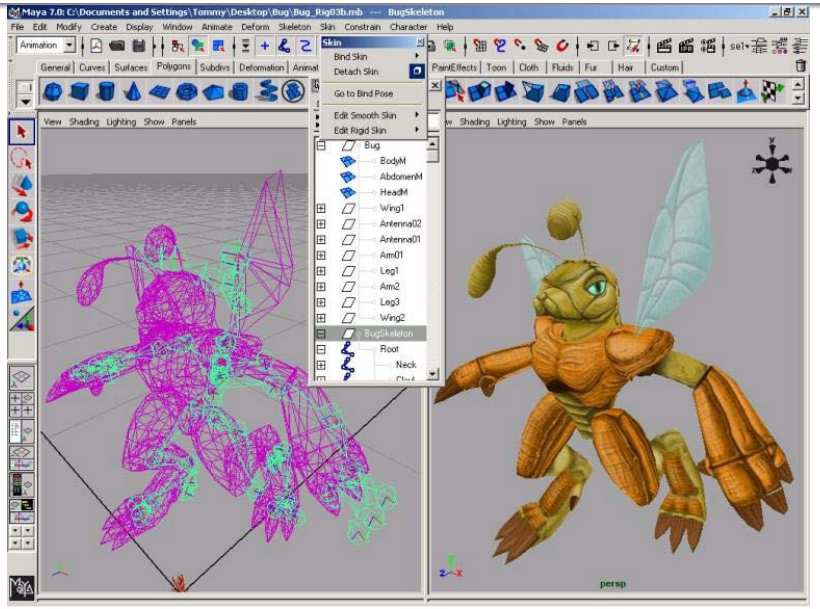
- **A**rchitectural, **E**ngineering and **C**onstruction (**AEC**)

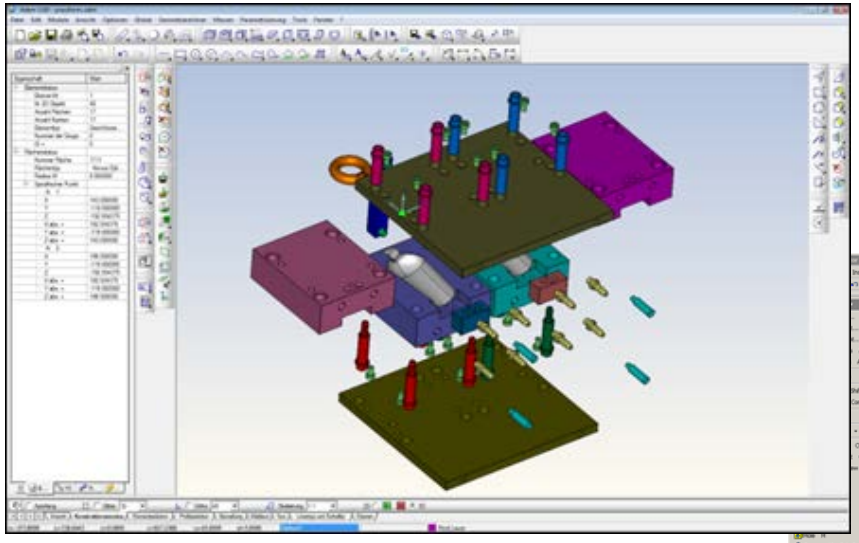


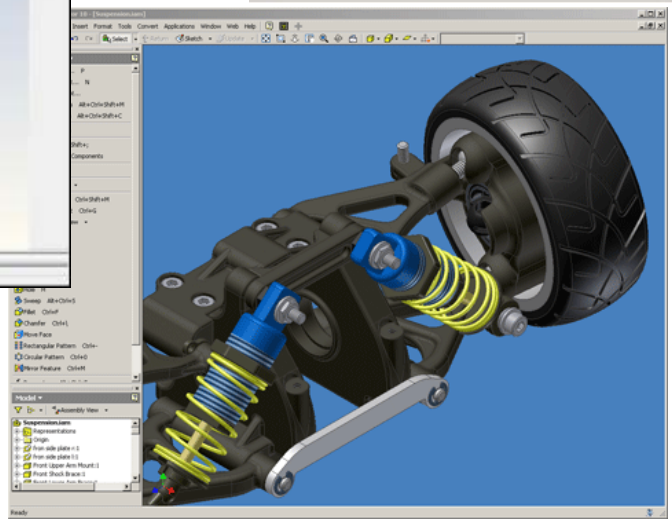


Computer-Aided Design (CAD)

