Bachelor of Science (BSc) & Master of Research (MRes)

Incubating the next generation of scientists

2024 - 25 (September 2024 intake)

Double degree programme
Is the Programme for You

We understand the learning pace and needs of highly able students might be different – they are quick learners who can usually accomplish more than expected, and therefore a standard pedagogical routine might not be an ideal option for them.

This elite programme:

- Provides a fast-track of study for talented students: completing 2 degrees at an accelerated pace
- caters specifically to the needs of science-inclined students, with more learning opportunities, intensive training and inspirations
- allows research-aspired students to immerse themselves in an authentic research environment and learn from researchers with diverse backgrounds
- incubates the next generation of dynamic scientists who are able to translate scientific knowledge into practical applications with far- and wide-reaching impacts

Why this Programme

Eminent Subject Rankings

- #43 Life Sciences
- #47 Physical Sciences
- #21 Life Sciences & Medicine
- #81 Natural Sciences

Top-notch Scientists in the Faculty

Clarivate Analytics’ Essential Science Indicators
18.3% of our professoriate staff (average over the past decade) are classified as Top 1% of scholars

International Environment

About 40% of academic staff in the Faculty are from overseas
WHAT the Programme Covers

Fast-track for completing 2 degrees

Remarks: Students in the programme have to maintain a high CGPA in order to remain in this double degree programme or else they have to switch to the 6901 BSc programme.

Scholarships will be provided to cover at least 50% of the tuition fee of the MRes programme.

Subject to review.

WHAT You will Learn

YEAR 1
University Education
(36 credits + non-credit bearing requirement)

YEAR 2
Intensive Majors

YEAR 3
Special tutorials by Grand Masters
exclusive for this programme

YEAR 4
Research-oriented

Programme Information

<table>
<thead>
<tr>
<th>BSc 240 credits</th>
<th>MRes 63 credits</th>
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<tr>
<td>Study load</td>
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<tr>
<td>303 credits for 2 degrees</td>
<td>240 credits</td>
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<td></td>
<td>63 credits</td>
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<td>Class schedule</td>
<td>Full-time</td>
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| Academic advising| - Students in the programme will be given individual advice to properly plan their study
|                  | - Each student will be assigned an academic adviser at the start of the study to guide them through the whole study |
| Tuition fees*   |                 |
| HKD 42,100 per year (local) | HKD 120,000* |

*Scholarships will be provided to cover at least 50% of the tuition fee of the MRes programme.

*Subject to review.
WHERE this Programme will Lead You to

Professional recognition
Some of the Intensive Majors fulfill the accreditation requirements of various societies in the UK

Career development & network
• Nurtures students who intend to pursue research in science
• After completing the BSc and the MRes, students will be fully equipped to further pursue graduate studies in prominent universities overseas or in HKU
• Builds a consortium of young researchers for cross fertilisation of innovative ideas and facilitates possible multidisciplinary projects

Transferable skills
• Provides students with extensive subject knowledge and specialised training
• Nurtures a scientifically literate population to formulate solutions for research challenges

WHO should Join this Programme
Students who would like to:

- Be future masters of science
- Obtain a diversity of experience by learning from the Grand Masters of the Faculty of Science
- Conduct research during both their undergraduate and master level studies
- Enjoy all privileges YSS has to offer
- Go onto higher degrees either in HKU or overseas
- Complete 2 degrees at an accelerated pace

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Hear from Our Students

Jerry NG
BSc&MRes Year 3 student
Summer Research Fellowship participant

HKU Science is the only Faculty offering an intensive major programme in Ecology & Biodiversity in Hong Kong, and this is why I am here! I am eager to learn directly from the grand masters and masters—a precious opportunity exclusive to students of this Science Master Class programme, so that I can further enrich my knowledge and develop my practical skills in Ecology and Biodiversity. I hope this programme can equip me to conduct research about habitat studies of succulent plants in Mexico, South Africa and Madagascar in the future.

With various opportunities offered by this programme, I was able to participate in the ecology research work that I have always been interested in. During my first year at HKU, I assisted with research in ants, butterflies and spiders. Through all those research experiences, my understanding of ecology and biodiversity deepened, which made me one step closer to my dream to be a researcher. Besides, by learning from the Grand Masters in a series of master tutorials, I acquired fascinating transdisciplinary knowledge and methods of conducting research. Furthermore, inspired by their passion for scientific research, I hope one day I can devote myself to ecology research and protect the beautiful yet delicate natural world.

Clare GUO
BSc&MRes Year 2 student

• Provides an accelerated route to achieve the professional qualification with completion of the programme and fulfillment of specific project requirement

Biological Sciences (Intensive)
Ecology & Biodiversity (Intensive)
Molecular Biology & Biotechnology (Intensive)

Geology (Intensive)

Chemistry (Intensive)
Your Programme Experts

We have renowned scientists including:

- Members of Chinese Academy of Sciences, Hong Kong Academy of Sciences, and Hong Kong Young Academy of Sciences
- International Members of National Academy of Sciences USA and a Foreign Member of Academia Europaea
- Awardees of International/National Awards/Prizes
- A number of highly cited scientists

Get to know our Grand Masters

◆ **Professor Chi Ming CHE**
Zhou Guangzhao Professor in Natural Sciences
Chair Professor of Department of Chemistry

As an Elected Member of the Chinese Academy of Sciences, the first Hongkonger to receive a First-class Prize of the State Natural Science Award and recipient of numerous awards in international academic arena including International Member of the US National Academy of Sciences, Professor Che’s pioneering study on synthetic chemistry shapes the culture of local research community. Steering the direction of profound research like Laboratory for Synthetic Chemistry & Chemical Biology and State Key Laboratory of Synthetic Chemistry, his wisdom can definitely inspire one’s heart.

