



City University of Hong Kong
College of Science and Engineering

National Academy of Engineering
Grand Challenges Scholars Program (GCSP)

The College of Science and Engineering (CSE) at the City University of Hong Kong recognizes the importance that our teaching and research activities are keeping up with the need of our society, and our world. Dedicated to providing our students with a forward-looking curriculum, CSE is keen to play a part in solving the Grand Challenges of the 21st century. In this connection, it made an application to join the GCSP, and became the very first tertiary institution in Hong Kong and Mainland China receiving the approval from NAE. The three main objectives of the program at CityU are to:

1. Foster the whole-person development of students, in particular their leadership skills
2. Provide an innovative learning platform for students to face the Grand Challenges
3. Adopt a holistic approach and build curricular connectivity into each student's scholarly plan by integrating five components (research experience, interdisciplinary curriculum, entrepreneurship, global dimension and service learning) with an emphasis on research experience.

GCSP Steering Committee

A College-based Steering Committee is formed to oversee and supervise the GCSP at CityU. The Dean of CSE will serve as the Chairman of the Committee, while Assistant Dean (Teaching Innovations) will serve as the Program Director. From a list of distinguished faculty, the Chairman and Program Director will select a team of 8-10 committee members from both science and engineering disciplines. The steering committee will be responsible for the following:

- To oversee the implementation of the project
- To review the program regularly for further enhancement
- To select students to join the program
- To assist mentors with any queries/problems which they may encounter while supervising the students
- To approve portfolios of students who successfully integrate the five major components

Faculty mentors

Each student will be supervised by a faculty mentor who are expert in one or more of the areas related to the 14 Grand Challenges and their information will be shown on the [CSE website](#). With a list of chosen faculty mentors, students could select their preferred mentors based on their research interest. The mentors will be responsible for the following:

- To assist the student in selecting the Grand Challenge and research direction;
- To provide coaching and advice to students
- To review the course work and learning progress of students
- To provide recommendation to the Steering Committee upon student's completion of the program.

Application and Selection

There are two stages of application for the GCSP. Each application will be considered by the Steering Committee. Decision will be made base on the relationship between the project/activities and the Grand Challenge(s), originality and creativity of the research project applicable and feasibility of the study plan to finish the requirement of the curricular components.

Stage one application:

Students are required to submit a statement of commitment and a preliminary proposal to describe the research project. They would also be required to submit their transcripts, and recommendation from at least one faculty mentor. The CGPA minimum requirement to enter GCSP is 2.70 out of 4.30.

Stage two application:

Students are required to submit a detailed proposal and a curricular plan. The proposal should describe the proposed research project which tackles at least of the 14 Grand Challenges, while the curricular plan should indicate the student's plan in fulfilling the five program components.

Mentorship, Support, Tracking and Assessment

Students' progress and performance will be reviewed on a continuous basis. They are required to submit an annual progress report, which should include the following:

- A summary of achievements and how they fulfill the five program components of GCSP;
- A portfolio containing all evidence of achievements (e.g. grades of relevant courses, transcripts, research work, certificates, reports etc.)
- A curricular plan for the coming year.

At the same time, they should meet with their faculty mentor(s) at least once per semester so that their mentor could closely monitor their progress and provide suitable coaching and guidance. As for the Final Year Project, students are expected to meet with their project supervisor on a regular basis.

Upon completion of the requirements of the five program components of the GCSP, students need to formally notify the Steering Committee about their completion the program. To this end, students are required to submit their final portfolio, together with a reflective essay to demonstrate how the learning and activities carried out in the five components relate to the selected Grand Challenge(s), and how their research have impacted the challenge under

investigation.

The final portfolio will be assessed by at least two members of the steering committee. Each group of member will make recommendation to the Director and the Dean. Final decision will be made as a whole. The assessment will be focused on the following areas:

- i. Completeness of the Final Portfolio;
- ii. Commitment to the program;
- iii. Uniqueness of the portfolio;
- iv. Creativity of the portfolio; and
- v. Integration of the chosen GC in fulfilling the curricular components

The steering committee will review each submission individually to assess whether they have successfully fulfilled all requirements of the GCSP and explored the selected Grand Challenge at sufficient depth. Students will be assessed on how their overall experience throughout the program cultivates an enhanced global awareness in their field of research and relates to their chosen Grand Challenge.

