香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

ACADEMY OF 跨學科學院
INTERDISCIPLINARY STUDIES

WITHOUT BOUNDARIES

Welcome to the

Academy of Interdisciplinary Studies at HKUST!

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Dean's Message

Formed in 2008 as the Interdisciplinary Programs Office (IPO), we have grown rapidly into an education center nurturing cross-disciplinary professionals, an incubator for new interdisciplinary programs, and an interdisciplinary research powerhouse. In July 2023, IPO was renamed as the **Academy of Interdisciplinary Studies (AIS)** to reflect our school-level scale, the evolved functions in interdisciplinary education and research, as well as the new role as a special academic zone to carry out missions with flexibility and agility.

AIS has made many new initiatives in interdisciplinary education, including offering the Individualized Interdisciplinary Programs at both undergraduate and postgraduate levels – the first of their kind in the Greater China area, that allow students the academic freedom to create their custom majors; launching the first Dual Degree Program in Technology & Management in Hong Kong which provides high-flying students an opportunity to gain two full degrees in five years; the first in Hong Kong to introduce a novel academic framework "Major + X" as a new degree option for undergraduates to excel in an extended major of an emerging hot topic such as Artificial Intelligence or Digital Media and Creative Arts.

Currently, AIS offers over 10 undergraduate programs and postgraduate programs which are all highly interdisciplinary and relevant to our modern world. Offered by our world-class AIS faculty members, these exciting programs have attracted talented students globally, with our 1744 undergraduates hailing from 24 countries and 885 postgraduates comprising 24 nationalities as of January 2025.

AIS provides a nurturing environment for faculty members from different backgrounds working together for cutting-edge interdisciplinary research. Our faculty members are clustered into five academically significant and socially impactful divisions, namely the Division of Environment and Sustainability, the Division of Public Policy, the Division of Emerging Interdisciplinary Areas, the Division of Integrative Systems & Design, and the newly established Division of Arts and Machine Creativity, with a wide range of research focus in air and health, climate adaptation and resilience (CARE), green finance and net zero solutions, science, technology, and innovation policy, environment policy, sustainability, social changes, robotics and AI, IoT for integrative systems, art management and machine creativity, and other emerging areas. One-third of our faculty members have joint appointments with other departments like Mathematics, Computer Science and Engineering, Chemistry, Economics, Civil Engineering, and Social Science, to name a few.

In our rapidly evolving world, grand challenges faced by humans today require solutions beyond individual disciplines. AIS will explore new pedagogy to cultivate students' competencies in fusing knowledge and know-how from different fields to drive positive changes in the world. New interdisciplinary research clusters will be established at AIS to tackle today's challenging and multi-faceted issues. AIS also plays an important role in support of the strategic plan of HKUST, including HKUST (GZ).

As the Dean of AIS, I encourage you to join us in transcending traditional academic boundaries and broadening our reach through partnerships within the community, industry, academia in Hong Kong and beyond.

Sincerely,

Prof. QU Huamin
Dean, Academy of Interdisciplinary Studies

Fast Facts

Structure

Academy of Interdisciplinary Studies

- Division of Arts and Machine Creativity
- Division of Emerging Interdisciplinary Areas
- Division of Environment and Sustainability
- Division of Integrative Systems and Design
- Division of Public Policy
- Dual Degree Program of Technology and Management
- Undergraduate Core Education

Faculty Members (By Headcount) As of February 2025

School/Division	Regular Faculty (including teaching and research faculty)	Visiting/ Adjunct Faculty	Sub-Total	Total
Division of Arts and Machine Creativity	9	0	9	130
Division of Emerging Interdisciplinary Areas	11	3	14	
Division of Environment and Sustainability	32	15	47	
Division of Integrative Systems and Design	28	5	33	
Division of Public Policy	21	4	25	
Dual Degree Program in Technology & Management	2	0	2	

25%
regular faculty with interdisciplinary joint appointments

36%
AIS faculty ranked among the World's Top 2% of Most-cited Scientists 2024 by Stanford University^

^AIS tenure-track faculty as of Oct 2024

Student Enrollment as of January 2025

Undergraduate Programs	Enrollment	Subtotal	Total
Dual Degree Program in Technology and Management	202	416	1744
BSc in Environmental Management and Technology	119		
BSc in Individualized Interdisciplinary Major	6		
BSc in Integrative Systems and Design	14		
BSc in Sustainable and Green Finance	75		
Extended Major in Artificial Intelligence	1254	1328	
Extended Major in Digital Media and Creative Arts	74		

Postgraduate Programs		Enrollment	Subtotal	Total
Research Postgraduate Programs	MPhil / PhD in Atmospheric Environmental Science	MPhil: 11 PhD: 48	428	885
	MPhil / PhD in Environmental Science, Policy & Management	MPhil: 12 PhD: 26		
	MPhil / PhD in Individualized Interdisciplinary Program (Research Area)*	MPhil: 15 PhD: 264		
	MPhil / PhD in Integrative Systems & Design	MPhil: 5 PhD: 21		
	MPhil / PhD in Public Policy	MPhil: 2 PhD: 24		
Taught Postgraduate Programs	MSc / PGD in Environmental Science and Management	MSc: 146 PGD: 3	457	
	Master of Public Management	54		
	Master of Public Policy	184		
	MSc in Technology Leadership and Entrepreneurship	70		

*Including GZ Pilot Scheme

Interdisciplinary Education Pioneer

1744 undergraduates
24 nationalities

885 postgraduates
24 nationalities

BEST
Faculty-Student Relationship

STRONG
Partnership with Industry

TRUE
Interdisciplinary Education and Research

AIS has led the way in many areas within Hong Kong and in the broader region:

FIRST
in HONG KONG

- to establish an interdisciplinary academic unit among universities in Hong Kong
- to create an undergraduate dual degree program integrating technology and business knowledge – Dual Degree Program in Technology and Management
- to start an undergraduate program nurturing ecologically and economically sound future leaders to embed and advance sustainability – BSc in Environmental Management and Technology
- to start an undergraduate program filling the global talent gap for top level green and sustainable finance experts – BSc in Sustainable and Green Finance
- to introduce a novel academic framework "Major + X" as a new degree option for undergraduates to excel in an extended major of an emerging hot topic such as Artificial Intelligence or Digital Media and Creative Arts, in addition to a traditional major program
- to create an experiential degree learning educating technologists and innovators – BSc in Integrative Systems and Design
- to create an academic division to nurture ArtTech talents who can leverage cutting-edge technologies such as artificial intelligence (AI) and machine learning in art creation process – Division of Arts and Machine Creativity

FIRST
in GREATER CHINA

- to offer Individualized Interdisciplinary Programs at both undergraduate and postgraduate levels that allow students the academic freedom to create their custom majors

Our Divisions

Division of Arts and Machine Creativity

As the first of its kind in Hong Kong, the Division of Arts and Machine Creativity (AMC) is an interdisciplinary academic division envisioned to become a leading cross-disciplinary center where technology, art and humanities converge to drive creativity and innovation.