◆ **Professor Ngaiming MOK**
Edmund and Peggy Tse Professor of Mathematics
Director of Institute of Mathematical Research
Chair Professor of Department of Mathematics

As a top-notch mathematician who has resolved many classic math problems, Professor Mok has been the leading figure and the brain of HKU Institute of Mathematical Research for years. Among his recent professional accolades, Member of the Chinese Academy of Sciences, State Natural Science Award, Member of the Hong Kong Academy of Sciences, Future Science Prize, Tan Kah Kee Science Award and Chern Prize are some of the representative ones. He appreciates the aesthetics of mathematics, which young intellectuals will find his “mathematics-as-life” attitude enlightening.

◆ **Professor Alice Sze Tsai WONG**
Associate Vice-President (Research)
Chair Professor of School of Biological Sciences

Professor Wong is a knowledgeable biologist who leads a team of scientists studying cell adhesion and signal transduction in cancer. She is a recipient of the RGC Senior Research Fellowship and also the Croucher Foundation Senior Research Fellowship. While her work provides important insights into the nature of ovarian carcinogenesis and informs the best practices of identifying new targets in cancer diagnosis and therapy, her experiences at laboratory are equally inspiring.

◆ **Professor Vivian Wing Wah YAM**
Philip Wong Wilson Wong Professor in Chemistry and Energy
Chair Professor of Department of Chemistry

Not only can we learn from Professor Yam of her innovative and frontier research, her resilience and values also inspire us on how to stay focused and insist on quality and excellence. Despite the many recognitions she has received, such as State Natural Science Award, Elected Member of Chinese Academy of Sciences, International Member of the US National Academy of Sciences, Laureate of L’Oreal-UNESCO Awards For Women in Science, Bailar Medal, and Josep Michl American Chemical Society (ACS) Award in Photochemistry, etc., she remains committed in pursuing and passing on knowledge and does not let go of chances to inculcate values to the young ones. Professor Yam is also the President of The International Organization for Chemical Sciences in Development (IOCD).

◆ **Professor Hongjie DAI**
Chair Professor of Department of Chemistry

Professor Dai’s research spans chemistry, physics, and materials and biomedical sciences, leading to materials with properties useful in electronics, energy storage and biomedicine. Recent developments include near-infrared-II fluorescence imaging, ultra-sensitive diagnostic assays, a fast-charging aluminum battery, alkali metal/Cl2 batteries and inexpensive electrocatalysts that split water into oxygen and hydrogen fuels. Among many awards, Professor Dai has been recognised with the ACS Pure Chemistry Award, APS McGroddy Prize for New Materials, Julius Springer Prize for Applied Physics and Materials Research Society Mid-Career Award. He has been elected to the American Academy of Arts and Sciences, National Academy of Sciences (NAS), National Academy of Medicine (NAM) and Foreign Member of Chinese Academy of Sciences.

Skills alone would not make one succeed. It is the attitude, visions and efforts that set one’s direction. Learn from the wise and broaden your horizon.
Students in local secondary schools taking the Hong Kong Diploma of Secondary Education Examination (HKDSE) should apply through JUPAS.

Minimum requirements:

- Mathematics and Science subjects required.

Science elective subjects: Biology, Chemistry, Physics, Combined Science

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<tr>
<th>JUPAS Applicants</th>
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<tr>
<td>English Language</td>
<td>Chinese Language</td>
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<tr>
<td>Level 3</td>
<td>Level 3</td>
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*Science elective subjects: Biology, Chemistry, Physics, Combined Science

Non-JUPAS applicants will be considered on a case-by-case basis. In general, excellent results in Mathematics and Science subjects are required.

Professor Wang Yao
Chair Professor of Department of Physics

Professor Yao is a condensed matter physicist. He has been named by Clarivate Analytics in the list of “Highly Cited Researchers” among the world’s eminent researchers in 2018 - 2022. His current research interest lies in 2D materials, and has played a decisive role in creating an important new research direction – valley optoelectronics, which aims to exploit valley, a quantum degree of freedom of electron, in future optoelectronic devices. He is an Elected Fellow of American Physical Society, RGS Senior Research Fellow, and recipient of Tencent Xplorer Prize, Huang Kun Prize, Nishina Asia Award and Founding Member of Hong Kong Young Academy of Sciences.

Your Programme Experts

Professor Shuang Zhang
Chair Professor of Department of Physics

Professor Zhang specialises in photonics, particularly in the area of metamaterials. His notable contributions include the first demonstration of geometric phase for harmonic generations, the pioneering of optical negative index materials, and the implementation of topological photonics using metamaterials. He has been recognised as a “Highly Cited Researcher” by Clarivate Analytics from 2018 to 2023 and is a Fellow of the American Physical Society and Optica. Professor Zhang has received prestigious awards, including the New Cornerstone Investigator Program, Royal Society Research Merit Awards, and IUPAP Young Scientist in Optics.

Professor Guochun Zhao
Chair Professor of Department of Earth Sciences

Professor Zhao has a clear mind in the face of challenges on his research of metamorphic petrology, Precambrian geology and supercontinents. His perseverance makes him the holder of many prestigious honours – Member of Chinese Academy of Sciences, National Natural Science Award (First-class, co-winner), State Natural Science Award (Second-class, co-winner), HKU Distinguished Research Achievement Award, and named by Clarivate Analytics as “Highly Cited Researcher” for 9 years in a row.