- Products design
- Multimedia

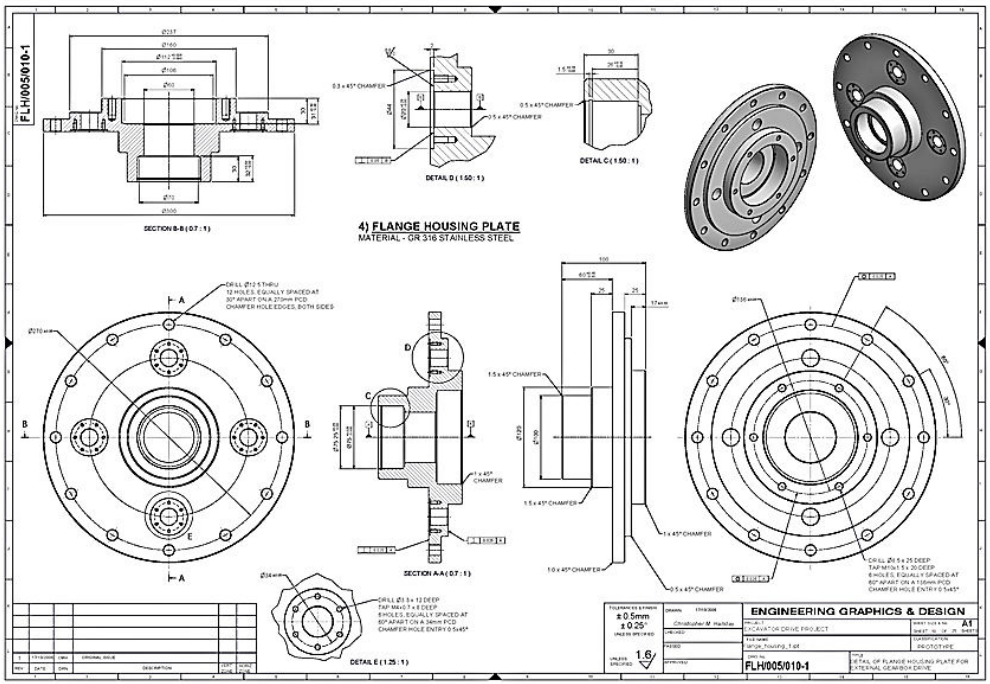


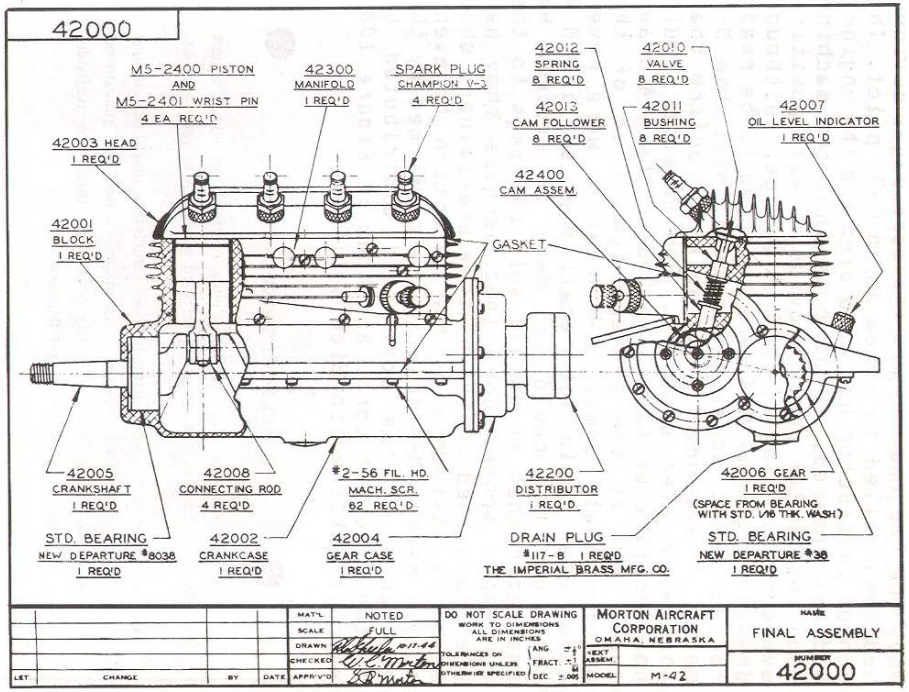




Engineering Drawings

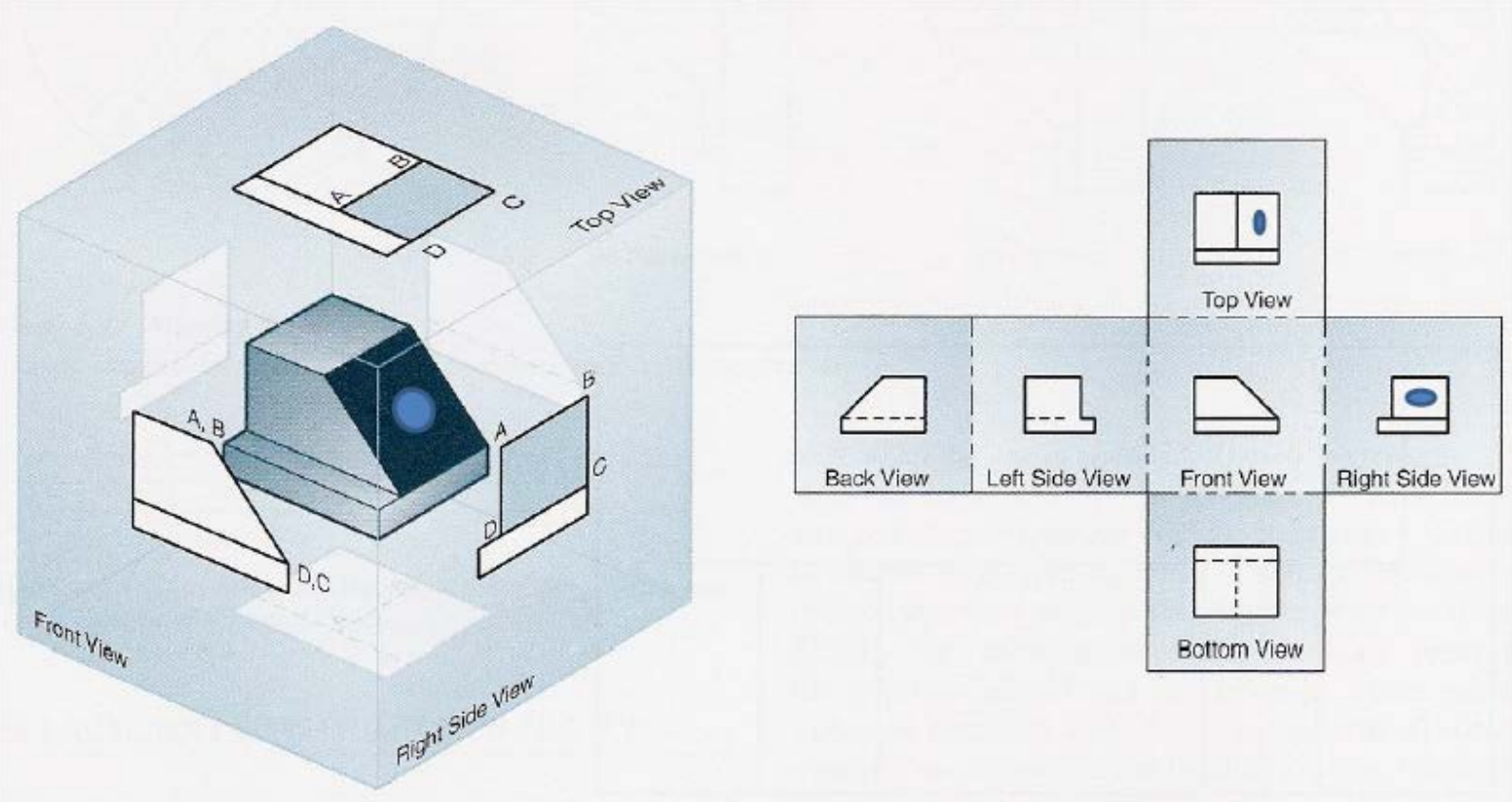
- Communications between engineers
