Humanitarian Engineering
bridging the global divide
with sustainable and collaborative solutions
Mark Henderson, Director, GlobalResolve
Global Resolve
Resolving Problems in the Developing World

Freshman (2013/2014)
1st Semester
= 14 CH
- Intro to Engineering Design I
  EGR 101 (3)
- Calculus for Engineers I
  MAT 265 (3)
- First-Year Composition
  ENG 101 (3)
- General Chemistry I (or Science Elective)
  CHM 113 (4)
- Success in Tech & Innov
  CTI 101 (1)

2nd Semester
= 15 CH
- Intro to Engineering Design II
  EGR 102 (3)
- Calculus for Engineers II
  MAT 266 (3)
- First-Year Composition
  ENG 102 (3)
- University Physics I: Mechanics
  PHY 121 (3)
- Critical Inquiry in Engineering (L)
  EGR 104 (3)

Sophomore (2014/2015)
Fall Multi-disciplinary Project
- Engineering Fundamentals I
  EGR 201 (3)
- Engineering Materials & Mfg
  EGR 202 (3)
- Engineering Statistics
  EGR 280 (3)
- Calculus for Engineers III
  MAT 267 (3)
- Modern Differential Equations
  MAT 274 or 275 (3)
- History of Engineering
  HST 318 (3)

Junior (2015/2016)
Fall Concentration Project
- Concentration
  SCI Elective (or Chem 113)
  BIO 187, CHM 116, GLG 101/3, PHY 131/2 (4)
- General Studies (HU/SSB)
  HU/SSB (4)
- Secondary Focus Area
  HU/SSB (3)

Spring Concentration Project
- Concentration
  Linear Algebra
  MAT 343 (3)
- General Studies (HU/SSB)
  HU/SSB (3)
- Secondary Focus Area
  HU/SSB (3)

Senior (2016/2017)
Capstone Project I (L)
- Concentration
  Concentration Math or Science
  HU/SSB (3)
- General Studies (HU/SSB)
  HU/SSB (3)
- Secondary Focus Area (upper div)
  HU/SSB (3)

Capstone Project II
- Concentration
  Concentration Math or Science
  HU/SSB (3)
- General Studies (HU/SSB)
  HU/SSB (3)
- Secondary Focus Area (upper div)
  HU/SSB (3)
GlobalResolve
Resolving Problems in the Developing World

1. Co-Create Quality of Life Solutions in the Developing World
2. Incubate and Scale Solutions for Economic Impact
3. Empower Students

2014-15
200 students
40 projects
10 countries

<table>
<thead>
<tr>
<th>Project</th>
<th>Community Location</th>
</tr>
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<tbody>
<tr>
<td>Biochar agriculture improvement</td>
<td>Peru</td>
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<tr>
<td>Solar PV micro-grid</td>
<td>Ghana</td>
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<tr>
<td>River-powered washing machine</td>
<td>Ghana</td>
</tr>
<tr>
<td>Water filter</td>
<td>India</td>
</tr>
<tr>
<td>Solar cargo bike</td>
<td>Ghana</td>
</tr>
<tr>
<td>Fish smoker redesign</td>
<td>Ghana</td>
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<tr>
<td>Water wheel transportation</td>
<td>India</td>
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<tr>
<td>Low cost housing</td>
<td>Bolivia</td>
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<tr>
<td>Greenhouse construction</td>
<td>Peru</td>
</tr>
<tr>
<td>Bike Smoothie</td>
<td>Mexico</td>
</tr>
<tr>
<td>Drip Irrigation</td>
<td>Nicaragua</td>
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<tr>
<td>.. and others</td>
<td></td>
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</tbody>
</table>
The GlobalResolve Methodology

- Define a Problem
  - Listen to the community in need
- Create a Team
  - Students, faculty, mentors, community, NGOs, others
    - Sometimes we travel; sometimes not
- Co-Create a Solution
  - Prototype in collaboration with the community
- Implement the Solution
  - Long-term commitment
Our Solutions

• **Parallel Project Courses**
  – Gives diverse mixed pool, 2 parallel project courses, same time, same place, different prerequisites

• **Certificate in Humanitarian Engineering**
  – Attracts more and diverse students

• **Partnering**
  – NGOs and host Universities connect locally
Providing Solutions Service to NPCA with Member Universities to create Solution Teams

AGI Headquartered at ASU Polytech School

Win/Win/Win IMPACT

Roll out date is subject to funding
Global Resolve

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