# Humanitarian Engineering

Humanitarian engineering is engineering for the betterment of communities, but particularly for underserved communities, communities devastated by natural disasters, and refugee communities. The engineering profession has made world-changing contributions to these communities through infrastructure, water treatment, medical devices, computers and many other technological advancements that continually impact society. This CGE track, and the Cockrell School's Certificate in Humanitarian Engineering takes engineering for society to the next level, providing undergraduate students with a rewarding, multidisciplinary program that allows them to focus their learning around communities that need their help the most. Students who pursue this track have the opportunity to work on design projects for real customers (such as the International Federation of Red Cross) to address humanitarian needs.

**Example projects**

*Biogas Heat Recapture System for Underserved Communities*: Improve the performance of an existing biodigester for processing human waste while capturing and using the biogas that is a natural product of the anerobic digestion process.

*Improvements to Mesquite Flour Production Facility:* Develop a new drying process to increase by tenfold the production of a mesquite flour plant in Mexico.

*Solids Removal for Potable Water Filter System:* Design a system for suspended solid removal in water treatment to reduce reliance on chemical sedimentation prior to filtration.

**Faculty Mentors:**
**Richard Crawford, rhc@mail.utexas.edu**
**Carolyn Seepersad, ccseepersad@mail.utexas.edu**

## Required Courses
None. Note that other courses are required to complete the certificate program.

**ME Undergraduate Elective Courses**
ME363M – Energy Technology and Policy
ME374T – Introduction to Renewable Energy Engineering and Sustainability
ME337F – Nuclear Environmental Protection
ME354 – Introduction to Biomechanical Engineering
ME354M – Biomechanics of Human Movement
ME374S – Solar Energy Systems Design
ME374T – Renewable Energy Technology
ME377K – Projects in Mechanical Engineering (with approved project)
ME379M – Design/Control of Robots for Rehabilitation
ME371D – Medical Device Design and Manufacture
ME379M – Nanotechnology for Sustainable Energy

ME379M – Development of a Solar-Powered Vehicle
*For course descriptions visit the **University Catalog**.*

**Humanitarian Design Courses**
ES277L – Project Design with Underserved Communities/ES277L – Project
      Development with Underserved Communities*
ES277 – Humanitarian Product Design/Humanitarian Product Development*

*Note that these courses are not substitutes for ME266K/ME266P.

**Other Elective courses (only one of the following can be accepted)**
AFR372D/HIS350L – Medicine in African History
AFR 74E/HIS346L – Modern Latin America
ANS361.29/ANT324L/RS373M – Biomedicine, Ethics, & Culture
ANS372.26 – Global Markets and Local Cultures
ANT324L.24/AFR372G.3 – Archaeology of African Thought
ANT324L.37/AFR374E.2 – Politics of Race/Violence in Brazil
ANT324L.57/GRG356 – Archaeology of Climate Change
ANT324L.17 – Nature, Society & Adaptation
GOV328L – Into to Latin American Government & Politics
GOV337M.8 - International Politics of Latin America
GRG344K – Global Food, Farming, and Hunger GC
GRG356T/HIS 363K – Mapping Latin America
GRG356T – Landuse/Landcover Change Practice
GRG356T – International Development in Africa
GRG357 – Medical Geography
SOC321G – Global Health Issues/Systems
PHL325C – Environmental Ethics
PHL325M – Medicine, Ethics, and Society
HIS363K/LAS366 – Politics of Food in Latin Amer
HIS363K.2/LAS366.28 – Argentina:Populism/Insurrection
HIS364G.6/AFR374C.6/WGS – Apartheid: South African History
HIS366N – Global History of Disease
ADV324 – Communicating Sustainability
CMS340K – Communication and Social Change
CTI323 – Might and Right among Nations
TC358 – Law & Ethics of Climate Change
SOC369K – Population and Society