- Details of your designs
- Examples of Engineering drawings:





Engineering Drawings

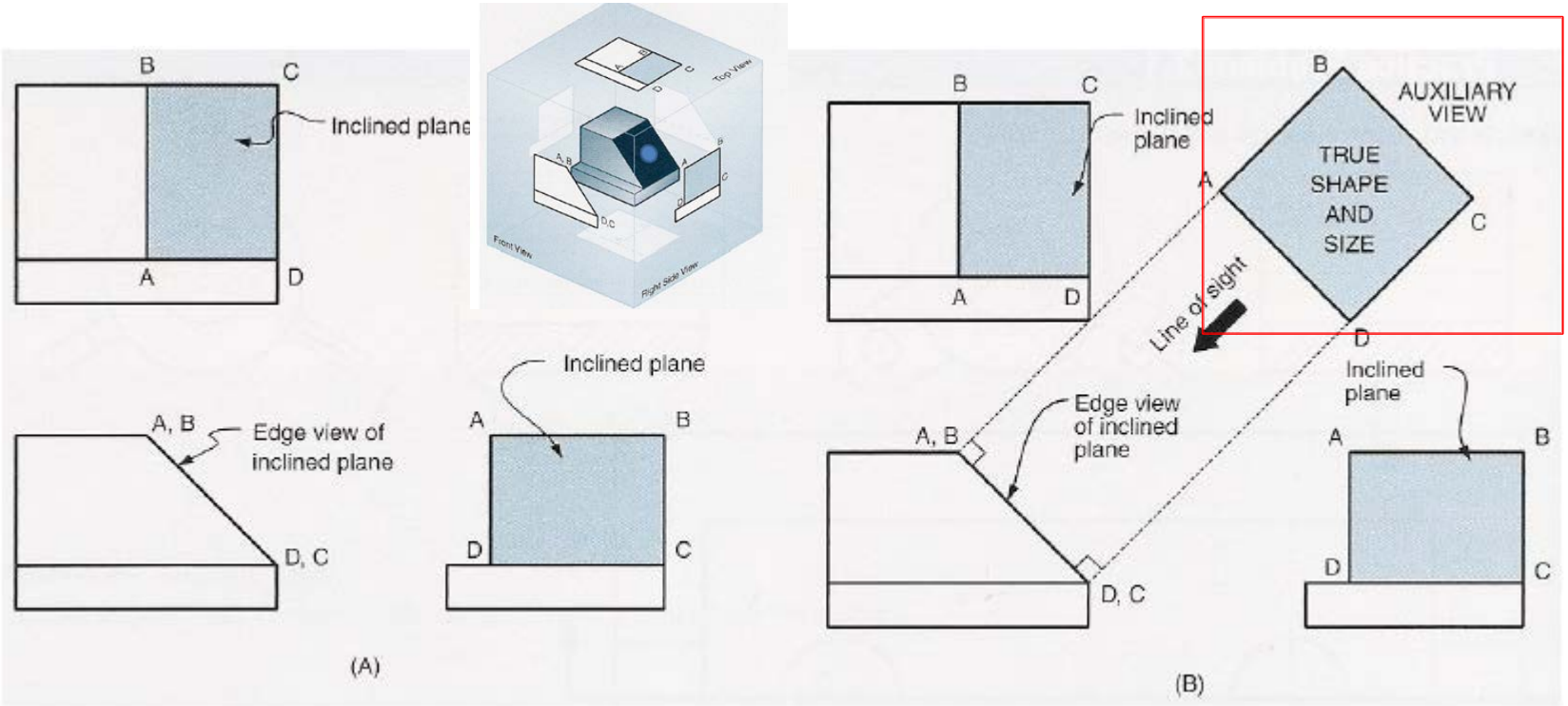
- Basics in Engineering drawings:
  - Principle View