Research Areas

- **Machine Creativity**
- **Machine-assisted Art Practice**
- **Art Management**
- **Critical Studies on Arts and Machine Creativity**

Facilities

The Shaw Auditorium, Machine Creativity Lab (MACRE), and Hong Kong Generative AI Research and Development Center (HKGAI) support the development of AMC, ensuring a conducive environment for teaching, research, and creative exploration.

Division of Emerging Interdisciplinary Areas

Technology is evolving faster than ever and shaping the rules and future of our society.Organizations that do not keep up with some of the major tech trends run the risk of being left behind. Agility is essential to identify and grasp these opportunities. In collaboration with different Schools at HKUST, the Division of Emerging Interdisciplinary Areas (EMIA) envisions to foster and advance interdisciplinary innovation in education programs. EMIA also serves as an incubator of new interdisciplinary education and research and a coordinator of interdisciplinary activities.

Research Areas

- **AI+**
- **Media, Communication, Human-AI interaction**
- **Interdisciplinary Scientific Computing**
- **Remote Sensing**
- **Integrated Photonic - III-V Active Devices for photonic integration**

Division of Environment and Sustainability

We are living in a world facing serious interrelated environmental problems, including climate change, pervasive pollution, reduction in biodiversity, and looming supply constraints for a number of key natural resources. Individually, and especially in combination, these issues pose serious challenges to sustainable development.

The Division of Environment and Sustainability (ENVR) has been created to meet such challenges. ENVR faculty members have diverse backgrounds in science, engineering, business, and social sciences to provide integrated and cutting-edge education and research on global environmental issues and emerging solutions.

Research Areas

- **Air and Health**
- **Climate Adaptation and Resilience**
- **Sustainable Finance and Net Zero Solutions**

ENVR also works at the points where these areas intersect, such as the scientific understanding of management strategies and policy formulations.

Facilities

The HKUST Air Quality Research Supersite Facility is the first such facility in Hong Kong, focusing on real-time characterization of air pollutants, especially particulate pollutants, and housing over HK$17 million of equipment. Other facilities and equipment include: the Environmental Central Facility; Volatile Organic Compounds (VOC) Laboratory; environmental monitoring facilities; real-time air quality and meteorological forecasting systems; satellite receiving systems; and Geographical Information System.

Division of Integrative Systems and Design

In view of the ever-changing world and the rising multi-faceted challenges, such as global warming, energy crisis and the emergence of AI in human life, the Division of Integrative Systems and Design (ISD) was founded in 2017, aiming at nurturing a new generation of technology innovators with our new mode of education and producing top-notch research outputs to solve these problems. Students of ISD will develop technical competency, user-centric design mindset, entrepreneurial spirits and understanding of complex systems through our unique pedagogy incorporating project-based learning elements and design thinking strategy. The interdisciplinary background of ISD faculty members drives collaborations across academic fields and bridges research outcomes with industry to create societal impacts. Building on the current research foundation, ISD aims to delve deeper into focused themes, such as MarineTech, HealthTech, SustainableTech, and DesignTech.

Research Areas

- **MarineTech**
- **HealthTech**
- **SustaintableTech**
- **DesignTech**

Facilities

Prototyping is a core part of the integrative systems design process, and therefore ISD students are encouraged to gain hands-on practice throughout the program. The makerspaces, ISDworks! and Design Studio, are equipped with state-of-the-art prototyping equipment, such as advanced 3D printers, laser cutters, CNC machines, solar simulator, nanoimprint machine, electrochemical stations and robotic arms. The makerspaces also serve as project spaces for inspiration, collaboration and project showcases. They are the heart and soul of ISD where students make their dreams a reality.

Division of Public Policy

Aging, climate change, economic crises, terrorism and other global challenges call for policy responses beyond institutional and disciplinary boundaries. The Division of Public Policy (PPOL) encourages close collaboration across disciplines and Schools at HKUST to contribute to policy development both locally and globally, with a particular emphasis on the impact of science and technology advances on policy-making. The Division complements HKUST's Institute for Public Policy and Leadership and Public Policy Executive Education by driving interdisciplinary policy research at the University.

Research Areas

The Division's main areas of focus address key challenges in Hong Kong, Greater China, and the region:

- **Science, Technology and Innovation Policy:** Smart city, research policy, regulatory policy for technological innovations, higher education policy, knowledge transfer, privacy and security
- **Environmental Policy and Sustainability:** Transboundary pollution, Climate change, environmental policy instruments, energy security, urban resilience, water security, green finance
- **Social Changes and Public Policy:** Population policy, ageing, elderly care, health policy reforms, migration, social stratification, social inequalities
- **China's Development Policy:** Infrastructure development, land, human resource development, regional integration, local government and development, public private partnership

Interdisciplinary Research

Impacting Society through Research

Interdisciplinary research has become increasingly important in addressing pressing global challenges such as aging, climate change, and food crises, as traditional single disciplines are no longer sufficient to meet these multifaceted issues. By synergizing and integrating multiple fields, AIS fosters meaningful societal transformation and drives scientific breakthroughs through interdisciplinary collaboration, especially in new and emerging areas.

Trailblazing Project Mixes Art with Technology

Division of Arts and Machine Creativity; Division of Emerging Interdisciplinary Areas

A pioneering project that blends art with technology, such as artificial intelligence (AI), seeks to disrupt how we create, receive, and respond to art, advancing the frontiers of art technology. HKUST Provost Prof. GUO Yike leads a multidisciplinary research team, including Prof. XUE Wei from the Division of Arts and Machine Creativity and the Division of Emerging Interdisciplinary Areas, which has embarked on the five-year project entitled "Building Platform Technologies for Symbiotic Creativity in Hong Kong".

The project seeks to revolutionize artistic creation through human-AI symbiotic collaboration. The initiative develops AI systems capable of creating, performing, and appreciating art, establishing a dynamic "Creative Flywheel" where human artists and AI systems engage in mutual inspiration and innovation, expanding the boundaries of creation.

Beyond computer scientists, the project also diversely consists of artists and cognitive scientists. A database of human cognitive and physiological responses is developed to train human reward models on novelty, curiosity, and aesthetic appreciation. This approach enables AI systems to learn artistic creation through reinforcement learning, moving beyond traditional distribution sampling.

The project launches three creative applications: the world's first "Music and Art Biennial" showcasing artworks co-created by humans and AI; empathetic concerts jointly organized by performers, audiences, and machines; and a new opera driven by immersive extended reality (XR), where humans and machines co-create in a virtual world.

