**Anti-Poverty Technology**

**Instructor:** Prof. Kevin M. Passino, Dept. Electrical and Computer Engineering

**Contact information:** passino.1, mobile: 614-312-2472

**Credits:** 1

**Grading:** S/U

**Time distribution:** 14 weeks, 14 lectures, 55min per lecture

**Scheduling:** Regular business hours, but coordinate with other courses

**Course Goals:** (i) Make students aware of the state of poverty and development in the world, (ii) Show students an approach to anti-poverty technology development, and (iii) provide an introduction to two research areas in anti-poverty technology development.

**Course Content:** The course content includes: (i) an introduction to the state of poverty and development in the world, (ii) an overview ideas from social justice, (iii) a summary of the major approaches to promote development, (iv) an introduction to a participatory development methodology for technology, and (v) a presentation of two current research challenges in the area of the development of anti-poverty technology (financial advisors for low-income persons and cooperative management of community technology).

**Weekly Topical Outline:**

Class Topic

1. Introduction to poverty (video: “Living on One Dollar” in Guatemala)
2. Discussion: What are anti-poverty technologies? Introduction to homelessness (videos from InvisiblePeople.TV). Anti-poverty technologies for the homeless?
3. World statistics on poverty and development (UN and World Bank data explorer/visualizer), UN Sustainable Development Goals
4. Social justice, UN Universal Declaration on Human Rights discussion
5. Development strategies, economics perspectives
6. Development strategies, education, health, business perspectives
7. The skilled helper, community development
8. Participatory community development, video “The Water of Ayolé” (a story about cooperative pump technology development in Africa)
9. Community assessment, project selection, fieldwork
10. Anti-poverty technologies, examples
11. Research Challenge #1: Personal financial advisor, problem formulation (how to help people save, and avoid risk)
12. Research Challenge #1: Personal financial advisor, technological solutions
13. Research Challenge #2: Cooperative management of community technology, people-solutions and semi-automated solutions (how to automate the collection of money for operation and maintenance of a shared technology)
14. Research Challenge #2: Cooperative management of community technology, technological solutions

**Homework Assignments, Percent Weighting:**

1. Summary and critique of poverty videos, Guatemala (“Living on One Dollar”) and US homeless (invisiblePeople.TV) cases: 20%
2. Develop poverty/development statistics for Guatemala and homeless in the US, compare: 20%
3. Summary and critique of “The Water of Ayolé.” Questions about participation and social transformation based on this movie: 25%
4. Design a cooperative management strategy (Research Challenge #2) for the “The Water of Ayolé:” 35%

**Required Textbook:**

Kevin M. Passino, *Humanitarian Engineering: Advancing Technology for Sustainable Development*, Edition 3, Bede Pub., Columbus, OH, 2016. This is available for a free download.

**Academic Misconduct:**

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

**Students with Disabilities:**

Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

**Biography:**

Kevin M. Passino is a Professor in Electrical and Computer Engineering at OSU. His research focuses on the design of technologies that alleviate poverty, especially those that use distributed dynamical systems, feedback control, stability, and optimization methods. He has won the Dept. of Electrical Engineering, Eta Kappa Nu student-run teaching award. He is an OSU Sphinx and Mortar Board Senior Class Honoraries Outstanding Faculty Member. He is a recipient of the Boyer Award for Excellence in Teaching Innovations in the College of Engineering. He has taught several undergraduate courses, including ENGR 5050 Humanitarian Engineering, ECE 5550 Computational Humanitarianism, ECE 3080 Engineering Ethics, and ECE 4/5759 Optimization,