

**The Ohio State University
College of Engineering
Humanitarian Engineering Minor**

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College of Engineering
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The Humanitarian Engineering Minor at Ohio State aims to educate students on the application of science and engineering to address complex societal challenges with an emphasis on collaborating with communities to achieve their desired vision of well-being through a curriculum grounded in proven theories and best practices of sustainable development, applied engineering and socio-cultural learning experiences. The program aims to educate engineers in the co-definition, co-conceptualization of solutions, and co-implementation of projects with individuals or communities.

The Humanitarian Engineering Minor consists of 16 credit hours of course work as listed below including required pre-requisites courses.

Required Curriculum Components

- FABENG 3201(4 credits)
- Humanitarian Engineering Core Course elective (3 credits)
- Global Perspectives Course (3 credits)
- Community Based Learning Experience (3 credits)
- Culminating Humanitarian Engineering Project Work (3 credits)

Humanitarian Engineering core course elective

Choose one of the courses from the following list.

- CIVILEN 5610.01/FABENG 5260.01 – Sustainable WaSH Infrastructure for Developing Rural Communities
- CIVILEN 5610.02/FABENG 5260.02 – Safe Water on Tap
- ECE 5050 – Humanitarian Engineering
- FABE 5200 – Appropriate Technologies for Developing Countries

Global Perspectives Course (3 credits)

These courses focus on topics such as social/cultural, development/poverty, sustainability/environment, economics/international business/public policy and are meant to help engineers understand their users/clients and the context in which they live. A full list of approved courses is attached.

Community Based Learning Experience (3 credits)

These courses focus on exposing the student to Community Based Learning Experiences.

- ENGR 2797.xx(S)/5797.xx(S) – Service-Learning Course
- ENGR 4692.xx(S) – Service-Learning in Engineering
- FABENG 3200 – Engineering for Community Development in Ohio
- CIVILEN 4900/4901; FABENG 4900/4910 – Global Capstone
- Courses not listed may be approved by the HE Minor coordinator

Culminating Humanitarian Engineering Project (3 credits)

Work must be taken in last year before graduation:

Humanitarian engineering project: international, local/domestic project, individual or in a group. Project work must be taken for academic credit. If all project content is firmly focused on humanitarian engineering, project course credit can be obtained in the following ways, for any College of Engineering unit:

- Individual Studies
- Undergraduate Research
- Honors Thesis Credits
- Capstone Design

Verification of humanitarian engineering content must be given by the faculty for the course; see the HE Minor Student Information Form

Humanitarian Engineering Minor Guidelines

- Required for graduation: No
- Credit hours required: A minimum of 16 credit hrs. 1000 level courses shall not be counted toward the 16 credit hr minimum. At least 6 credits must be at the 3000 level or above.
- Transfer and EM credit hours: A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.
- Overlap with the GE: A student is permitted to overlap up to 6 credit hours between the GE and the minor.
- Overlap with the major and additional minor(s): The minor must be in a different subject than the major. The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).
- Grades required: Minimum C- for a course to be listed on the minor
- Minimum 2.00 cumulative point-hour ratio required for the minor
- Course work graded Pass/Non-Pass cannot count on the minor
- No more than 3 credit hours of course graded Satisfactory/Unsatisfactory may count toward the minor
- No more than 3 credit hours of Independent Study X193 credits
- Approval required: The student must fill out the Minor Student Information Form with all required information and get this approved by the Humanitarian Engineering Minor Advisor.