The team has made significant breakthroughs in developing new modalities of art creation and consumption. A "Machine Singing Artist" was created to learn to sing from speaking voices, compose original music based on lyrics, generate novel timbres, and improve melodies from simple humming; an "AI Painter" created an imaginative portrait merging Mr. DENG Xiaoping with Hong Kong's iconic Victoria Harbor backdrop; The world's first human-AI symbiotic orchestra was held, featuring an innovative collaboration between AI-powered choir, visual artists, and dancers performing seamlessly alongside human conductors and performers. human conductors and performers.

Transforming Food Production with AI and 3D Printing

Division of Integrative Systems and Design

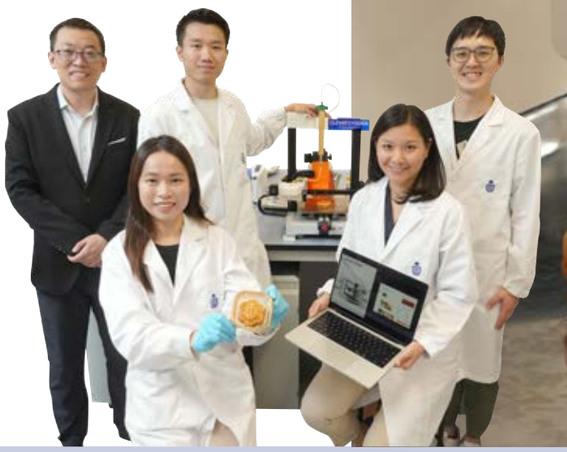
The research team led by Prof. Mitch LI, Assistant Professor of the Division of Integrative Systems and Design, aims to revolutionize the food industry with 3D printing and artificial intelligence (AI), so that people can have food that is tailored to their tastes and nutritional needs.

The team has built a next-generation food-printing device that can prepare ready-to-eat baked food, like cookies or bread, that contain precisely how much of the various compounds people need, depending on their fiber, fat, or sugar levels. To top it all off, the device only needs minutes to produce something from scratch.

In addition to its patented 3D food printing technology, the research team uses AI to enhance the customization of its products, such as mooncakes with unique shapes and contents. Traditionally enjoyed during the Mid-Autumn Festival, mooncakes are available in various flavors and fillings, but with the integration of AI and 3D printing, the traditional delicacy is transformed with the help of science and technology. Mr. John LEE, the Chief Executive of Hong Kong, was one of the earliest to sample the mooncake during a visit to the HKUST campus in 2023.

The team leverages AI to also analyze how people want their food to look with the help of keywords. That allows them to concoct food that appeals to individual tastes. This level of customization is a big step forward in 3D food printing, expanding its scope beyond conventional applications such as chocolate printing.

One key advantage of this approach to custom food innovation is that it can reduce food waste, as it provides meals on demand. The ability to customize food precisely also means it can help groups with special needs, such as elderly individuals with swallowing disorders, patients and children with special diets, and athletes.



Study on How COVID-19 Spread Becomes Global Cornerstone

Division of Environment and Sustainability

While the worst disruptions from COVID-19, such as border closures and lockdowns, may be far behind us, the global pandemic has permanently altered society and continues to influence public behavior.

When the health crisis was in full swing that the world needed an urgent understanding of the virus, Prof. NING Zhi, Professor of the Division of Environment and Sustainability, was one of the earliest scientists to discover the airborne nature of SARS-CoV-2, the variant of coronavirus that causes COVID-19. The article, published in Nature (Liu and Ning* et al., 2020), became a cornerstone in shaping public health policies.

The study played a pivotal role in guiding the World Health Organization (WHO) and many governments, including the European Union and the United States, to formulate public health policies.

As an expert in air pollution measurement and modeling, Prof. NING led a research team to investigate the aerodynamic nature of the virus by measuring viral RNA in aerosols in different areas of Renmin Hospital of Wuhan University and Wuchang Fangcang Field Hospital in early 2020, based on the limited pre-existing research on aerosol transmission.

The research team employed traditional aerosol capture devices to gather Total Suspended Particles (TSP), size-segregated particles, and deposition-based samples. The study revealed the bimodal nature (0.25 to 2.5 microns) of SARS-CoV-2 aerosol in its airborne form and transportation of this virus-laden aerosol from patients to medical staff.

The study provided crucial insights that underscored the necessity of rigorous sterilization, proper ventilation, mask-wearing, and crowd management to reduce infection risks in medical settings and to limit aerosol transmission.

But the study's implications extend well beyond immediate health measures. They also inspired technological innovations, namely two patented applications focusing on virus detection and prevention, to drive socio-economic transformations for healthier living conditions in the long term.

Improving Mental Health Literacy and Help-seeking Behaviors of Hong Kong's Ethnic Minorities

Division of Public Policy

A research project that investigated mental health literacy and help-seeking behaviors among ethnic minorities in Hong Kong has led to the creation of mental health education programs, community engagement initiatives for ethnic minorities, and ongoing training sessions for service providers, demonstrating how academic outcomes can positively influence policy and social changes.

Recent demographic trends show that amid an aging population, the ethnic minority population in the city is on the increase, so it is important to appropriately understand and address their needs and challenges in relation to mental health.

Led by Prof. Naubahar SHARIF, Head and Professor of the Division of Public Policy, the project filled gaps left by existing literature, specifically how ethnic identity and systemic interactions influence mental health literacy and help-seeking attitudes and behaviors.

The research identified the need for targeted policy interventions to improve mental health literacy and access to care among ethnic minorities in the city. It recommended developing tailored mental health education programs that address cultural beliefs and language needs. It also recommended implementing a plan to improve inclusivity within the public healthcare system to ensure that services are accessible and sensitive to the needs of ethnic minorities.

The findings provided the basis for various stakeholders, such as non-governmental organizations, political parties, religious and community organizations, and other service providers to develop tailored mental health education programs and community engagement initiatives, directly enhancing mental health literacy and reducing stigma among ethnic minority elderly and families.

The research has improved our understanding of how ethnicity and systemic factors converge to shape mental health outcomes in a densely multicultural society like Hong Kong. It has led to better service delivery, a noticeable reduction in stigma, and improving the quality of life for ethnic minority populations in the city.

Greenhouse Gas Emissions Calculation and Estimation Tools to Drive Forward Sustainability Reporting in Hong Kong

Division of Environment and Sustainability

Addressing climate change requires concerted efforts across the business spectrum, from multinational corporations to small and medium-sized enterprises (SMEs). Led by Prof. Alexis LAU, Head and Chair Professor of the Division of Environment and Sustainability, the research team has developed a cutting-edge calculator and estimator in collaboration with the Green and Sustainable Finance Cross-Agency Steering Group. These tools facilitate sustainability reporting for corporates and financial institutions in Hong Kong.

