Human-Centered Sustainable Design Module Schedule – Rotation 2 – 2009

Week + Topic + Reading	Monday – March 30, April 6, 13, 20, 27, May 4	Wednesday – April 1, 8, 15, 22, 29, May 6	Friday – April 3, 10, 17, 24, May 1, 8	Lab Exercises
1 — **Reread** Chapter 1-5.	Logistics/Overview What is Human-Centered Design? Need Finding and Contextual Inquiry.	Teamwork and personality differences. Good design/ bad design. IDEO video.	What are design notebooks? Introduction to sustainable product design.	• Mission statement. • Team formation activities. • Contextual inquiry activity. • Do user needs observations over weekend and bring to lab next week.
2 — Sustainable Product and Building Design; Concepts. **Read** Section 11.4.	Life cycle thinking; Sustainable design case studies; Recycle: computer example	Creativity; Functional methods for structured brainstorming; Framing concepts; metaphors.	Benchmarking and concept selection. How to test concepts. Examples: Segway and Seguro.	• List of needs, organize needs, Benchmarking (competitive analysis), brainstorming, personas.
3 — Benchmarking, Concept Selection Testing; **Read** Chapter 5.3, Chapter 6.	Green building design tour and lecture.	Review of final deliverables; Early Prototypes: Why prototype? Types and low fidelity methods.	Mood lighting testing. Biomimetics in Design. Guest Speaker: Prof. Dharan.	• Revise mission, develop, concepts, concept testing plan.
4 — Prototyping, Testing; **Read** Chapter 7 and 11.	High fidelity prototyping; Mood lighting test results; energy analysis.	Seguro thermal comfort testing; Design for assembly and manufacture; ethics in testing. Class exercise.	Prototyping tours: student machine shop, life cycle analysis, solid modeling.	• Concept development and prototyping, testing
5 — Finalizing design & Prototyping; **Read** Chapter 9 and 12.	Human-power analysis; Design for the environment; materials and dematerialization; Nike case study; Feedback.	Design for Emerging Regions. Guest Speaker: Jaspal Sandhu	Communications tips. Peer Review.	• Prototyping and concept development.
6 — Presentation; **Skim** Chapter 8; **Read** Chapter 9.	Guest Speakers: Prof. Kazerooni and industry guests industry Mitchell Heinrich and Mike Lin.	Student competitions and community service.	Party – optional class **Note: May 11** will meet in Sibley to go over the take home final.	• Presentation, evaluation.

Final module project judging criteria:
1. **Mission Statement:** This statement is intended to communicate what the intent of the students' project was. It should describe the product objective, the target population and stakeholders, as well as identified important constraints. Is the mission statement clear? Is it compelling?
2. **Customer and User Needs:** Students we asked to employ methods suitable to their project to assess customer and user needs. The methods used range from hands-on work directly with customers to web-based surveys. Did the students use the "right" methods for getting at their customer and user needs? Were they creative? Do you believe they learned what they needed to know about their customer/ user needs?
3. **Concept Generation:** Students engaged in various types of concept generation exercises from creative "brainstorming" approaches to competitive benchmarking. Some students focused on concepts for experimental testing of existing prototypes. Were the students as creative as they could have been? Did they explore many different angles on the product or the testing? Did their concepts or test procedure relate to the information uncovered in the customer and user needs research?
4. **Concept or Experiment Selection:** Students were to assess the concepts or prototype testing experiment they generated against their customer and user needs as well as against various analyses they may have performed (e.g., energy savings or generation, life cycle, durability, etc.) Did they have a good set of evaluation characteristics? Did they account adequately for their customer needs?
5. **Early Prototypes and Testing:** Students developed first-pass prototypes or experiments to test previous prototypes. Those with early prototypes, were to take those prototypes back out to their potential customers to gather feedback. Those performing experiments were to perform the tests, analyze the data and make recommendations relative to customer needs. What did they learn from the feedback or from the testing? How effective was they way they presented the prototype or results of the experiment?
6. **Design for the Environment**: The class covered design for sustainability. How did the students address this in their final product or learn from their experiment?
7. **Technical Feasibility**: Did they perform an initial concept feasibility analysis (e.g., back of the envelope calculations, energy analyses, functional testing).

Final Module Deliverables (All but peer evaluation due during last lab):
- Final presentation, slides and prototypes (team)
- Final report (team)
- Design journals (individual)
- Complete team peer-evaluation (individual; to be completed soon after last lab)

Final Presentations
- 15 min. sharp with 5 min. Q&A; Set-up for next talk during Q&A
- Upload slides on l bSpace at 1:00 pm prior to lab

Final Report
- No more than 2 pages. Figures and visuals may be added to the Appendix.
- Report should be organized around the areas of the presentation and the seven judging criteria.
- Add an additional section on "lessons learned" to the final report only, not the presentation.