SP.722 (D-Lab) Spring 2005
Session #1 notes

## Introduction: Design for Developing Countries

Course background: D-Lab is designed as a year-long sequence of courses.


- Fall term emphasizes background in appropriate technologies and preparation for field work.


- The IAP (Individual Activities Period) field trip provides students with a ~three week experience in a particular country.


- Spring session is very project focused. Students will form teams at the beginning of the term and work on the projects throughout the duration.


- Summer fieldwork is the culmination of the sequence. Some of the summer opportunities will require students to make plans and submit applications early in the term.

Course goals: The primary objective is to create technologies that have a positive impact and bring working technologies into the field. The slide details specific goals that support this broader goal.

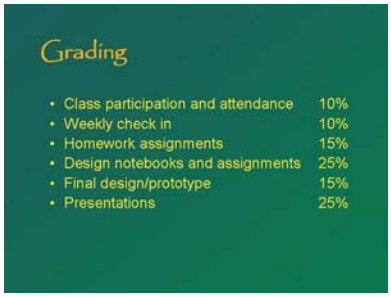
Here's some background on the SP.722 instructors and staff:


- Amy Smith – creator of D-Lab; MIT MechE alumna, Peace Corp volunteer, developed an improved grain mill and other appropriate technology innovations, winner of 2004 MacArthur Foundation grant.
- Kurt Kornbluth – co-instructor for SP.721 Fall 2004 and SP.722 Spring 2005. MechE background, shifted into working on Appropriate Technology after brief stints as automotive engineer and street musician; extensive work with Whirlwind Wheelchair International; Ph.D. student at UC Davis.
- Will DelHagen – field experience with Whirlwind Wheelchair and many sustainable development projects around MIT.
- Alan Armstrong – Mechanical engineer, worked with Design That Matters (http://www.designthatmatters.org) on the Kinkajou Projector for literacy education.
- Leo Burd – Interests in educational technology, working with kids. Led the D-Lab IAP trip to Brazil.
- Sam Davies – Works on computer vision in MIT CSAIL group; D-Lab trip leader for India.
- Erica Fuchs – was in DMSE (Course 3), after graduation worked with the U.N. on offshore production issues; how location impacts technology decisions, alternatives to large multinationals and economic implications
- Matt Orosz – former Peace Corp volunteer, field work in Lesotho, interest in renewable energy
- Kate Steel – Background in MechE, main interest is energy development in Africa.

## *Course Logistics*


Syllabus and handouts are discussed. Student profile and student survey provide the instructors with information that will be very helpful in setting up the design groups.

The Friday sessions are largely devoted to group work. These sessions will start with brief update on each group's progress (3 min to present, 2 min for discussion). In fact, part of one's grade for the class will be determined by the feedback you provide to other groups during these Friday sessions.




Attendance policy is rather strict, because group work is so critical to each projects success. No one can miss more than two classes and expect to pass.

Grading policy: Active participation in class is very

important.

Each person should be keeping a detailed design notebook, as recurring work throughout the term.

## *Design Challenge Examples*

Next week the class will review about 15 design challenge candidates, drawn largely from past D-Lab or Design that Matters (DtM)[1] projects. If students already have a particular interest (as already expressed by some):

- Fill in the information on the Design Challenge worksheet handout and email it to the class list before Session #2.
- The instructors will review it and let you know by noon on Saturday, at which point you should fill in the design challenge template (which we will include at the time) and a single PowerPoint slide and email back to the instructors.
- At Session #3, you will have two minutes to present your design challenge to the class.

Here are two examples of Design Challenges.

### Kinkajou Microfilm Projector

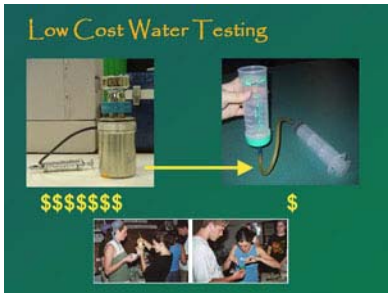
Courtesy of Design That Matters, Inc. Used with permission.

The original idea was to develop a means to distribute books and literacy materials via microfilm, without the high costs of shipping traditional books.

Prototype (top left) had an LED light source, developed by Design That Matters. A community partner selected the device for use in sub-Saharan Africa (Mali). In this region, lots of education projects such as literacy classes happen at night, so a visible projection with very low power requirements is a key objective. Kinkajou was picked up by course 2.009 students for redesign. In 2005, a large scale test is happening in Mali. (Photos courtesy of Design That Matters, Inc. Used with permission.)

Kinkajou will be discussed in more detail later in this course in session 35. (May 2, 2005).

### Low-cost Water Testing Device




This is a system for low cost membrane water filtration tests. Currently filtration test technologies cost $600-$1300. The Fall 2003 D-Lab class made a prototype that worked…sort of. The subsequent design challenge led to a much improved system, which was used for the Fall 2004 D-Lab trips. The system uses baby bottle inserts, and costs around $10. The latest design seems to work well, so now

[1] Design that Matters (DtM): http://www.designthatmatters.org/

it’s time to evaluate ways to redesign for production and scale up for broader dissemination.