

UG Course Syllabus: UCOP 3200 - Design for Global Health

[Course Title]: Design for Global Health

[Course Code]: UCOP3200

[No. of Credits]: 3

[Any pre-/co-requisites]: N/A

Name:

| Name | Email | Office |
|------------------------|--|--------|
| Prof. Ying CHAU | keychau@ust.hk | 4555 |
| Dr. Malinda ABEYNAYAKE | malinda@ust.hk | 2513 |

Course Description

This course is offered by Student Innovation for Global Health Technology (SIGHT) at HKUST, and is a project-based, experiential course that exposes students to tackle global health problems using design thinking as an innovation process. The goal of this course is to develop students' critical thinking, understand the needs of different communities around the world, and improve communication, design skills through a multi-disciplinary, team-based design experience. Each team will set objectives at the beginning of the semester after getting the needs of communities via the project partners. There will be several task-based assessments throughout the semester to check the progress of each project team, as evaluated by the teaching team, faculty advisors, and project partners. At the end of the semester, students need to showcase their output as a roadshow.

This common core course is open to students from any academic background looking for practical experience in design thinking and motivation to tackle global health issues. The instructor's approval is required for enrollment in the course.

Course ILOs

- State and explain the process modules of design thinking
- Apply design thinking mindset to identify and analyze user needs in the global health context
- Collaborate and communicate effectively in a multi-disciplinary team
- Define the scope of the problem and develop innovative ideas to address the user needs
- Engage in iterative prototyping processes and evaluate solutions to effectively tackle global health challenges

Class time: 3 hours per week, Thu 18:00 – 19:30 and one more time slot for each project team.

Projects

PROJECT A1: Telemedicine Implementation in Haputale

Continue developing our telemedicine app, HapuTele, with the Two Leaves Trust Foundation. This project aims to enhance healthcare delivery in rural communities through integrated hardware and software solutions, while also empowering local youth by providing IT training for future technical support.

PROJECT A2: Drone Technology for Medicine Delivery in Haputale

Partner with the Two Leaves Trust Foundation to utilize drone technology to deliver life-saving medicine, dramatically cutting transfer times to remote communities in Haputale that are hard to reach due to challenging terrain.

PROJECT B: Community Health Screening in Haputale

Enhance community screening programs in partnership with the Two Leaves Trust Foundation to improve health access and outcomes for rural communities.

PROJECT C: Community Health Technology Collaboration with the University of Kelaniya

Collaborate with undergraduates from the Faculty of Medicine at the University of Kelaniya. Brainstorm and integrate innovative technology solutions into their Community Attachment Program, gaining direct insights from medical students to enhance real-world project outcomes.

Multi-Dimensional Implementation Last Year (Summer 2025):

- Plastic Waste Management & Health: Addressing the dangerous practice of open plastic burning, teams established community recycling programs, built collection shelters, and conducted households education on waste sorting.
- Water Purification & Hygiene Education: Students developed and tested an educational card game to promote clean drinking water habits, conducting workshops reaching 150+ students. This gamified approach was well-received by community partners.
- Nutrition Education Program: SIGHT teams conducted interactive workshops in temples and primary schools, teaching children about macronutrients, the dangers of excessive salt/sugar, and healthy cooking through hands-on activities.

PROJECT D: Data Management for Hypertension Patients in the Philippines

Create a system to streamline data flow between a local health center and Philos Health. This vital tool will help track at-risk residents and ensure health workers are updated on drug prescriptions and hypertension management plans.

PROJECT E: Data Management for a Children's Dental Health Clinic in the Philippines

Assist a children's dental clinic by creating or modifying a simple, intuitive data interface. This project will ease data input and improve the communication system between the clinic and the children it serves.

