Challenges and Innovations in Civil and Environmental Engineering and Earth Sciences

Fall 2013 Seminar Series

Department of Civil and Environmental Engineering and Earth Sciences

Engineering in Sustainable Human Development: Challenges and Opportunities

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3:30pm – 4:30pm
102 DeBartolo

In the next two decades, almost two billion additional people are expected to populate the Earth, 95% of them in developing or underdeveloped countries. This growth will create unprecedented demands for energy, food, land, water, transportation, materials, waste disposal, earth moving, health care, environmental cleanup, telecommunication, and infrastructure. The role of engineers will be critical in fulfilling those demands at various scales, ranging from remote small communities to large urban areas, and mostly in the developing world. A simple question arises: Do today's engineering graduates and engineers have the skills and tools to address the global problems that our planet and humans are facing today, or will be facing within the next 20 years? Since the answer to that question is negative and we cannot solved tomorrow's problems with yesterday's tools and skills, a *new epistemology of engineering practice and education* is needed; one that is based on the idea of reflective and adaptive practice, system thinking, engagement, and a holistic approach to global problems. This new form of engineering education and practice must be designed to cover a wide range of technical and non-technical issues in order to train *global citizen engineers* and *whole* persons, capable of operating in a multi-cultural world. As we enter the first half of the 21st century, the engineering profession must embrace a new mission statement—to contribute to the building of a more sustainable, stable, and equitable world.

Dr. Amadei is Professor of Civil Engineering at the University of Colorado at Boulder. He received his PhD in 1982 from the University of California at Berkeley. Dr. Amadei holds the Mortenson Endowed Chair in Global Engineering and served as Faculty Director of the Mortenson Center in Engineering for Developing Communities from 2009-2012. He is also the Founding President of Engineers Without Borders - USA and the co-founder of the Engineers Without Borders-International network. Among other distinctions, Dr. Amadei is the 2007 co-recipient of the Heinz Award for the Environment; the recipient of the 2008 ENR Award of Excellence; an elected member of the U.S. National Academy of Engineering; and an elected Senior Knight-Ashoka Fellow. He holds three honorary doctoral degrees. Dr. Amadei was recently appointed as a 2012 Science Envoy by the U.S. Department of State.