

GLOBAL HEALTH TECHNOLOGIES

THE GEORGE R. BROWN SCHOOL OF ENGINEERING,
THE WEISS SCHOOL OF NATURAL SCIENCES, THE
SCHOOL OF HUMANITIES, AND THE SCHOOL OF
SOCIAL SCIENCES

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DEGREES OFFERED: NONE

Rice 360°: Institute for Global Health Technologies collaborates with a number of departments to offer Rice undergraduate students a minor in global health technologies (GLHT) through the Beyond Traditional Borders (BTB) initiative—a unique, multidisciplinary program to educate and train students to reach beyond traditional disciplinary and geographic boundaries to understand, address, and solve global health disparities. With complementary contributions from the humanities, social science, policy, bioscience, and engineering programs at Rice, the GLHT minor prepares students to integrate diverse perspectives as they develop solutions to the complex problems of global health, using the formal approach of the engineering design process.

Advances in biotechnology and bioengineering are transforming how disease is detected and treated, and have led to significant advances in health over the last 50 years. Developing countries, however, have largely missed out on the gains in health enjoyed by the rest of the world, and the HIV/AIDS pandemic has greatly increased the complexity of health challenges faced by the world's poorest regions. With the GLHT minor, BTB aims to create future leaders who can develop effective solutions to significant world health challenges. Many students pursuing the GLHT minor—having been trained to develop and implement appropriate biotechnology and bioengineering solutions that integrate scientific, engineering, health, policy, and economic data perspectives—enter careers in medicine, public health, public policy, and international development.

Students begin the GLHT minor sequence (five core courses and two elective courses) in a multidisciplinary gateway course, choosing between one of two tracks based on their major course of study for teaching focused on their area of expertise. Having fostered a command of specialized knowledge relevant to the development of technologies appropriate for resource-constrained settings, students conclude the GLHT minor with a common capstone course that enables them to benefit from one another's proficiencies as they work in interdisciplinary teams to address a global health challenge.

- In the **Engineering and Science track**, undergraduates take a series of courses leading to a year-long capstone design experience. Beginning with GLHT 362 *Bioengineering for Global Health Environments*, students are provided an

overview of scientific, economic, and policy issues associated with biotechnology and bioengineering advances to address global health needs. A seminar-style design course, GLHT 260 *Appropriate Design for Global Health*, introduces students to the range of challenges faced by the least developed countries in the pursuit of healthy populations. Guest speakers from relevant departments at Rice and from BTB collaborating institutions make the course accessible to students of all disciplines. Next, GLHT 361 *Metabolic Engineering for Global Health Environments* provides students with expertise in biotechnology and bioengineering applied to international health problems. Finally, GLHT 461/462 *Global Health Design Challenges* requires multidisciplinary teams of students, mentored by interdisciplinary faculty teams, to work together in a two-semester course to develop a solution to an international health challenge.

• Likewise, **Humanities, Social Science, and Policy track** undergraduates completing the GLHT minor take a series of courses, also leading to the capstone design experience GLHT 461/462 *Global Health Design Challenges*. Alongside science and engineering students, they begin with the course GLHT 301 *Bioengineering and World Health*, the nontechnical version of GLHT 362, followed by GLHT 260 *Appropriate Design for Global Health*. The track is rounded out by GLHT 122 *Fundamental Concepts in Biology*.

REQUIREMENTS FOR MINORING IN GLHT

Students must complete five core courses in the science and engineering track or the humanities, social science, and policy track, depending upon their major course of study. In addition to the core course sequence, students must complete a minimum of two elective courses.

Science and Engineering Track Core Courses

- GLHT 362 *Bioengineering for Global Health Environments*
- GLHT 260 *Appropriate Design for Global Health*
- GLHT 361 *Metabolic Engineering for Global Health Environments*
- GLHT 461/462 *Global Health Design Challenges*

Humanities, Social Science, and Policy Track Core Courses

- GLHT 301 *Bioengineering and World Health*
- GLHT 260 *Appropriate Design for Global Health*
- GLHT 122 *Fundamental Concepts in Biology*
- GLHT 461/462 *Global Health Design Challenges*

All core courses will be offered each year: GLHT 122, GLHT 301, GLHT 362, and GLHT 461 in the fall and GLHT 260, GLHT 122, GLHT 361, and GLHT 462 in the spring. The sequence indicated is the recommended sequence, and pre-requisites may apply, although some flexibility is possible. Prior to enrollment in the capstone course GLHT 461/462, students must successfully complete all other GLHT minor core course requirements per their track, although electives may be taken concurrently. There is no requirement to initiate the GLHT minor in the freshman year. It can be initiated as late as the junior year (beginning in the fall semester). It will be possible for students to receive credit for GLHT minor courses that also fulfill a requirement within their major. Students can petition the GLHT minor advisory committee to accommodate a change in their major course of study that impacts their minor track selection.

ELECTIVE COURSES

For a list of approved elective courses, covering a wide range of relevant topics, please visit www.beyondtraditionalborders.rice.edu and/or speak with the minor advisors.

ADMISSION

All GLHT minor courses are open to all Rice students, including those not pursuing the GLHT minor, with the exception of the capstone course GLHT 461/462 which is restricted to students completing the GLHT minor. For GLHT 260, students are required to submit a short application (available at www.beyondtraditionalborders.rice.edu) to gain instructor permission to register for the course. Preferential admission to GLHT 260 will be given to students who indicate they are seeking to complete the GLHT minor course of studies.