Engineering and Sustainable Development
CVEN 5929 Spring Semester, 2014: Monday 11:00 a.m. – 1:30 p.m.
University of Colorado Boulder
Instructors: Dr. Rita Klees (CU Department of Civil, Environmental & Architectural Engineering), and Dr. Helen Petach (USAID)

**Draft Course Outline**

This goal of this course is to examine the role of engineering in achieving transformative and sustainable development. We will study fundamental issues facing the engineer as a development practitioner, and identify viable strategies and solutions that address technical, social, economic, and political dimensions of selected engineering-related sectors. The course is structured to provide a perspective on cross-cutting themes placed within the context of policies, programs, and projects that successfully deliver development results.

This is a graduate level course for students in Environmental Engineering, Civil Systems, Construction Engineering and Management, and Building Systems within the Department of Civil, Environmental, and Architectural Engineering. It is a required course for students in the Mortenson Center for Engineering in Developing Communities program.

The major development themes to be covered are:

- Governance and institutional arrangements
- Legal and policy frameworks
- Regulatory authorities and jurisdiction
- Environmental and social impacts
- Reaching the poor and vulnerable
- Cross sectoral programming
- Working with fragile and failed states
- Post disaster recovery
- Ethics: Justice, equity, and human rights
- Faith based organizations
- Innovation and entrepreneurship
- Project impact assessment

We will analyze these themes through the lens of selected engineering sectors including energy, transport, agriculture, housing, environment, public health, water, and information and communications technology. Guest lecturers will represent multiple perspectives, disciplines and scales of intervention and will include experts from academia, bilateral and multilateral development agencies, non government organizations, social enterprise, and private corporations. They will discuss how to design and deliver sustainable engineering solutions while responding to fundamental development issues. The readings, class discussion, and assignments will require students to think as both an engineer and a development practitioner. The course makes extensive use of case studies from Asia, Africa, Latin America, and Eastern Europe.

Students will come away from this course with a better understanding of challenges facing the engineer cum development practitioner; a clearer view of the realities of implementing policy, technology, and behavioral solutions; and an awareness of practical, multidisciplinary programmatic solutions to development problems.