The criteria and assessment of performance may have some minor adjustments subject to operational changes within CityU. Nevertheless, the quality of the scholars will always be upheld by the steering committee. Students who successfully completed a GCSP will receive a certificate from the CSE. Each year, successful graduates of the program will be reported to NAE Grand Challenges Scholars Program steering committee.

Five GCSP Components

1. Research Experience

CityU is adopting a Discovery-enriched Curriculum framework, which gives all our students the opportunities to make original discoveries so that they learn what it means to create new knowledge, communicate it, curate it, and cultivate it to benefit society. The research topic must be related to at least one of the 14 Grand Challenges. Faculty mentors will guide the student to ensure that the research is gearing towards a path in providing pragmatic solutions in tackling a chosen Grand Challenge.

Both individual and group projects are acceptable, and interdisciplinary collaboration is highly encouraged. Students should submit a final report and a poster which is approved by the supervisor by the end of the research project. All GCSP students should conduct both a Final Year Project and a two-month summer research project.

Requirements

- Perform a two-semester long Final Year Project (FYP) with the topic related to at least one of the 14 Grand Challenges
- Present the FYP in the College's annual Student Project Exhibition
- Conduct a two-month summer research project* (minimum of 120 hours) with the theme related to one of the 14 Grand Challenges

2. Interdisciplinary Curriculum

All students from CityU are required to take 12 credit units of Gateway Education (GE) courses from three areas, with a minimum of 3 credit units from each area in order to fulfil the Distributional Requirements:

Area 1	Arts and Humanities
Area 2	Study of Societies, Social and Business Organizations
Area 3	Science and Technology

These GE courses are interdisciplinary in nature and prepare Engineering/Science students to work across boundary between an engineering and non-engineering disciplines.

Requirements

- *GE2304 Foundations of Innovation and Entrepreneurship* (Area 3) is a compulsory course to fulfill the entrepreneurship component; and
- Three other GE courses need to demonstrate the interdisciplinary component (i.e. minimum one course each from Areas 1 and 2).

3. Entrepreneurship

To fulfill the entrepreneurship component, it is compulsory for students to take the GE course *GE2304 Foundations of Innovation and Entrepreneurship*. The course aims to help students understand innovators and entrepreneurs. The overall goal is to nurture students' innovative mindsets, entrepreneurial spirit and collaborative and communication skills within a multi-disciplinary environment.

Aside from the above-mentioned GE course, students are also required to participate in at least one business plan/pitching competition and submit a reflective essay after completion of the experience. CityU has many resources and platforms in assisting students to turn innovative ideas into real products, services or business plans to advance social and economic development.

Requirements

- Complete the GE course *GE2304 Foundations of Innovation and Entrepreneurship* (Area 3)
- Participate in at least one business plan/pitching competition and submit a reflective essay after completion of the experience

4. Global Dimension

The CSE has always been very active in encouraging students to take part in overseas activities to broaden their horizons. This includes student exchange program, overseas internships and Cultural and Language Immersion Scheme. Students can satisfy the global dimension component through completion of an approved international or intercultural experience.

Requirements

To complete ONE of the following activities:

- Overseas Student Exchange Program
- Overseas Internship Scheme (OIS)
- Cultural and Language Immersion Scheme (CALIS)
- Overseas Study Tours
- Overseas Summer School
- Overseas Competition

And, submit a reflective essay to articulate the linkage between the global experience and the Grand Challenge(s).

5. Service Learning

Students are expected to develop and deepen their social consciousness and demonstrate motivation to bring their technical expertise to bear on societal problems. Students are strongly encouraged to integrate their research ideas to the service learning component. Thus, students could also carry out different types of service learning activities that are related to the 14 Grand Challenges. However, prior approval needs to be sought from the steering committee and the minimum number of service hours should not be less than 30 hours. They should also submit a report to their faculty mentor to reflect on the overall experience.

Requirements

To complete ONE of the following activities:

- City-Youth Empowerment Project (CYEP)
 - Minimum of 30 hours of services
 - Submit a report to the faculty mentor to reflect on the overall experience
- Servant Leadership Training Program (SLTP)
 - Meet the requirements laid down by the SLTP
 - Obtain endorsement on the completion of the program
- Other service learning activities related to the 14 Grand Challenges
 - Prior approval needs to be sought from the steering committee
 - Minimum of 30 hours of services
 - Submit a report to the faculty mentor to reflect on the overall experience

And, submit a reflective essay to articulate the linkage between the experience and the Grand Challenge(s).