SMILE Boat Design Challenge

Friday, January 26th 2024

The SMILE Capstone team will challenge you to work through the engineering design process and build a DIY boat. Be prepared for a test of teamwork and creative problem-solving.

Phases (3-5 person teams):

1. Introduction - 10 mins
2. Familiarization - 5 mins
3. Concept Generation - 5 mins
4. Design - 5 mins
5. Manufacturing - 5 mins
6. Testing- 10 mins

Materials for boat building (Subject to availability, add or remove as desired):

- Large Plastic Tub
- Water
- Cardboard
- Sandwich bags
- Sharpies
- Popsicle sticks
- Duct tape
- Pipe cleaners
- Colored markers
- Blank Paper (for concept generation)
- String/twine
- Scissors
- Paper clips
- Binder clips

Materials for testing:

- Golf Balls
- Shoe Boxes

Familiarization: ~5 minutes
Goal: Familiarize yourself with design requirements, existing designs, and solutions.
Customer Requirements:

- The Boat needs to float.
- Needs to fit in a shoe box.
- Carries the specialized equipment (golf balls) without falling overboard.
- Carries at minimum ½ lb (~5 golf balls).
- Can be built (manufactured) in 5 minutes or less.

Concept Generation: ~5 minutes
Goals: Create multiple concepts to select a design from.

- Create at least 3 sketches of separate and unique design concepts that meet the customer's requirements.
- Create a list of potential materials.

Design: ~5 minutes
Goal: Create a final design for your boat that meets customer requirements.

- Determine which ideas from concept generation you will incorporate into the final design.
- Create a brief plan for manufacturing and assembly.

Manufacturing: ~5 minutes
Goal: Create a functional boat with the materials available.

- Create a complete list of materials used.
- Ensure your boat meets the customer's requirements.

Testing: ~10 minutes
Goal: Test your prototype.

- Test your boat in the water!
- Does it float?
- How long does it float?
- How many golf balls can it hold?

Special Awards:

- First Boat to Float
- Closest to Original Design
- Most Creative Design
- Most Weight Carried Without Capsizing
- Prettiest Boat
- Fastest Manufacturing Time
- Least Expensive Boat