Understanding the limited resources of small and medium-sized enterprises to engage sustainability experts, these user-friendly tools are publicly available on the Group's website that empower businesses with the means to accurately calculate and manage their environmental footprint, supporting the transition to a more sustainable future.

Currently, the calculator covers Scope 1 and Scope 2 greenhouse gas (GHG) emissions. Scope 1 refers direct GHG emissions, including stationary combustion emissions, mobile emissions, and fugitive emissions. Scope 2 represents indirect emissions resulting from the purchase of electricity and gas.

In today's world, investing in environmentally responsible companies is of paramount importance. However, accessing a company's public data on GHG emissions can be challenging. The estimator enables users to estimate a company's emissions even when sufficient data is unavailable, assisting financial institutions, banks, and investors in making investment and lending decisions based on a company's potential GHG emissions.

Benchmarking capabilities will be introduced in the next stage of the development, allowing companies to understand their competitive standing in terms of industry-wide emission performance. Over time, when the system is utilized by more entities, the dataset will become more robust, enhancing the estimator's accuracy and reliability as a tool for estimating GHG emissions.

The impact of this research extends beyond individual companies to society. By empowering businesses to gauge the GHG footprint of their investees or borrowers, these tools help promote transparency and accountability in sustainability practices, a new element of corporate governance in the era of climate change.

New Foundation Model for Marine Image Analysis Advances Understanding of Marine Ecosystems and Conservation

Division of Integrative Systems and Design

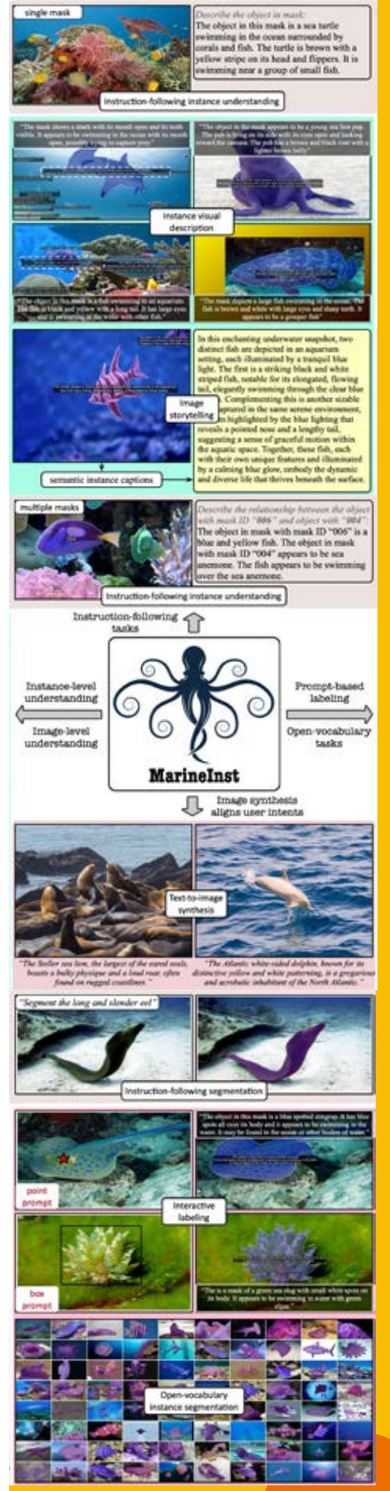
Covering 70% of the Earth's surface, the oceans are rich in biodiversity and play a pivotal role in regulating the global climate, yet they remain largely unexplored and unknown due to their vastness and inaccessibility. The analysis and interpretation of marine imagery have garnered increasing attention from both computer vision and marine biology communities. However, developing a foundation model for marine visual analysis poses considerable challenges, primarily due to the scarcity of labeled data and the discrepancies between underwater photographs and general in-air images.

To address these challenges, the research team led by Prof. Sai-Kit YEUNG, Professor of the Division of Integrative Systems and Design, has developed MarineInst, a groundbreaking foundation model for the analysis of the marine realms with instance visual description, enabling effective segmentation and description of marine object instances, alongside the largest marine image dataset to date.

Building on their previous project, MarineGPT—the first vision-language model specifically for the marine domain with extensive marine knowledge, the research team has created MarineInst20M, a dataset featuring a wide spectrum of marine images with high-quality semantic instance masks. These marks are constructed by a mixture of human-annotated instance masks and model-generated instance masks from the team's automatic procedure of binary instance filtering, totaling 2.42 million images and 19.2 million masks.

With this extensive marine image dataset, MarineInst facilitates the generation of meaningful and comprehensive semantic captions faithful to each generated instance mask. The dataset and model support a wide range of marine visual analysis tasks, from image-level scene understanding to regional mask-level instance understanding. This new model exhibits strong generalization ability and flexibility to support various downstream tasks with state-of-the-art performance.

This project paves the way for future marine image analysis, helping scientists unveil the mysteries of the oceans, and leveraging technology to advance our understanding of marine ecosystems and conservation.



Interdisciplinary Education

Cultivating Innovative Thinking

Innovative thinking is important for problem-solving in all settings of study and work. The ability to analyze problems from multiple perspectives and fuse knowledge and know-how from different fields in building solutions is essential in tackling the increasingly complex challenges we are facing today. AIS provides worldwide platforms to cultivate student's innovating thinking with interdisciplinary approaches while at the same time broadening their horizons to develop passion and pursue individual goals.

The First Cross-disciplinary, Cross-campus, and Cross-reality Course at HKUST

The Division of Emerging Interdisciplinary Areas (EMIA), in collaboration with the Computational Media and Art Thrust Area (CMA) at HKUST(GZ), offers the first cross-disciplinary, cross-campus, and cross-reality course "EMIA 6500C: Metaverse Cross-disciplinary Design Thinking" to students from the Clear Water Bay and Guangzhou campuses. Introduced in Fall 2023, this innovative course creates a unique learning experience that transcends traditional educational boundaries.

Led by Dr. ZHANG Rong, Senior Lecturer of EMIA and Prof. HUI Pan, Chair Professor of CMA, the course employs design thinking methodologies and advanced virtual reality (VR) technologies to establish a metaverse classroom. This immersive environment effectively overcomes the limitations of physical distance, enabling students to engage in interactive and collaborative learning. With ten students from each campus, Dr. Zhang and Prof. Hui explore how VR technologies can be used to address pain points in traditional education, and to facilitate immersive and interactive teaching and learning for students and instructors who are in different physical locations.

