

Humanitarian Engineering

General CSM Minor/ASI requirements can be found here (<http://bulletin.mines.edu/undergraduate/undergraduateinformation/minorasi>).

Program Mission

To teach students how engineering can contribute to co-creating just and sustainable solutions for communities.

Program Educational Objectives

To achieve its mission -- *teach students how engineering can contribute to co-creating just and sustainable solutions for communities* -- HE graduates will be able to

- *Reflect critically on the practices of engineering* to know why, how, when and whether to use engineering in the co-creation of just and sustainable solutions.
- *Serve communities effectively and responsibly* in collaboratively identifying problems and defining and providing solutions that are just and sustainable.
- *Design and build technologies* that promote just and sustainable solutions.
- *Map career trajectories* (corporate, public, NGOs, academic) that will enable them to work as engineers for just and sustainable solutions.

Programs Offered

- Minor in Humanitarian Engineering (18 credit hours)
- Area of Special Interest in Humanitarian Engineering (12 credit)

Program Requirements

1. Humanitarian Engineering Minor Program (18 credit hours)

Intro Course (3 cr)

LAIS377	ENGINEERING AND SUSTAINABLE COMMUNITY DEVELOPMENT	3.0
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Area I Community, Culture & Social Justice (6 cr) Select two of the following:

LAIS325	CULTURAL ANTHROPOLOGY	3.0
LAIS430	CORPORATE SOCIAL RESPONSIBILITY	3.0
LAIS475	ENGINEERING CULTURES IN THE DEVELOPING WORLD	3.0
LAIS478	ENGINEERING AND SOCIAL JUSTICE	3.0
LAIS490	ENERGY AND SOCIETY	3.0

Area II Engineering by Doing (EbD) (6 cr) Both courses below are required:

EGGN301	HUMAN-CENTERED PROBLEM DEFINITION (Required)	3.0
EGGN401	PROJECTS FOR PEOPLE (Required)	3.0

Capstone Course (3 cr)

EGGN492	SENIOR DESIGN II (for CECS students)	3.0
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CEEN477	SUSTAINABLE ENGINEERING DESIGN (non CECS students)	3.0
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2. Area of Special Interest in Humanitarian Engineering (12 credit hours)

Intro Course (3 cr)

LAIS377	ENGINEERING AND SUSTAINABLE COMMUNITY DEVELOPMENT	3.0
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Area I Community, Culture & Social Justice (6 cr) Select two of the following:

LAIS325	CULTURAL ANTHROPOLOGY	3.0
or HNRS305	EXPLORATIONS IN MODERN AMERICA	
LAIS430	CORPORATE SOCIAL RESPONSIBILITY	3.0
LAIS475	ENGINEERING CULTURES IN THE DEVELOPING WORLD	3.0
LAIS478	ENGINEERING AND SOCIAL JUSTICE	3.0
LAIS490	ENERGY AND SOCIETY	3.0

Capstone Course (3 cr)

CEEN477	SUSTAINABLE ENGINEERING DESIGN	3.0
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Co-Curricular Activities

Students interested in the Humanitarian Engineering (HE) Program are strongly encouraged to join Engineers without Borders (EWB) in their first year at CSM to begin understanding the role of engineering in community development. HE students are also encouraged to attend the HE Lecture Series to gain new perspectives on the role of engineers in co-developing solutions to problems faced by communities in the US and abroad.

4. Senior Design Projects

During their senior year capstone experience, HE students must select HE projects in areas such as Community Development or Assistive Technologies for People with Disabilities. Projects which are approved for use towards the minor are indicated in the project list provided in EGGN491. HE students will be given priority on these projects and will be supported by a Social Context Consultant with whom they will interact regularly to make sure that their design addresses human- and/or community-centered needs as well as technical requirements.

CEEN477	SUSTAINABLE ENGINEERING DESIGN	3.0
LAIS325	CULTURAL ANTHROPOLOGY	3.0
LAIS430	CORPORATE SOCIAL RESPONSIBILITY	3.0
LAIS475	ENGINEERING CULTURES IN THE DEVELOPING WORLD	3.0
LAIS478	ENGINEERING AND SOCIAL JUSTICE	3.0
LAIS490	ENERGY AND SOCIETY	3.0
EGGN301	HUMAN-CENTERED PROBLEM DEFINITION	3.0
EGGN401	PROJECTS FOR PEOPLE	3.0

Professor

Juan Lucena, Humanitarian Engineering Program Director, Division of Liberal Arts and International Studies

Associate professor

Junko Munakata-Marr, Shultz Faculty Fellow & Civil and Environmental Engineering Department, College of Engineering and Computational Science

Assistant professors

Doug Van Bossuyt, Shultz Faculty Fellow & Mechanical Engineering Department, College of Engineering and Computational Science

Jessica Smith, Hennebach Assistant Professor of Energy Policy, Division of Liberal Arts and International Studies

Teaching Associate Professors

Jered Dean, Senior Design Director, College of Engineering and Computational Science

Leslie Light, Design EPICS Director, College of Engineering and Computational Science

Mirna Mattjik, Program Coordinator & First Year Engineering Design Instructor, College of Engineering and Computational Science

Greg Rulifson, Engineering for Sustainable Community Development Course Instructor, Division of Liberal Arts and International Studies

Adjunct Faculty

Susan Anderson, Human Centered Problem Definition Course Instructor

Rachel Fleming, Anthropologist

Ben Teschner, Corporate Social Responsibility Project Manger & Project for People Course Instructor

Marnie Thompson, Anthropologist

Lecturer

David Frossard, Engineering for Sustainable Community Development Course Instructor

Research Associate Professor

Nicole Smith, Energy and Society Course Instructor, Division of Liberal Arts and International Studies