Cory Schaffhausen, PhD

Concept sketching and rendering

(with TA: Scott Melanson)
product design @ UMN

pdes 3704  innovative computer modeling and rendering for design

pdes 3703  product form and model making

pdes 3702  concept sketching and rendering

pdes 3701  creativity, idea generation, and innovation

pdes 3706  designing for manufacture

me 2011  introduction to engineering

mgmt 4171  entrepreneurship in action

des 3131  user experience in design

des 5185  human factors in design
Drawing Kit
Why is Drawing Important?

It is a (potentially fast) means of communicating an idea.

The Strumbone

A guitar with a rolling capo that moves up and down the neck so you can play it similar to the way one plays a trombone and there are only three strings in drop D tuning and the roller must be preloaded against the neck of guitar so the strings are always depressed and the locations of the chords must be marked on the
Why is Drawing Important?

thinking sketches
Why is Drawing Important?

- clarity
- creativity
Why is Drawing Important?

Sketch a horizontal toaster

bread is inserted into slots on the side (as opposed to slots on the top)

write your name on the back
Why is Drawing Important?

increasing sketch quality (clean line work, correct proportions and perspective)
Why is Drawing Important?

these sketches represent the same idea

not a creative idea

VERY creative idea

kudrowitz, te, wallace 2012
I can't draw...

before

Horizontal Toaster

3 → 6

after

Horizontal Toaster

0 → 4

Horizontal Toaster
Putting “Science” to “Art”

Mental Models
  proportions, elements

Basic Tools
  line work, simple shapes

Basic Rules
  perspective, lighting

Practice
Sketch a bike (from the side)
Sketch a bike (mental model)

what is unknown? what is missing?
does this seem right?

supporting weight?

frame connections?

drive chain?

pedal attachment?
The Basics Tools

lines, circles, ellipse

35 degree ellipse
Uncertainty is Visible
The Basics Tools

Perspective

1 Point

2 Point

3 Point
The Horizon or Eye Line

Vertical Lines are always vertical
Proportions

note: no strong convergence of lines
The Cube

Close Vanishing Points = High Distortion

lines that are parallel on the object will converge to the same VP
The Cylinder

minor axis
First Assignment
line sketches of dice

submit only 1 page of sketches (8.5x11)
but should have many iterations beforehand
3-5 dice, at least 2” in size
try wide vanishing points to reduce distortion
same horizon for all dice
various orientations
clean line work,
no tracing (from memory)
don’t fill in the dots, show your line work
OK if dice have only one dot on each face
no pencil
practice your basic warm up 10 min/day

Due in 2 Weeks
Feb 3
First Assignment
Grading Method
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