Reference materials are from notes in course MAEG2010

Engineering Drawings

- Basics in Engineering drawings:
  - Auxiliary View



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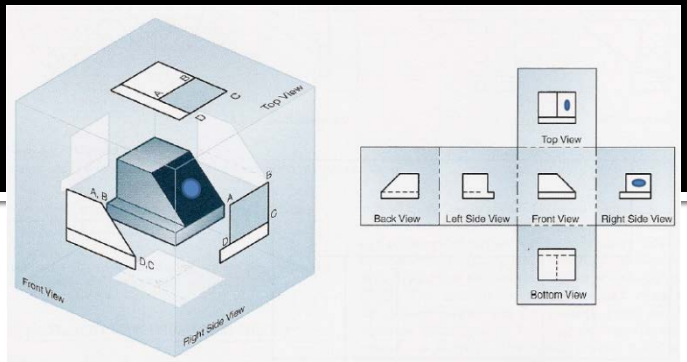
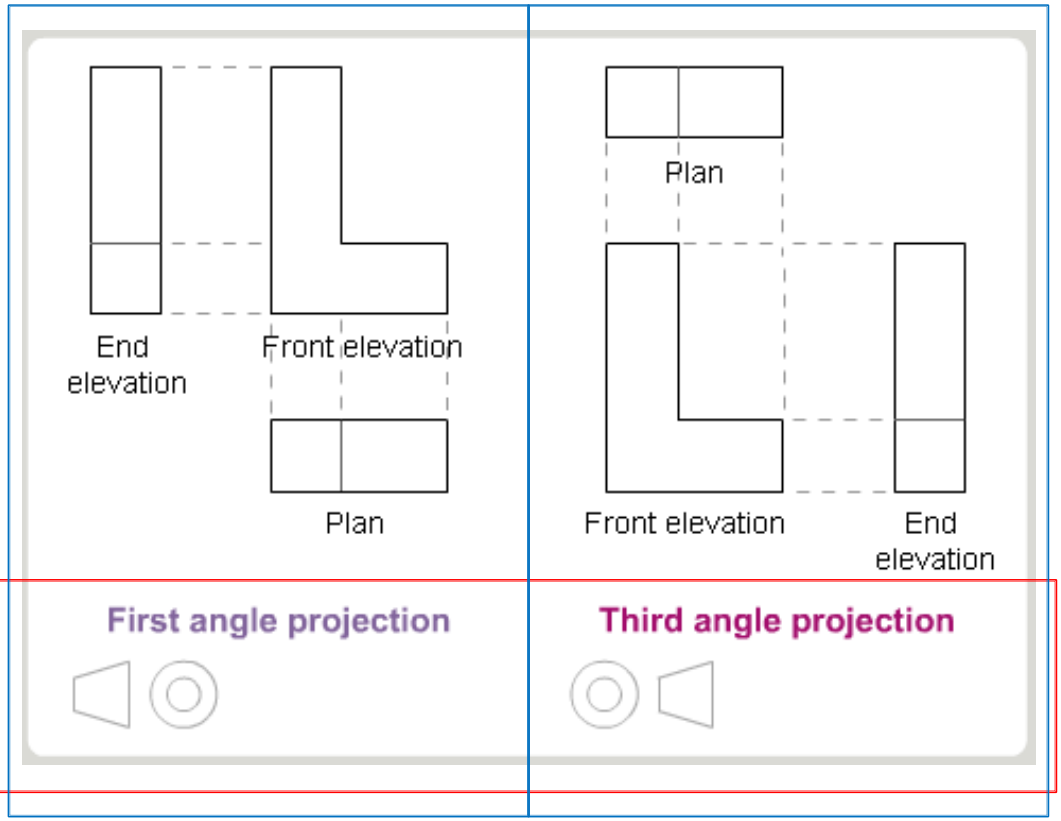
Engineering Drawings



