Rice 360 Institute for Global Health Technologies collaborates with multiple departments to offer students a minor in Global Health Technologies (GLHT), 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.

The minor is open to Rice undergraduate students from all disciplines and requires completion of seven courses, including five core courses, and two electives. Students begin the minor by taking GLHT 201, which provides an overview of contemporary challenges and advances to improve human health. The course opens with an introduction to the epidemiology and physiology of the major human health problems throughout the world. With this introduction, we examine medical technologies to prevent infection, detect cancer and treat heart disease. The course is designed for non-engineering / non-science majors.

Throughout the program, GLHT students benefit from receiving guidance and mentorship from Rice faculty and graduate students, as well as from partner organizations and clinicians in the Texas Medical Center and in low-resource settings, to design robust, low-cost, effective health technologies.

Minor


Global Health Technologies does not currently offer an academic program at the graduate level.

Director and Advisor

Rebecca Richards-Kortum

Undergraduate Advisors

Elias K. Bongmba
Z. Maria Oden

Minor Advisor

Ashley R. Taylor

Steering Committee

Pedro J.J. Alvarez
Rachel Tolbert Kimbro
Douglas A. Schuler
Tomasz Tkaczyk

For Rice University degree-granting programs:
To view the list of official course offerings, please see Rice's Course Catalog (https://courses.rice.edu/admweb/!SWKSCAT.cat?p_action=cata)
To view the most recent semester's course schedule, please see Rice's Course Schedule (https://courses.rice.edu/admweb/!SWKSCAT.cat)

Global Health Technologies (GLHT)

GLHT 201 - INTRODUCTION TO GLOBAL HEALTH

Short Title: INTRO TO GLOBAL HEALTH

Department: Global Health Technologies

Grade Mode: Standard Letter

Course Type: Lecture

Distribution Group: Distribution Group III

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: This course provides an overview of contemporary challenges and advances to improve human health. The course opens with an introduction to the epidemiology and physiology of the major human health problems throughout the world. With this introduction, we examine medical technologies to prevent infection, detect cancer and treat heart disease. The course is designed for non-engineering / non-science majors.
GLHT 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

GLHT 314 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
Short Title: SUST WTR PURIF FOR DEV WORLD
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: BIOE 365, CEVE 314. Repeatable for Credit.

GLHT 360 - APPROPRIATE DESIGN FOR GLOBAL HEALTH
Short Title: APPRO DESIGN FOR GLOBAL HEALTH
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): GLHT 201
Description: Seminar-style introductory design course covering epidemiology, pathophysiology, health systems, health economics, medical ethics, humanitarian emergencies, scientific and engineering design methods, and appropriate health technology case studies. To register, you must be enrolled in the GLHT minor. The minor and course prerequisite is waived for students majoring in Bioengineering. Instructor Permission Required. Cross-list: BIOE 360.

GLHT 392 - NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING
Short Title: NEEDS FINDING & DEV IN BIOE
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in this course will learn and develop the engineering skill of needs finding in the field of bioengineering focused on designing for disabilities. Students will work in groups with patients with disabilities to identify daily needs and develop design criteria to meet those needs including preliminary prototype development. Instructor Permission Required. Cross-list: BIOE 392.

GLHT 390 - GLOBAL HEALTH TECHNOLOGIES INDEPENDENT RESEARCH PROJECTS
Short Title: GLHT INDEPENDENT RESEARCH
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course enables undergraduates pursuing the Global Health Technologies Minor to perform independent research on a specific design challenge in global health technology and innovation. Students are advised by the faculty and often mentored by a graduate student/post-doc. Instructor Permission Required. Repeatable for Credit.
Course URL: www.btb.rice.edu (http://www.btb.rice.edu)

GLHT 401 - GLHT RESEARCH PAPER WRITING AND SUBMISSION
Short Title: GLHT RESEARCH REPORTING
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Students in this course will work in the preparation of a paper reporting a previously completed design project. Instructor Permission Required. Repeatable for Credit.

