

International Research Enrichment (IRE) Program

INTERNATIONAL RESEARCH ENRICHMENT (IRE) program is designed for students interested in pursuing a research career in science or broadening their exposure to research during their undergraduate studies. It emphasizes curiosity and grit, which are the essential attributes to a successful career in scientific research. Building upon the premise that exposure to international research environments at an early stage is essential to a fruitful research career, the program offers outstanding science students an early opportunity to nurture their research abilities and solidify their discipline-specific knowledge in regular Science programs.



The Hong Kong University of Science and Technology (HKUST) is a research-oriented university, which is well-known for its excellence in research. We have a wide international connection for offering students research opportunities in foreign universities. At HKUST, we are committed to achieving excellence in research, and to ensuring our research contributes to the social and economic development of Hong Kong and beyond. Our research culture nurtures and facilitates collaboration and innovation, which is why our campus is a magnet for some of the best and brightest minds. Researchers at the University are encouraged to take a multidisciplinary approach and to engage the public in solving a spectrum of problems.



PIONEER STUDY TRACK FOR TOMORROW’S SCIENTISTS

Program Curriculum

The IRE program (JS5101) has the same curriculum structure as the Science (Group A) program (JS5102) or Science (Group B) program (JS5103) of the School of Science at HKUST. However, students admitted to the IRE program can enjoy FREE choice among six major programs offered by the School: Biochemistry and Cell Biology, Biotechnology, Chemistry, Mathematics, Ocean Science and Technology, and Physics.

- It further distinguishes itself from the regular Science program by providing students with
- (i) Admission to The Undergraduate Research Opportunities Program (UROP),
 - (ii) Exchange to a foreign university, and
 - (iii) A summer research internship opportunity in a foreign university or institution.

“What unites us is a love of science and an insatiable curiosity.”

WORDS FROM IRE STUDENTS

International Research Enrichment students take on research projects under faculty supervisors as early as freshman year. Through accumulating a rich research background in the low-stakes environment of undergraduate studies, we can widen our perspectives and develop scientific thinking skills by experimenting with different fields and techniques.

However, IRE is not only an academic program – it is a lifestyle of its own. Not only has IRE offered me so many opportunities to push research frontiers, both on campus and overseas in the United States, but the program has also created a community of brilliant classmates and caring faculty who serve as my role models. In our study room, IRE students of all years and majors – from Life Science to Physics – gather to discuss course materials, assignments, as well as ridiculous science jokes and memes. It is through these peer interactions that I have become even more excited about science, and more determined in solving humanity’s most pressing health problems.

Raphaella SO Wai Lam
(Class of 2017)
BSc in Biochemistry and Cell Biology
Graduate studies offer: University of Toronto, PhD in Biochemistry

TAILOR-MADE RESEARCH COURSES WITH FACULTY MENTORING

Curriculum Design Philosophy

- *The need for excellent supervisors and program flexibility:* The program provides a nurturing environment to encourage students to interact among themselves and to delve deep into the subject(s) of their interests without limitations.
- Incorporation of a foreign research element broadens students' horizon in research skill development and fosters understanding of the relation between different research areas. This is essential for Hong Kong students because of the limited scope of research topics available in Hong Kong universities. The title “International Research Enrichment” emphasizes this aspect of the program.

The IRE program has offered me many research opportunities, allowing me to freely explore my research interest. I am grateful to be supervised by a number of faculty members to gain the essential background for performing cutting-edge research. Gaining research experience during my undergraduate studies has significantly sharpened my competitive edge for my PhD application. Within the IRE community, the academic atmosphere is strong.

Frequent discussion about advanced materials encouraged me to study much more than regular courses. This has prepared me to pursue further studies in Physics. Being a member in the IRE program has been a fruitful experience for me.



Johnny WU Tsz Chun
(Class of 2017)
BSc in Physics
Graduate studies offer: Rice University, PhD in Physics

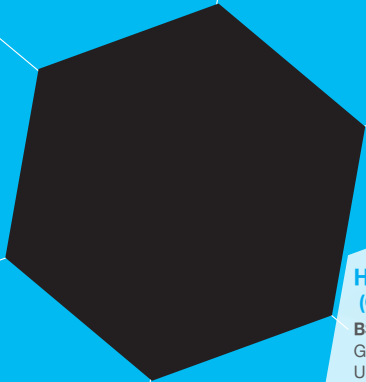
Rachel LIAW Ming Wai
(Class of 2018)
BSc in Chemistry
Graduate studies offer: The Hong Kong University of Science and Technology, MPhil in Chemistry

Thanks to the IRE program, I met many faculty and researchers who are devoting in scientific research and let me see that pursuing a research career in Hong Kong is actually possible. I started working in research project in year 2, where I gained hands-on experience in doing literature review, designing, conducting and evaluating the experiments. The project makes me first taste the sense of satisfaction of doing research. In my overseas research internship, I worked as a full time researcher in an organic synthesis research group in Japan. Though the experimental techniques are similar, the research culture and approach are different. My classmates who are also passionate in science supports me to keep trying when there is bottleneck in my research project. The many research opportunities and supports built my confidence in being a researcher.