- Basics in Engineering drawings:
  - First angle projection / Third angle projection



sign

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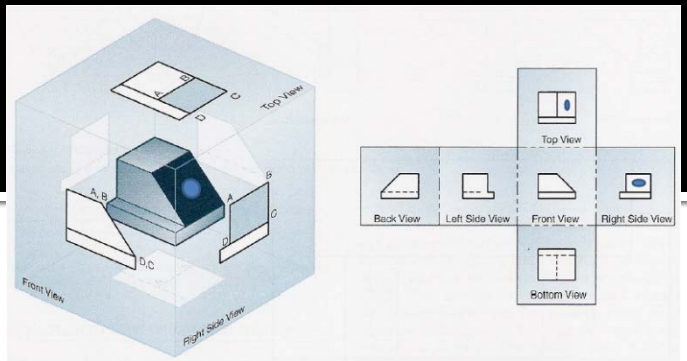
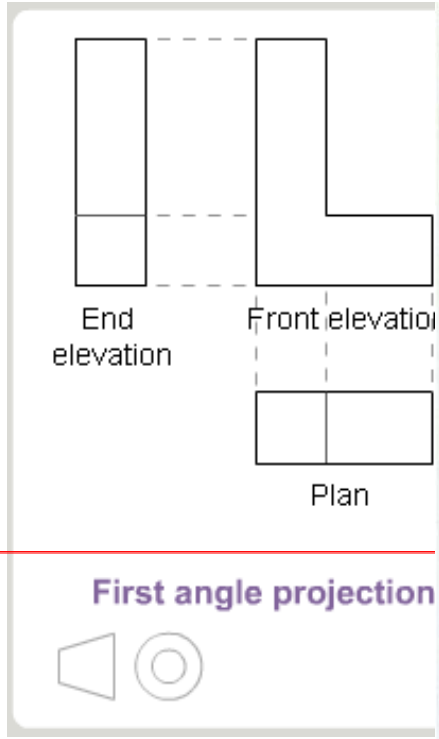
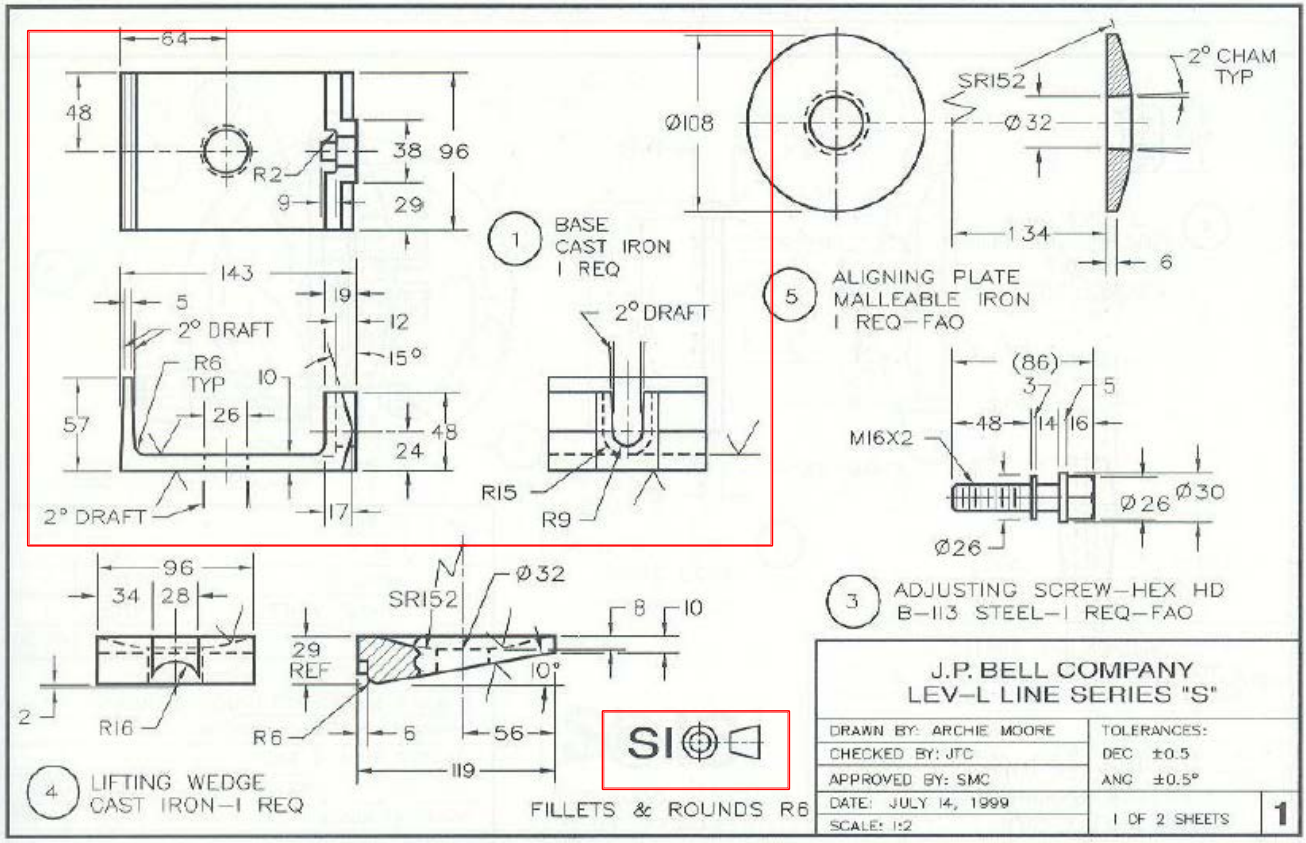
Engineering Drawings