Throughout the course, students utilize various teaching and learning tools, such as virtual whiteboards and interactive team-building objects, fostering creativity and innovation. The metaverse classroom offers surreal learning experiences that extend beyond what is possible in the physical world.

The Fall 2023 course culminated in a virtual roadshow on December 1, 2023, where students and guests from both campuses engaged in immersive interactions within the metaverse. This pioneering initiative not only demonstrated the potential of virtual reality technologies in higher education but also provided valuable insights for the future of metaverse education.

This course represents a significant collaborative effort under the "Unified HKUST, Complementary Campuses" framework, garnering attention from local and national media for its groundbreaking approach to educational innovation.

International Business Plan Competition

The Dual Degree Program in Technology and Management offers a valuable cross-cultural learning experience – International Business Plan Competition, allowing students to learn the underlying ingredients for business success, including hard work, building trust across cultures, innovation and mastery of emerging technology. Co-organized with renowned institutions from the U.S., Germany, Saudi Arabia, Singapore, etc., students work in multicultural teams to develop creative and viable business plans for an emerging technology in hosting regions. Over the years, students have visited Silicon Valley, Sao Paulo, Bayreuth, Singapore, Shanghai, Guangzhou and many more locations to explore topics such as mobility and logistics, AI, 3D printing, unmanned aerial vehicles, smart transportation and health tech. This initiative generates numerous innovative ideas that serve as solid foundations for students to develop creative solutions to real-world problems.

Cornerstone Design Project

The Cornerstone Design Project is a pivotal component of the ISD undergraduate program, commencing in Year 2 and designed to foster context-based problem solving while enhancing individual technical competencies.

This year-long project course engages second and third-year students in large-scale, theme-based initiatives in collaboration with industry partners, where they can apply technology and design principles to tackle complex challenges. The second-year project focuses on planning, task distribution, client interaction, ideation, prototyping, and testing. In their third year, students focus on more technically complex issues, with an emphasis on sustainability, manufacturability, and marketability—all within budget constraints.

The final-year iteration empowers students to define their own projects, develop feasibility proposals, and seek approval, all while managing resource and time limitations. Regular progress meetings ensure accountability, with each student taking the lead on a key aspect of the project. The final project presentation allows them to share their final product prototype or conclude the achievement of project milestones, showcasing their growth in technical, design, and business knowledge as they work towards creating viable product solutions.

This comprehensive approach equips students with the essential skills and experiences necessary for success in the ever-evolving landscape of design and technology.

Undergraduate Programs

T&M-DDP

Dual Degree Program in Technology and Management

In today's knowledge society, a thorough understanding of technology and management paves the way to success. The Dual Degree Program in Technology and Management (T&M-DDP), the first of its kind in Hong Kong, enables high-flying students to gain two internationally recognized degrees in five years: Bachelor of Engineering (BEng) or Bachelor of Science (BSc), and Bachelor of Business Administration (BBA).

Going beyond traditional boundaries to answer the need for innovative vision in the workplace, T&M-DDP students learn how to analyze issues from technological and business viewpoints and solve both quantitative and qualitative problems. Students also enjoy wide-ranging experiences of how the world works, develop cultural competence and global perspectives, and foster a willingness to serve, gaining much more than two degrees.

BEng OPTIONS OR **BSc OPTIONS** AND **BBA OPTIONS**

- BEng in Aerospace Engineering
- BEng in Artificial Intelligence
- BEng in Bioengineering
- BEng in Chemical Engineering
- BEng in Civil and Environmental Engineering
- BEng in Civil Engineering
- BEng in Computer Engineering
- BEng in Computer Science
- BEng in Decision Analytics
- BEng in Electronic Engineering
- BEng in Industrial Engineering and Engineering Management
- BEng in Mechanical Engineering

- BSc in Biotechnology
- BSc in Integrative Systems and Design

- BBA in Economics
- BBA in Finance
- BBA in General Business Management
- BBA in Global Business
- BBA in Management
- BBA in Marketing

EVMT

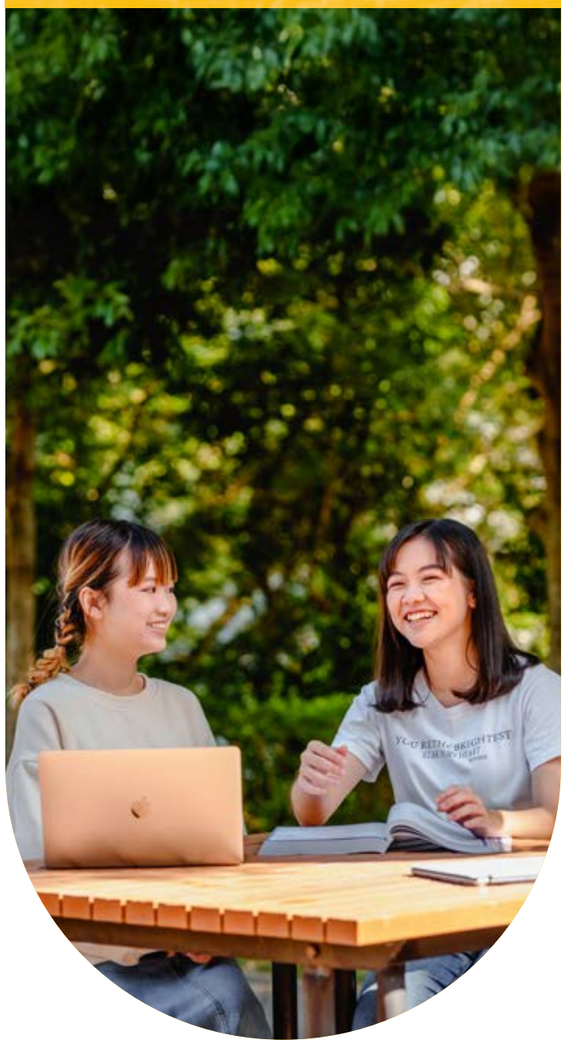
BSc in Environmental Management and Technology

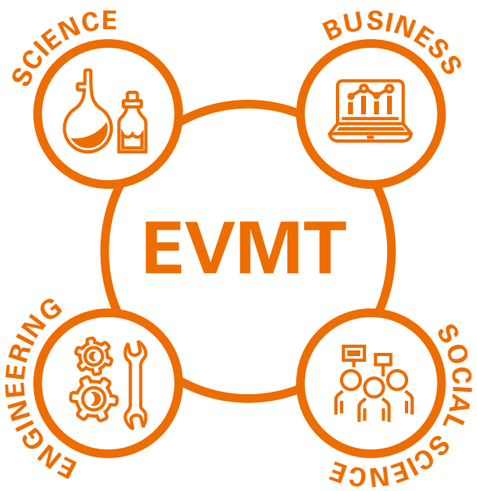
Sustainability is of paramount importance for the well-being of current and future generations. It is a global challenge that requires the attention and action of every organization. The BSc in Environmental Management and Technology (EVMT) program is at the forefront of tackling the pressing global concerns related to environmental and sustainability issues. This program offers motivated students a unique opportunity to become environmental and sustainability professionals equipped with cross-disciplinary knowledge to develop and implement ecologically and economically sound solutions. Graduates of this program are prepared to take on the role of sustainability managers and environmental professionals in corporations both in Hong Kong and around the globe.

