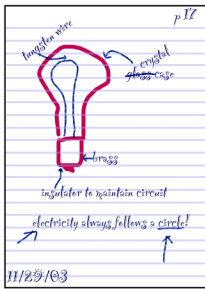


# lab notebooks

design & discovery

what goes into a notebook?

number the pages



use an ink pen

draw one line through mistakes

- diagrams
- notes
- sketches
- specifications
- requirements
- ideas

date the pages at the bottom

leave three pages blank at the front of your lab notebook to use later for a table of contents.

...anything design or engineering related

# discover an engineer

design & discovery

ask questions

there is no such thing as a stupid question

look around you

observe the world with the eyes of an engineer

sketch everything

a picture is really worth a thousand words.

speak out

participation counts

use your lab notebook

write everything down. everything.

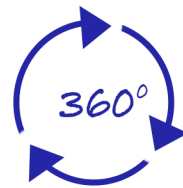
experiencing engineering through design

# activity mapping

design & discovery

pre-activity

describe what is done before the activity



assessment

explain how one knows if the activity has been successful

activity

explain what is involved in the activity

post-activity

include what is involved after the activity

view an activity from the user's perspective

# scamper

a technique for improving existing design

design & discovery

substitute

combine

adapt

minimize/magnify

put to other uses

eliminate/elaborate

reverse/rearrange



# design brief

design & discovery

1. describe the problem
2. describe how the current product is used
3. describe a typical user
4. propose a solution
5. draw a sketch of the solution
6. describe the basic requirements

clarify and communicate the problem to be solved

a planning tool for the project that changes throughout the process

# design process

design & discovery

1. identify a design opportunity
2. research design opportunity
3. brainstorm possible solutions
4. draft a design brief
5. research and refine your solution
6. prepare requirements and drawings
7. build models and component parts
8. build a solution prototype
9. test, evaluate, and revise
10. communicate the solution

Getting from 'think' to 'thing'