Approved Global Perspectives Course List for the Humanitarian Engineering Minor

Offering Unit	Course No.	Course Title	Cr.	GE Category(s)	Pre-requisites	Course Description
Development						
AEDECON	2500	Introduction to Environment, Economy, Development and Sustainability	3			Introduces students to principles from various disciplines related to social, economic and environmental sustainability. Students will evaluate key concepts and examine tradeoffs that are a part of sustainability action using case studies representing diverse perspectives.
AEDECON	4535	International Economic Development	3		Econ 2001	Study of the growth and diversification of developing economies and the causes of poverty and inequality. Analyze the impacts of human capital formation, markets, and public policy on development.
BUS-MHR	5530	Value Creation in Social Entrepreneurship	3		BUS_MHR 2500 and ECON 2001.01	Developing a business plan in social entrepreneurship
ECON	4130	World Economic Development in Historical Perspective	3	historic study and diversity global studies	ECON 2001.01, 2001.02, 2001.03H and 2002.01, 2002.02, 2002.03 or equiv	A survey of economic development from the middle ages through the 20th century, emphasizing Europe, Asia and Africa.
GEOG	5700	Geography of Development	3			Political economy of development; development theory; the historical geography of capitalism development; and contemporary development practices and strategies.
ECON	4130	World Economic Development in Historical Perspective	3	historic study and diversity global studies	ECON 2001.01, 2001.02, 2001.03H and 2002.01, 2002.02, 2002.03 or equiv	A survey of economic development from the middle ages through the 20th century, emphasizing Europe, Asia and Africa.
GEOG	5700	Geography of Development	3			Political economy of development; development theory; the historical geography of capitalism development; and contemporary development practices and strategies.
RURLSOC	3580	Social Groups in Developing Societies	3	soc sci indivs and groups and diversity global studies	3 crhrs in RurlSoc, Sociol, or a related social science	Contemporary struggles and experiences of rural social groups in the "Third World" in the context of development and globalization; emphasis on grassroots initiatives and resistance movements.
Food						
AEDECON	2580	Feast or Famine: The Global Business of Food	3	soc sci human, nat, and econ resources and diversity global studies		Global and regional trends in food consumption and production are surveyed. Trade, technological change, and other responses to food scarcity are analyzed.
AEDECON	4532	Food Security and Globalization	3		Econ 2001	Examination of the causes and solutions for food insecurity. Global and local factors that affect access to food are also considered.

Offering Unit	Course No.	Course Title	Cr.	GE Category(s)	Pre-requisites	Course Description
Water						
EARTHSCI	3411	Water Security in the 21st Century	3		Soph standing	Examine the major issues that are contributing to the decline in quantity and quality of global freshwater resources and the resultant environmental and societal impacts
INTSTDS	4532	Food Security and Globalization	3		Econ 2001	Examination of the causes and solutions for food insecurity. Global and local factors that affect access to food are also considered.
Health						
PUBHLTH	2010	Introduction to Global Public Health	3			Public health concepts examining the philosophy, purpose, history, organization, functions, and results of public health practices domestically and internationally. Presents the pressing global public health concerns of the 21st century.
Cultural Competency						
ESHESA	2577	Crossing Boundaries: A Journey Towards Intercultural Leadership Identity Development	3	Diversity		Builds on intellectual and experiential engagement with issues of difference, diversity, social justice, and alliance building. GE diversity soc div in the US course.
Other						
GEOG	3701	Making of the Modern World	3	soc sci organizations & polities and diversity: global studies		The geographies of modernity and their formation: the world market, the global polity, diasporas and constructing difference, colonialism, the transformation of nature, Eurocentricity, post-modernity.
GEOG	3800	Geographical Perspectives on Environment and Society	3	soc sci human, nat, and econ resources		Geographical understanding of interactions between society and environment; how historical and contemporary views of the environment influence people's actions toward the environment and other people.
GEOG	3701	Making of the Modern World	3	soc sci organizations & polities and diversity: global studies		The geographies of modernity and their formation: the world market, the global polity, diasporas and constructing difference, colonialism, the transformation of nature, Eurocentricity, post-modernity.
POLITSCI	4282	The Politics of Income Inequality	3			Introduces fundamental politics of income inequality and redistribution, including social policy development, redistributive policy differences between countries, and popularity of differing welfare programs.
SOCIOL	3302	Technology and Global Society	3			Social aspects of technology, social change, and technological development; underdevelopment and the global economy
SOCIOL	3306	Sociology of Poverty	3	Soc Div in the US		A study of low-income peoples, especially concerning the effect of poverty on them, and their consequent social participation.
SOCIOL	3463	Social Stratification: Race, Class, and Gender	3	soc sci human, nat, and econ resources		The study of social inequality with a focus on inequalities by class and status, race and ethnicity, and gender.
SOCIOL	3597.01	World Problems in Global Context	3	cross-disciplinary seminar course		Sociological analysis of contemporary world societies - non-industrialized, industrializing, and industrialized - with special attention to major social institutions and patterns of social change.