Design process

1. Define objectives
2. Generate alternatives
3. Evaluate
   a. Build
   b. Analyze
4. Select best
5. Act
Prototyping

- Interim prototypes
- Final prototype
Rules for prototyping:

- Cheap
- Fast

Only prototype as much detail as necessary to test your idea.

Choose the cheapest material for prototyping. Steel and aluminum are much harder to cut than cardboard or foamcore or plywood or plexiglass.
Example: A device to shoot foam balls at a target.

Question: Would a “tongue” work?
Type of prototype: Functional
Materials: Cardboard, rubber bands, bamboo skewers
Speed to build: Very fast
Answer: No

Stanford ME118, “Rat Job”
Question: Would a “shooter” work?
Type of prototype: Functional
Materials: Cardboard, scavenged haptic paddle
Speed to build: Fast
Answer: Yes!
Question: What kind of motor?
Type of prototype: Functional
Materials: Legos, Maxon motor
Speed to build: Fast
Answer: Not Maxon
Question: Make shooter more elegant looking?
Type of prototype: Functional, look & feel
Materials: Foamcore, parts scavenged from a slot car
Speed to build: Fast
Answer: Yes.
**chassis 1**

**Question:** How big should the overall device be?
**Type of prototype:** Functional
**Materials:** Wood, aluminum sheet
**Speed to build:** Fast
Question: How should the overall device look?
Type of prototype: Functional, Look & Feel
Materials: Foamcoare
Speed to build: Fast
Final prototype

**Materials**: Plastic, aluminum
**Speed to build**: Slow
Time Management

- Design is never done
- Pick a deadline
- Choose design and make interim prototypes in design phase
- Prioritize: function first!