SCHEDULE

- The schedule may be subject to minor changes depending on the circumstances.
- The arrangements for different teams may vary slightly based on project nature.

| | |
|----------------|---|
| Week 1 | <ul style="list-style-type: none"> • Kickstart Meeting/Introduction to SIGHT UCOP 3200 project course – “Design for Global Health” • Skills assessment for the team during the 1st Team Meeting |
| Week 2 | Design Thinking Workshop <ul style="list-style-type: none"> • Prepare for Literature Review |
| Week 3 | <ul style="list-style-type: none"> • Extensive Literature Review on existing solutions/technologies & global market: <ul style="list-style-type: none"> ○ Each Team must present for 1 hour plus 15 minutes of Q&A during their Team Meeting • Communicate with partners and finalize project objectives • Finalize Project Objectives |
| Week 4 | <ul style="list-style-type: none"> • Prototyping Workshop • Team Work |
| Week 5 | <ul style="list-style-type: none"> • 1st Internal Check |
| Week 6 | <ul style="list-style-type: none"> • Communicate with partners and update the results/feedback of the 1st Internal Check |
| Week 7 | <ul style="list-style-type: none"> • Feedback session with faculty advisors |
| Week 8 | <ul style="list-style-type: none"> • 2nd Internal Check |
| Week 9 | <ul style="list-style-type: none"> • Communicate with partners and update the results/feedback of the 2nd Internal Check • Teamwork & preparation for the project pitch |
| Week 10 | <ul style="list-style-type: none"> • Internal Project Pitch |
| Week 11 | <ul style="list-style-type: none"> • Prepare for Roadshow • Submission of Roadshow posters |
| Week 12 | <ul style="list-style-type: none"> • Roadshow |
| Week 13 | <ul style="list-style-type: none"> • Submission of Final Documentation • Course debrief • Peer Evaluation |

Assessments:

| Assessment task | Contribution to Overall Course grade (%) |
|---|--|
| Literature Review: Presentation on existing solutions & global market | 10% |
| Internal Check ×2 | 20% |
| Project Pitch | 15% |
| Final Roadshow | 20% |
| Final Documentation | 15% |
| Self-reflection report | 5% |
| Peer Evaluation (2x) | 15% |

Literature Review: Presentation on existing solutions & global market

Each team will have a 60-minute presentation plus 15-minute Q&A. The content and presentation skills, such as coherence and use of visual aids, will be evaluated.

Information should be gathered from literature and other resources. An in-depth understanding and analysis of the potential users and existing solutions/products are expected. Students should be familiar with the situation and dynamics of the population and areas to be served. The review should also provide/identify:

- A solid background on the project problem

- Similar technologies/solutions currently used in other communities
- Strengths and weaknesses of existing solutions
- Any gaps in existing solutions, and
- Hence the opportunities to make your proposed solution distinctive to these existing solutions

Internal Check ×2

The prototypes will be tested on campus, in a setting simulating the real situation. The performance of prototype and the proficiency in collecting information from such testing will be evaluated.

Teaching team will design goals/milestones for each Internal Check, based on the initial objectives set by the team. Students are expected to obtain as much information as possible from the test, and incorporate the findings into the next round of iteration.

Project Pitch

After weeks of work, students will get a better understanding of exact user needs and develop more mature prototypes. Project teams will get a chance to Pitch their solutions to the class, gather in-depth feedback from peers and the teaching team.

Final Roadshow

The Final Roadshow to showcase your project to the UST community. The Roadshow should include the background and scope of the project, rationale and evolution of the design, demonstration of the prototype and introduction of the implementation plan.

Guests with relevant expertise and experience would be invited, such as SIGHT advisors, consultants, representatives from NGOs and social enterprises. The presentation is also open to the HKUST community. For evaluation, each team will have 15 minutes for demonstration and 15 minutes for Q&A.

Final Documentation

This report will likely be the key (or even only) document where students can pick up where you have left off. So you need to pass over all related files to us to be uploaded to SIGHT's GitHub, such as detailed description of your prototype, software codes with comments (if coding was involved), design files (pictures and figures to illustrate your prototypes, 3D modelling files), user manuals, results of user tests, feedback from partners, etc.

Required Texts and Materials

N/A

[Optional] Additional Resources

N/A