EXPOSURE TO CONTEMPORARY RESEARCH FIELDS

Program Highlights

- Free choice of major programs among Biochemistry and Cell Biology, Biotechnology, Chemistry, Mathematics, Ocean Science and Technology, and Physics
- Tailor-made team building activities and field trips
- Participation in advanced research projects under the supervision of world-class professors
- Opportunities to meet with Nobel Laureates and renowned scientists
- Individualized Research Guidance and Mentoring from experienced Faculty
- Undergraduate Research Opportunities Program (UROP)
- Exchange opportunity in a renowned foreign university
 - Summer research internship opportunity in foreign universities and institutions
 - Scholarship support for overseas learning trips



Harry TAM Pok Man
(Class of 2018)
BSc in Physics
Graduate studies offer: University of Pennsylvania, PhD in Physics

It is very fruitful! I have taken advantage of the many research opportunities offered by the IRE program. In the first two years, I was in Prof. Lortz’s research group doing experimental research on high-temperature superconductors. I continued my interest in this subject after I went for exchange at Columbia University and worked with a renowned theorist Prof. Andrew Millis on the novel superconductivity of FeSe. After returning to HKUST, I got a chance to join Prof. Vic Law’s research group and started to train myself to be a condensed matter theorist and get to know the field of topological superconductors. HKUST has given me plenty of training to be a serious researcher. I also met many friends who share similar ambitions and interests as I do. IRE has created an ideal environment for me to interact with brilliant students, PhDs, professors and even prominent researchers from foreign institutes.



OVERSEAS SUMMER RESEARCH INTERNSHIP

Examples of Internship Host Institutions in 2018

North America	
Stanford University	Harvard University
Massachusetts Institute of Technology	Yale University
University of Chicago	University of California Santa Barbara
University of California Los Angeles	Northwestern University
University of California Berkeley	Boston University
McGill University	
Europe	
Technical University of Munich, Germany	École Polytechnique Fédérale de Lausanne, Switzerland
Paul Scherrer Institut, Switzerland	

FURTHER STUDIES OPPORTUNITIES

Examples of PhD Offers of the Class of 2018
Institution / Program

Johns Hopkins University / Neuroscience	Cornell University / Physics
University of Pennsylvania / Physics	Oxford University / Physics
Columbia University / Mathematics	University of Texas at Austin / Mathematics
University of California, Berkeley / Chemistry	Sussex University / Physics

ADMISSION

Direct Year 1 or Transfer in Year 2

The IRE program is an independent and separate program choice. Students can apply for the IRE program through the direct choice in JUPAS, or apply for transfer from the regular Science (Group A) program or Science (Group B) program of the School of Science into IRE after their first year of study. Students interested in the IRE track are encouraged to include either one of Science (Group A) program (JS5102) or Science (Group B) program (JS5103), and the IRE program (JS5101) in their program choices.

To be admitted to the IRE Program, HKDSE students must fulfill the HKUST's general admission requirements and School of Science's specific requirements, and must pass the IRE admission interview.

Admission Requirements (JUPAS Applicants with HKDSE Results)

University General Requirements

- i. 4C + 2X (four core subjects plus two electives), or
- ii. 4C + M1/M2 + 1X (four core subjects with Mathematics Extended Module 1 or 2 plus one elective)

Minimum Level Requirements

Subject^	Level
English Language	3
Chinese Language	3
Mathematics (Compulsory Module)	2
Liberal Studies	2
Elective 1* (Science Elective)	
Must be one of: Biology / Chemistry / Physics / Combined Science / Mathematics (Compulsory Module) OR M1 / M2	3
Elective 2*	
Any one Category A subject OR M1/M2	3



JUPAS Score Calculation for IRE Program (JS5101)

(1) Eng + (2) Math + (3) & (4) Best TWO science electives + (5) Next Best ONE subject

Subject 1	English Language
Subject 2	Mathematics
Subject 3 & 4	Best Two Science Electives Must be two subjects from: Biology, Chemistry, Physics, M1, M2 or Combined Science
Subject 5	Next Best One Subject Can be core, M1/ M2 or any Category A subject

Remarks:
^ Only Category A core and elective subjects (including Mathematics Extended Part Module 1 or Module 2, i.e. M1/M2) are used in the admission score calculation.
* Elective subjects may include M1/M2.

ADMISSION SCHOLARSHIPS

The University and the School of Science offer a number of scholarships to award students for their academic and non-academic excellence both upon entry and during the course of study. In 2018/19 academic year, over 2,300 scholarships and prizes were awarded to undergraduate students in various programs of study, with the total value awarded amounting to approximately HK\$73 million.

Please refer to the QR code for information on scholarship for JUPAS students.



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INTERNATIONAL
RESEARCH
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PROGRAM (IRE)

JUPAS code: JS5101