- Basics in Engineering drawings:
  - First angle projection / Third angle projection



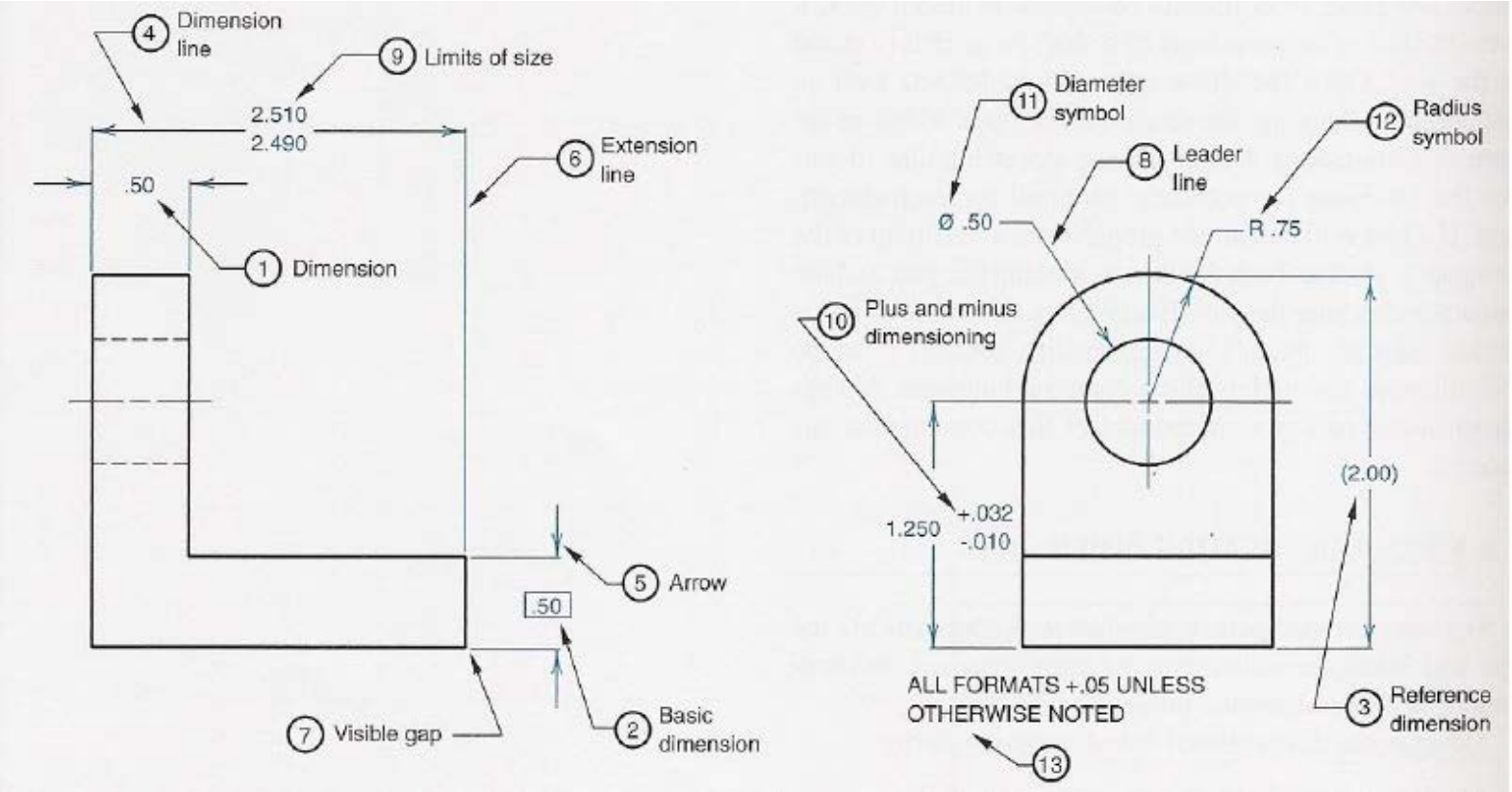


sign

Reference materials are

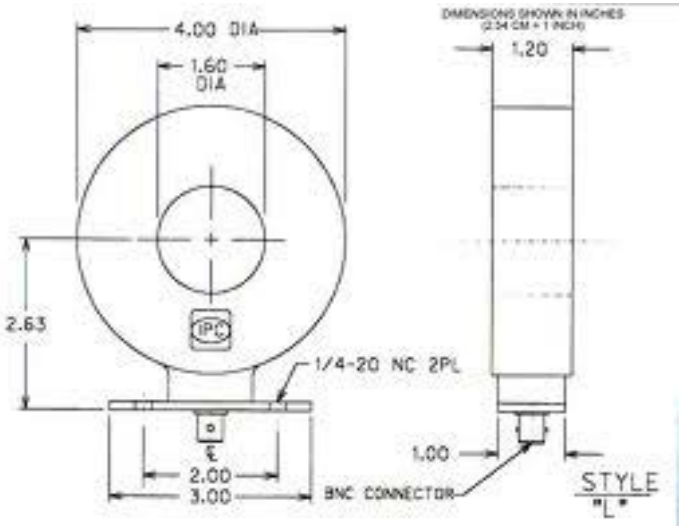
Engineering Drawings

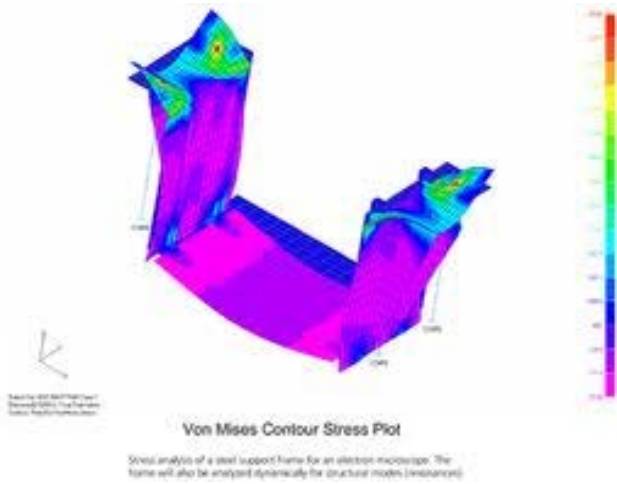
- Basics in Engineering drawings:
  - Dimensioning: Dimensions in a drawing provides the necessary information for fabricating a part



A CAD software: SolidWorks

- What is SolidWorks used for?
  - Create 3-D design for products
  - Create Engineering Drawings for communications and manufacturing
  - Do analysis on your design