EVMT is the first accredited program by the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP) allowing EVMT graduates a faster track to becoming Professional Members with just five years of in-field experience.

EVMT Courses

- **Energy sources and usage**
- **Environmental technology for impact assessment**
- **Environmental law**
- **Environmental, social, and governance (ESG) management and reporting**
- **Green business strategy**
- **Life cycle assessment**
- **Sustainable development**





IIM

BSc in Individualized Interdisciplinary Major

Today, there is a critical need for incisive next-generation front-runners, who can integrate knowledge from different fields and devise original approaches to problem-solving. The Individualized Interdisciplinary Major (IIM), currently the first program of its kind in Greater China, offers a non-traditional, cross-School academic pathway for exceptional students with the vision, talents and character to initiate an interdisciplinary major tailor-made to their intellectual interests. Joining this exciting degree program will enable those selected to subsequently pursue a novel interdisciplinary research field or a career in an area of emerging significance.

Common Core and Fundamental Courses

36-37 credits

Major Courses Planned by Student

At least 48 credits

Elective Courses Planned by Student

At least 18 credits

Interdisciplinary Capstone Project

6 credits

Approved IIM Program Examples

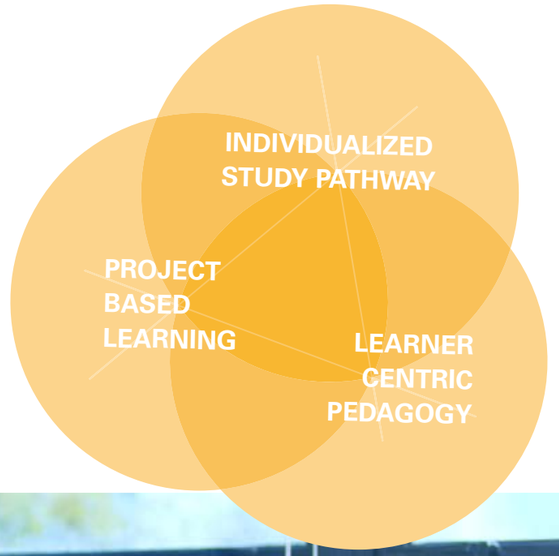
- Anthropomorphism in Interactive Systems
- Art Heritage Digitalization and Curation
- Behavioral Consumer Science
- Bioenergy Management
- Bionics
- Brain Computer Interface
- Built Environment Design
- Computational Cognitive Science
- Computational Earth Systems
- Computational Linguistics
- Environmental Geoscience
- Human-Computer Interaction
- Innovation Management
- Medical Engineering
- Technological Development Ecosystem

ISD

BSc in Integrative Systems and Design

Incubating disruptive innovators requires cutting-edge technical knowledge and design thinking mindset. There is a huge demand for transforming undergraduate students into innovators who can integrate the know-hows across disciplines in a human-centric mindset. The BSc in Integrative Systems and Design (ISD) program is the first experiential learning bachelor's degree program in Hong Kong that tailors this need and provides a multi-disciplinary training to students. This program hopes to equip students with design thinking skills, solid technology knowledge and entrepreneurial spirit. To achieve this goal, we adopt team-based and project-based learning to engage students for hands-on development. Students will work on projects of their interests throughout four years of study with full capacity. These projects are developed based on real-life problems faced by the society and industry and represent an important component of ISD transdisciplinary curriculum.

ISD students will be offered many unique learning experiences in alignment with program goals of being interdisciplinary, learner-centric and entrepreneurial. The graph below illustrates the program elements and learning outcomes that aim to develop the problem solving and technical competencies of students.



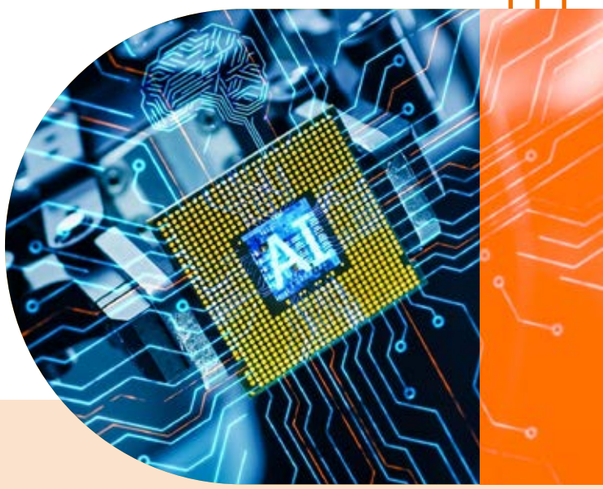
SGFN

BSc in Sustainable and Green Finance

The BSc in Sustainable and Green Finance (SGFN) program is at the forefront of undergraduate education in Hong Kong to equip students with interdisciplinary knowledge and skills in both Business & Finance and Environment & Sustainability areas. This program is jointly offered by the School of Business and Management and the Division of Environment and Sustainability, designed for students who would like to pursue a career in the sustainable and green finance industry.

Investing in sustainability has been a global megatrend in recent years driven by the collective effort among governments and businesses around the world to address climate risks. Such trend has been creating tremendous opportunities in carbon pricing and trading market, sustainability-linked debt market, green financial product development, sustainable supply chain financing, environment, social, and governance (ESG) management and strategy development, and so on.

The SGFN program nurtures students to be effective leaders in the sustainable and green finance industry. The curriculum overlays business and finance topics with sustainability significance, which covers the latest sustainable and green finance development at national and global levels to provide students with a global perspective on the field with local relevance.



Major + X

Extended Majors

HKUST is the first in Hong Kong to introduce a novel academic framework "Major + X" as a new degree option for undergraduates to excel in an extended major of an emerging hot topic such as AI in addition to a traditional major program. Blending traditional programs with the emerging hot topics, this new degree structure not only offers students with greater flexibility, but also allows timely curriculum adjustment and better integration between existing and new knowledge to meet with the emerging need of the society.

The Extended Major framework (Major+X) offers an organic study pattern for students from different disciplines to learn solid knowledge from their own Majors PLUS innovative application of "X" in their Major areas. Students need not take a full degree of "X" to learn about emerging technologies. Currently, we offer two Extended Majors: Artificial Intelligence and Digital Media and Creative Arts.

