GOALS: Instruction #1
Regarding the Design Process, develop a goal for learning that combines the interests of the people in your group. Write your goal in the space below.

Topics (number of hits). DESIGN PROCESS (x, x, x, x, x, x, x, x, x, x, x, x, x, x = 14)

Quotes from students. Starting with a problem and ending with an adequate solution. How does the customer/real engineer move from conception to prototype. Learn the design process by doing the design process. Define the needs, problems, & design specifications for an open-ended problem.

TEAMWORK (x, x, x, x, x, x = 6)

Learn to work effectively as a group. Maximize the strength of each team member while growing each person’s and the team’s creativity/ideas. To cultivate a motivated team environment where each team member feels ownership of the project.

COMMUNICATIONS & CLIENT RELATIONSHIP (x, x, x, x, x = 5)

Group communication and team work. How to deal with clients.

PROJECT MANAGEMENT (x, x, x = 3)

We would like to learn how to properly manage our time and project, including assigning tasks, setting goals and encouraging other team members. Learn how to break a big problem into small parts.

FABRICATION (x, x, x = 3)

How to build a prototype. Learn how to use machines in the machine shop.

OTHER

Learn how to balance trial & error with concept learning. Learn entrepreneurship. Learn documentation techniques for use on a resume. Learn how the design process really gets done in industry.
Instruction #2

Regarding learning of the Design Process, identify ways that the Capstone Instructors and Mentors can best help you reach your learning goals? List your three best ideas in the space below.

1. INTEGRATING LEARNING WITH DOING
   a. PROVIDE CONCRETE EXAMPLES: Provide examples of good methods/procedures. Provide hands on activities & projects. Bring examples of the 5 best senior design projects of years past AND examples of the 5 worst projects. Bring a demonstration of what we need to succeed at the engineering expo. Give us a detailed walkthrough of a project you have done. Provide examples of good & bad groups.
   b. SHARE LESSONS LEARNED: Provide warnings of pitfalls & give feedback. Make us aware of previous mistakes. Reference past projects & suggest certain ideas. Share past mistakes & experiences; past observations.
   c. AVOID BUSYWORK. Do not assign busy work. Reinforce the idea of fun in design rather than busy work. Reduce the amount of busy work that impedes progress.
   d. LEARN BY DOING: Don’t micromanage, let us do our work & be there for support. Don’t force feed us a canned process, as told in class there are many maps for one process. Let us learn it by doing it.” Give us the room to learn. Let us make mistakes

2. ASSESSMENT: Quick turnaround with quality feedback on assignments, logbooks, grades etc. Provide structure & feedback in the design process. Monitor our progress & status and let us know anything we could do better. Feedback: positive and negative. Give us positive & useful assessment in a timely manner. Progress and inputs on how our process is working in relationship to our project. Qualitative feedback

3. CONSULTING: Provide experts for reference in the field we are designing. Make yourselves available as often as possible for questions that we may encounter. Provide us with contact information who can help us when we are researching topics along the course of the project. Provide help with debugging & problem solving.

4. STRUCTURE (PROJECT MANAGEMENT): Allow us to have as much ownership of our project as possible, and avoid micro-management. Provide a quasi-supervisor role [by meeting with teams to follow progress]. Use your experience to prevent catastrophic team project failures. Advise on time management--how much time to spend on each phase. Check in with groups periodically to ensure the project is progressing. Set dates & goals we should be meeting.

5. OTHER
   a. Fun in design.
   b. Provide resources for teams during design process.
   c. Provide caffeinated beverages to motivate the groups.
Follow up:

Learning Goals (in priority order)
1. Design process
2. Teamwork
3. Communication & Client Relationships
4. Project Management
5. Fabrication

Learning Process
1. Acquire Foundation. Relate topic to learning goals and develop meaningful rationale for spending time on the topic. Analyze concrete examples of past design project work to identify aspects of strong and weak performance. Share best practices & lessons learned.

2. Learn by Doing. Take ownership of task, create your own plan, and rapidly execute the plan.

3. Assessment. Receive assessment based on your own needs and time scale. Take ownership of quality of the feedback you receive.

Support
1. Project Management. We will schedule major milestones and set requirements for major deliverables. Teams will manage day-to-day & week-to-week activities, with a typical cycle time of 3-4 weeks between major milestones. We will provide instruction on project management so that each team will have an opportunity to have effective project management by one of their team members. Each team will have a faculty member who serves as a guide—this faculty member will be expected to meet with the team about once per week.

2. Client Relationships. As the class is realizing, delighting the client by meeting the needs of the end users of a design product is the *sine qua non* (essence) of Engineering Design. We will provide our best guidance.

3. Consulting & Providing Resources. We will help students learn how to set up consulting relationships with professionals. We will help students learn how to find their own information resources. Each team will be provided with a budget and allowed to manage their own budget.