Syllabus

Dept. Electrical and Computer Engineering

The Ohio State University

**ECE 682 Humanitarian Technology Challenge**

**Instructor:** Prof. Kevin M. Passino, passino@ece.osu.edu

**Office Hours:** Open-door policy, but email for an appointment

**Course Web Site:** A wiki is used for the course web site (under development)

**Course Goals:**

1. Understand poverty in the developing world, the importance of technology in human welfare, and constraints on technology designs imposed by developing communities.
2. Introduce and develop open-ended technology design problems (challenges) that are sustainable and appropriate to the community. Understand the importance of community input to the design problem definition. Example challenges include low-cost off-grid sustainable lighting and reliable electricity generation.
3. Formulate solutions to humanitarian technology challenges, including paper designs and prototypes. Learn how to take into consideration economic, cultural, environmental, safety, ethical, manufacturability, and maintainability issues. Learn about phases of engineering design projects and how to work on a design team. Learn about the interaction between technical and nontechnical design issues.
4. Demonstrate an engineering solution to a humanitarian technology challenge. Report both orally and in written form on the solution. Contribute to developing the course’s collaborative web site (wiki).

**Course Topics and Assignments:**

1. World poverty, general humanitarian challenges (Essay assigned, contributions to class web site required)
2. UN Millennium Development Goals and role of engineering
3. Energy poverty and its implications, digital divide (Essay assigned, contributions to class web site required)
4. Sustainable and appropriate technology definitions and examples
5. Humanitarian technology challenge definition (Project #1, contributions to class web site required)
6. Design solution, step #1, paper design and report to instructor (Project #2)
7. Design solution, step #2, initial prototype and demonstration to instructor (Project #3)
8. Design solution, step #3, final prototype and demonstration to class and invitees (Final Project that counts as the final examination for the course, contributions to class web site required)

**Grading:**

Attendance at every class, and your design group meetings, is very important. Contributions to the course web site are very important. It is expected that you be fully engaged in this course (e.g.,. that you seek out new information to contribute to the course web site, beyond what is assigned) and you are strongly encouraged to get involved with the OSU College of Engineering student organization “Engineers for Community Service” (ECOS) to deploy your design solutions in the field (see: http://ecos.osu.edu/). Specific percentage breakdown on course grading is as follows:

* Homework (e.g., essays): 25%
* Project #1: 20%
* Project #2: 20%
* Final Project: 35%