Humanitarian Engineering
Colorado School of Mines

Engineers co-creating with communities

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ASEE EDI Cool Ideas Session
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Humanitarian Engineering is ...

.... a *curricular minor* for engineering students to learn about co-creating just and sustainable solutions for communities
Humanitarian Engineering is …

.... Cutting Edge! – as the 1st such program in the US (2003), HE is a
• Space for deep and serious constructive critical reflection on “what is engineering for?”
• Vehicle for praxis, where students can see the relevance of engineering to social problems
Humanitarian Engineering is...Complicated!

Larger Context of Community Development includes

- History, culture, geopolitics, ideology, internal conflict, and international organizations

- Development banks
- Corporations
- NGOs (engineers and other actors)
- Engineers and scientists
- Relief organizations
- Community (women, children, elderly, clans, labor unions, traditional families, kinship groups, etc.)
- Universities (engineers and other actors)
- Government agencies

Other Stakeholders:

- Community groups
- Labor unions
- Academia
- Corporations
- Governments
- Families
- Corporate Social Responsibility
- NGOs

The World of the Humanitarian Engineer
Humanitarian Engineering is ...

... **Participatory**! – 1/2 of the required 18 credit hours are project based learning

HE students brainstorming at the Posner Center, a Denver-based NGO incubator
Humanitarian Engineering is … Engineering by Doing!


EbD II – Projects for People Combines HDC techniques with technical skills to address design challenges for communities.

EGGN491/2 – Senior Design Design/build of infrastructure, assistive technologies and solutions for community partners based on work previously completed in EbD I/II
Humanitarian Engineering is … Interdisciplinary!

**Employing a Human-Centered Design methodology**, HE as a place where team-based problem definition and solution skills are developed in a real-world setting.
Humanitarian Engineering is …

**a Partnership with Community!**

Numerous HE students work with some of the 60+ Tenants at the Posner Center for International Development – the largest US NGO Incubator – located in Denver
Humanitarian Engineering is …
Making a difference!

- Water-powered pumps in Niger
- Mountain bikes for quadriplegics
- Solar-powered pumps and post-harvest storage solutions for African farmers
- Schools for girls in Nepal and Nicaragua
- Footbridges over formerly impassable rivers,
- Energy-efficient housing for Native American Sustainable Housing Initiative
Humanitarian Engineering is …

… a COOL IDEA!!

Questions?