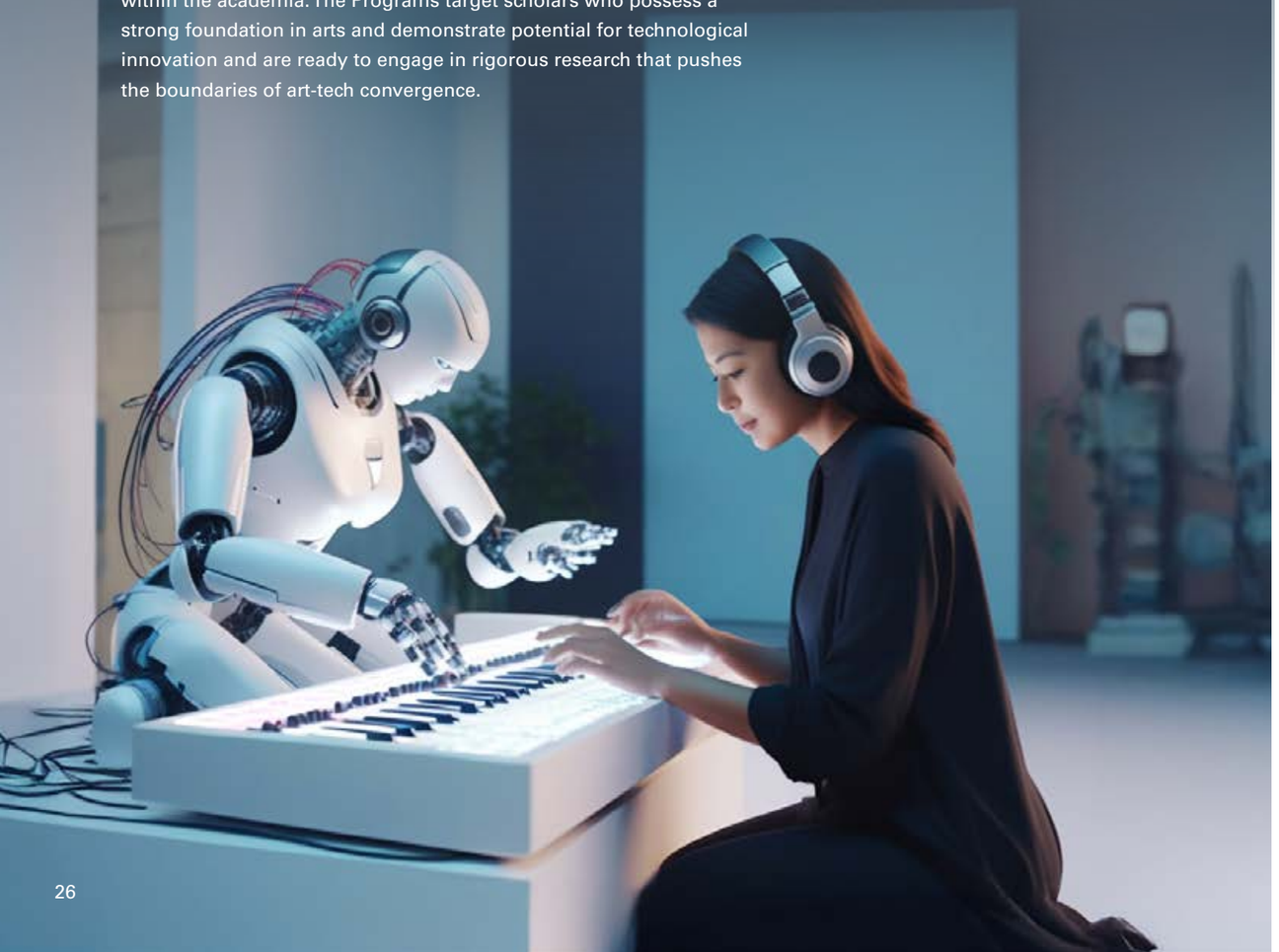
Postgraduate Programs

RESEARCH POSTGRADUATE

AMC

MPhil / PhD in Arts and Machine Creativity

The Master of Philosophy (MPhil) and Doctor of Philosophy (PhD) Programs in Arts and Machine Creativity are tailored for students who aim to pursue advanced research in the field of Arts and Machine Creativity. With the rapid development of generative AI technology and its impact on the art creation process in the present-day art world, there is an increasing demand for scholars to engage in scientific research and critical studies related to arts and machine creativity. These fields also explore technological and conceptual advancements within the academia. The Programs target scholars who possess a strong foundation in arts and demonstrate potential for technological innovation and are ready to engage in rigorous research that pushes the boundaries of art-tech convergence.



AES

MPhil / PhD in Atmospheric Environmental Science

The MPhil Program in Atmospheric Environmental Science (AES) aims to train students to conduct independent research in Atmospheric Environmental Science. The PhD Program in AES seeks to train students in original research in Atmospheric Environmental Science and to cultivate independent and innovative thinking that is essential for a successful research career in environmental science.

Currently, AES' research concentrations include:

- **Aerosol physics and chemistry**
- **Air quality modeling and data analysis Atmospheric chemistry**
- **Environmental sensing and measurement technology**
- **Global and regional climate modeling**
- **Health effects of air pollutants**

ESPM

MPhil / PhD in Environmental Science, Policy and Management

The MPhil and PhD Programs in Environmental Science, Policy and Management (ESPM) is an interdisciplinary research and education program covering a wide spectrum of environmental interests. The research programs focus on the dynamics and interconnection of scientific, technological, environmental socio-economic and policy challenges facing the world. Co-supervision on student thesis work is a core feature in this program, an approach that enhances the interdisciplinary education experience for students.

Currently, ESPM' research concentrations include:

- **Air quality and built environment**
- **Climate change and adaptations**
- **Environmental data analysis**
- **Environmental economics**
- **Environmental microbiology**
- **Environmental policy and management**
- **Environmental pollution and health**
- **Physical/Biophysical oceanography and ecosystem modeling**
- **Planning and design for sustainable development**
- **Sustainability, energy and environment**

IIP

MPhil / PhD in Individualized Interdisciplinary Program (Research Area)

This program offers students a broad academic freedom to create a unique research postgraduate program focused on a specialized area of research in ways that best suit their own intellectual interests and passion, by working on an interdisciplinary research topic and using courses from different Departments / Divisions to fulfill the curriculum requirement. It aims to create an organic curriculum to facilitate students' intellectual growth, exploration into novel research direction, and a long-term commitment in an interdisciplinary research field bridging seemingly unrelated areas. IIP would make an ideal choice for students with academic and research interests which extend beyond the boundaries of HKUST's existing research postgraduate (RPg) programs. IIP students have to develop a research plan and framework which allow them to explore their unique research interests and to work with their primary supervisor and co-supervisors to pursue and complete their degree. The program is intended to meet the needs of applicants who have well-articulated research goals which cannot be reached through established RPg programs.