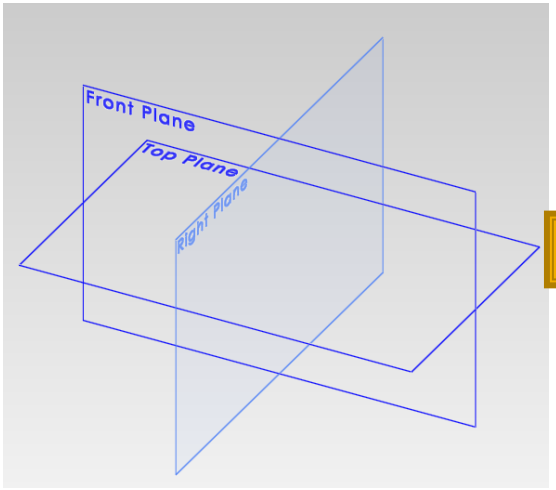




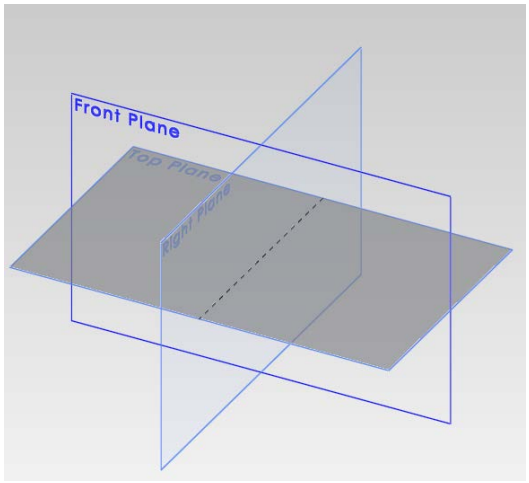
Using SolidWorks

- http://www.youtube.com/watch?v=cPB7R8U8x_Q

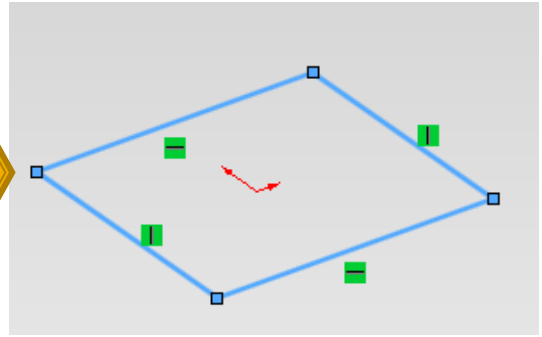
Basic steps



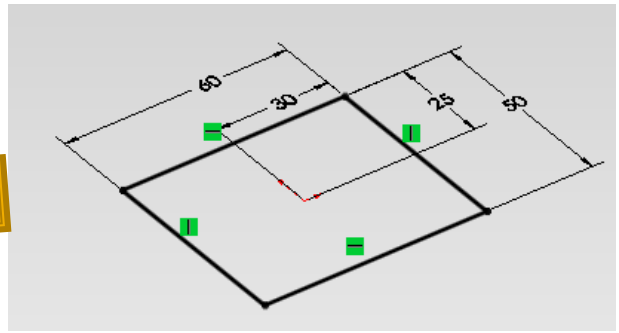
Nothing



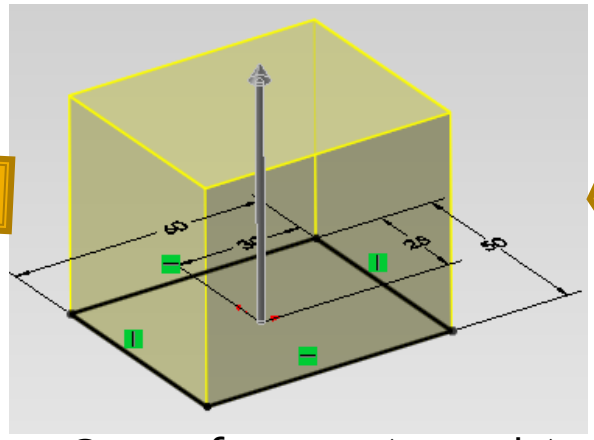
Select a plane



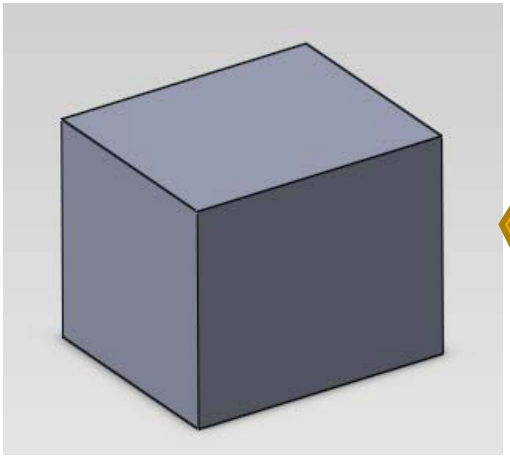
Sketch on the plane



Dimensioning

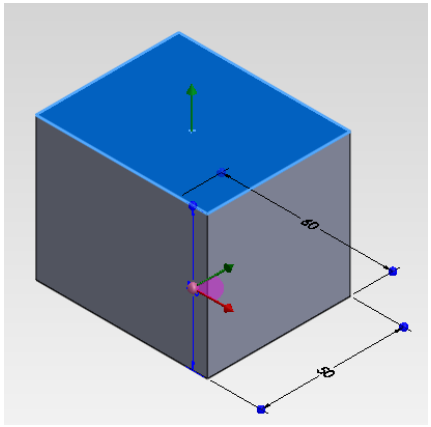


Create features (extrude)

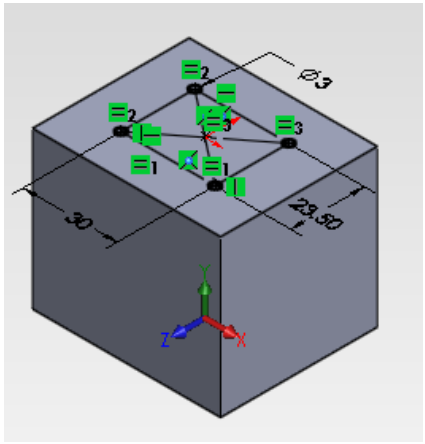


Finish a feature

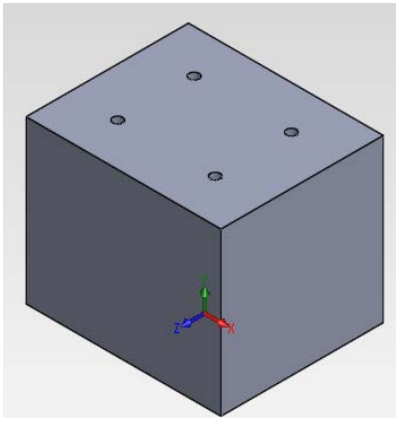
Basic steps [Con't]



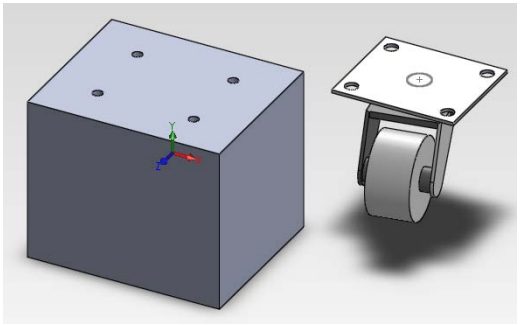
Select other planes



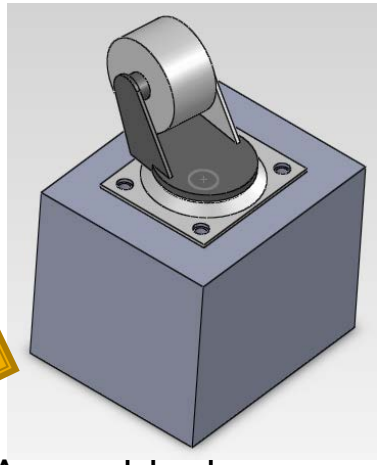
Create more sketches



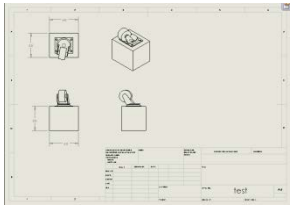
Create more features



Assemble with other parts



Assembly done, or modify if necessary



Create engineering drawing

Send to fabrication

Rapid Propotyping

- Rapid prototyping can be defined as a group of techniques used to quickly fabricate a scale model of a physical part or assembly using three-dimensional computer aided design (CAD) data.
- It is usually constructed by 3-D printing technology
- Examples on 3-D printing:
  - http://www.youtube.com/watch?v=iB5i5SA6rKQ&feature=related

End

SolidWorks Reference (Online resources)

- http://help.solidworks.com/HelpProducts.aspx