GLHT 411 - INTEGRATED APPROACHES TO SUSTAINABLE DEVELOPMENT
Short Title: SUSTAINABLE DEVELOPMENT
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is a multidisciplinary course in which students explore the origins, connections and consequence of social and political tensions arising from the expansion of commercial energy resources in unique and rapidly changing Arctic and sub-Artic environments. The challenge for the class will be to understand that in matters of sustainable development systemic complexities often give rise to a disconnect between analysis and decision-making. Topics will include the impacts of commercial energy development and drilling in rapidly changing Arctic environments, as well as strategies that can promote sustainable development and improved conditions for indigenous populations in the context of environmental challenges associated with the Arctic meltdown and drilling activities for oil and gas. Methodologies for structuring the analysis to be applied to enhance systemic resilience of the Alaska environment will be presented. Students will learn explore the barriers to sustainable development and discuss cost-effective, culturally appropriate solutions to energy related issues by integrating technical, organizational, and personal perspectives. Each class will have formal lectures(s) by Rice faculty or guest lecturer. Registered students are eligible to apply for a summer internship in Alaska. Recommended Prerequisite(s): POST 401 Mutually Exclusive: Cannot register for GLHT 411 if student has credit for POST 411. Repeatable for Credit.
GLHT 449 - TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT

Short Title: MED BIOENGINEERING WORKSHOP

Department: Global Health Technologies

Grade Mode: Standard Letter

Course Type: Laboratory

Credit Hours: 1

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Bioengineering course in the troubleshooting, repair, and maintenance of standard biomedical equipment used in hospitals in the developed and developing worlds. Cross-list: BIOE 449. Repeatable for Credit.

GLHT 451 - GLOBAL HEALTH DESIGN CHALLENGES I

Short Title: GLOBAL HEALTH DESIGN I

Department: Global Health Technologies

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): GLHT 201 and (BIOE 360 or GLHT 360) and (GLHT 363 or BIOS 363 or PSYC 480 or SOCI 345)

Description: Students in this course will work on design projects to address global health disparities. Students will work in teams and partner with bioengineering students to develop solutions to particular problems in delivering healthcare in the developing world. Students must take GLHT 452 in the spring semester to complete their projects. Instructor Permission Required.

Course URL: www.btb.rice.edu (http://www.btb.rice.edu)

GLHT 452 - GLOBAL HEALTH DESIGN CHALLENGES II

Short Title: GLOBAL HEALTH DESIGN II

Department: Global Health Technologies

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): GLHT 451

Description: Students in this course will work on design projects to address global health disparities. Students will work in teams and partner with bioengineering students to develop solutions to particular problems in delivering healthcare in the developing world. Students must have taken GLHT 451 in the fall semester to initiate their projects.

Course URL: www.btb.rice.edu (http://www.btb.rice.edu)

GLHT 464 - SOCIAL ENTREPRENEURSHIP

Short Title: SOCIAL ENTREPRENEURSHIP

Department: Global Health Technologies

Grade Mode: Standard Letter

Course Type: Seminar

Distribution Group: Distribution Group II

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has four distinct parts: social context; organizational forms and collaborations; private sector roles; and measurement and impacts. Various aspects of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism will be covered. From this foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: food insecurity and food deserts. Cross-list: BUSI 464, SOSC 464.

GLHT 510 - SEMINAR IN TROPICAL MEDICINE

Short Title: SEMINAR IN TROPICAL MEDICINE

Department: Global Health Technologies

Grade Mode: Satisfactory/Unsatisfactory

Course Type: Seminar

Credit Hour: 1

Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: 8 week lecture series on topics in global health. The theme for this offering is one health; integrating efforts to obtain optimal health for humans, animals, and the environment. Offered in conjunction with the new National School of Tropical Medicine, the course will feature lectures by various experts on the public health issues most pressing in poor populations in the world today. Course open to all undergraduates and graduate students. Cross-list: BIOE 510. Repeatable for Credit.
GLHT 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: GLHT

Department (or Program) Description and Code
• Global Health Technologies: GLHT

Undergraduate Minor Description and Code
• Minor in Global Health Technologies: GLHT

CIP Code and Description
• GLHT Minor: CIP Code/Title: 14.0501 - Bioengineering and Biomedical Engineering

Classification of Instructional Programs (CIP) 2020 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/