ISD

MPhil / PhD in Integrative Systems and Design

The Division of Integrative Systems and Design offers the opportunity for creative students to engage in research on a wide variety of topics towards either a MPhil or a PhD degree.
The MPhil program aims to train students to conduct world-class research on a cross-disciplinary topic, particularly using principles of design in solving technical problems with clear emphasis on human and societal benefits. A successful MPhil candidate is also expected to demonstrate sufficient knowledge about the state-of-the-art in the areas related to the research problem and on the broader related topics.

The PhD program aims to train students with an ability to independently conduct and lead world-class research on a cross-disciplinary topic. They will learn to use and apply principles of design in solving technical problems informed by human and societal issues. Successful graduates will be expected to lead their own research agenda, while demonstrating sufficient knowledge about the state-of-the-art in the areas related to the research problem and on the broader related topics.

PP

MPhil / PhD in Public Policy

Rigorous research training for academically outstanding students aspiring to pursue a career in policy research and teaching. Given the breadth and depth of HKUST faculty expertise across departments and Schools, Public Policy students can specialize in one of four policy areas.

Policy areas that PP students can specialize:

- **Science, Technology and Innovation**
- **Environmental Policy and Sustainability**
- **Social Changes and Public Policy**
- **China's Development Policy**

To facilitate interdisciplinary research, students will be co-supervised by the Division faculty members and faculty members appointed jointly with other Schools.

TIE

MPhil in Technology Innovation and Entrepreneurship

The MPhil in Technology Innovation and Entrepreneurship (TIE) program is a transformative step towards redefining research and industry impacts at postgraduate level. It enables our graduates to become pioneers in their respective fields, driving technological progress and contributing to a thriving, future-ready economy. Students will form dynamics teams to engage in rigorous trainings, interdisciplinary exposure and industry connections. They are required to independently complete a thesis under the mentorship of a faculty member. Candidates with a robust foundation in science and engineering, a profound sense of curiosity, and an aptitude for learning are ideal for this program.

Taught Postgraduate

MA (AMC)

MA in Arts and Machine Creativity

The Master of Arts (MA) in Arts and Machine Creativity Program emphasizes art management and critical study aspects of arts and machine creativity through:

- **Critical analysis and theory: Courses focus on the study of machine-assisted art practices within a cultural, social, and historical context, encouraging students to analyze and engage machine creativity critically;**
- **Interdisciplinary approaches: The curriculum integrates insights from media studies, computer science, and visual arts, offering a broad perspective on machine-assisted creative process;**
- **Project-based learning: Students can choose to undertake individual and collaborative projects that apply theoretical concepts to practical challenges, culminating in a capstone project that demonstrates mastery of art and technology.**

The MA program targets aspiring managers and innovators who envision leading the intersection of arts and technology globally, blending administrative acumen with creative insight to drive the future of creative industries.

MFA (AMC)

MFA in Arts and Machine Creativity#

The Master of Fine Arts (MFA) in Arts and Machine Creativity Program emphasizes actual human art practice assisted by machine creativity thinking, methods, tools, and techniques. With the rapid development of generative AI technology and artistic implementations, from Midjourney to Sora, there is a growing demand for artists who are also technologically savvy in the realm of arts and machine creativity.

The MFA Program targets artists with a substantive portfolio, seeking to deepen their creative practice through advanced technology, fostering a professional mastery of art that resonates in the age of AI. It requires substantial creative practice and a thesis project as degree requirements.

#subject to the Senate's approval

EVSM

MSc / PGD in Environmental Science and Management

MSc/PGD in Environmental Science and Management (EVSM) is a multi-disciplinary program that emphasizes the application of both environmental science knowledge and environmental management skills to solve local, regional and global issues. While core courses in both science and management areas are required for this program, there is also a wide range of elective courses to cater to students of a diverse background. It aims to strengthen the students' understanding of important environmental concepts and enhance their ability to apply them.

The program objectives of EVSM are:

- **To strengthen student's professional status with updated and advanced knowledge and development in important and emerging environmental issues and concepts.**
- **To enhance student's ability in applying latest environmental concepts (technologies or management strategies) to local, regional and global environmental problems.**
- **To provide professional and interdisciplinary training for graduates to prepare themselves to tackle the rapidly developing environmental issues in Hong Kong and the surrounding region.**
- **To cultivate student's stewardship towards sustainable development in their professional industries and sectors.**

MPM

Master of Public Management

The Master of Public Management (MPM) program is designed to prepare students to operate and thrive in a complex, rapidly changing and disruptive world. The program will prepare them for senior management roles in organizations that deliver public services or interact frequently with governments and regulatory authorities. It aims to equip students with the skills, knowledge and habits of mind to deal with the fast changing and contested environments that governments—as well as their stakeholders, partners, and regulated entities—face.

In this program, students will have the opportunity to develop their managerial capabilities such as their analytical skills, operational competence and political acumen—all of which are essential for successful careers in the public or private sectors. Leveraging the strengths at HKUST, the program also aims to give students the interdisciplinary perspectives that will enable them to explore the policy, operational, regulatory and political issues associated with technology advances and sustainability.

MPP

Master of Public Policy

The Master of Public Policy (MPP) is an interdisciplinary program that equips students with knowledge of the full impact of science and technology innovations and professional skills in the formulation and implementation of innovative solutions to current and emerging global challenges. The program draws from research and teaching excellence from across a diverse range of disciplines to equip students with a set of core skills in data analytics, economic analysis and management to become effective policy professionals.

Design for students with diverse educational backgrounds, including social science, engineering, business, and other fields of study, this two-year full-time program consists of a core curriculum, an optional summer internship upon completion of first year, a client-based policy analysis project in the second year, and elective courses allowing students provides their area of specialization. The first of its kind in Hong Kong, this program provides students with complete professional training that focuses on probelm-solving skills with real-world cases and examples.

TLE

MSc in Technology Leadership and Entrepreneurship

Jointly offered by the Academy of Interdisciplinary Studies and the School of Business and Management, this unique program seeks to nurture engineering talents with an entrepreneurial spirit and a design thinking mindset, so that they can become technology entrepreneurs. Students will work independently or in a team to conceptualize and develop a product or services prototype. Along the way, they can enroll in a diverse selection of technical and business courses to build in-dept knowledge related to their project. A start-up workshop will equip students with practical details of venturing in the Greater Bay Area.

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ACADEMY OF 跨學科學院
INTERDISCIPLINARY
STUDIES