## Congregation

**Two Congregations** will be held annually (in July and December respectively) which is to align with international practices and to facilitate the convenience for students. Graduands who are eligible for graduation will be assigned to the Congregation nearest to the completion date of their studies for conferral of degree. The Graduation Certificate normally could be collected on the day of the Congregation.

## Tuition Fees

The full composition fee for the programme is HK$309,000# for the 2024 intake. The fee shall normally be payable in three instalments over 1.5 years for full-time study or in five instalments over 2.5 years for part-time study. In addition, students are required to pay Caution Money (HK$350), refundable on graduation subject to no claims being made, and Graduation Fee (HK$350). With effect from 2022-23, all full-time students will be charged a student activity fee of $100 per annum to provide support for activities of student societies and campus wide student events.

*# Subject to approval*

## Admission Requirements

- Applicants shall hold a Bachelor's degree or an equivalent qualification.
- Applicants shall have taken at least one university or postsecondary certificate course in each of the following three subjects (calculus and algebra, computer programming and introductory statistics) or related areas.
- Applicants shall fulfil the University Entrance Requirements.

**Expected graduation time for normative study period**

| Full-time (1.5 years) | Part-time (2.5 years) |
|---|---|
| Summer (July 2026) | Summer (July 2027) |

## Online Application

https://admissions.hku.hk/tpg/

## Admission Deadline

**Main Round: 12:00 noon (GMT +8), November 20, 2023**

**Clearing Round: 12:00 noon (GMT +8), January 8, 2024**

## Programme Director

**Professor Marius Hofert**
MSc *Syracuse*; Dipl.-Math. oec., Dr. rer. nat. *Ulm*
Department of Statistics & Actuarial Science

## STAFF LIST

**Professor T J Boonen**
BSc, MSc, PhD *Tilburg*
Actuarial Science, Capital Allocation, Game Theory, Insurance Economics, Optimal (Reinsurance, Longevity Risk Modelling, Risk Sharing

**Professor Y Cao**
BS *Fudan*; MS, PhD *Princeton*
Machine Learning; Learning Theory; High-dimensional Data Analysis; Optimization

**Professor K C Cheung**
BSc(ActuSc), PhD *HK;* ASA
Actuarial Science; Dependent Structures; Stochastic Orders; Risk Measures; Optimal Insurance; Extreme Value Theory

**Dr O T K Choi**
BSc *UBC*; MSc *Oxon*; PhD *ISM*
High Frequency Data Analysis/ Market Co-integration; Analysis of Dually Listed Companies across Different Regions

**Professor L Feng**
BS *Renmin U*; PhD *Rutgers*
Statistical Machine Learning; Image Data Analysis; High-dimensional Statistics; Deep Learning

**Professor E C H Fong**
BA, MEng *Cantab*; DPhil *Oxon*
Bayesian Inference; Bayesian Nonparametrics; Model Selection; Causal Inference

**Professor Y Gu**
BSc *USTC*; PhD *N Carolina*
Survival Analysis; Non- and Semi-Parametric Inference; Biostatistics; Alzheimer's Disease; Infectious Disease; Cancer

**Professor K Han**
PhD *HK*
Computer Vision; Machine Learning; Deep Learning

**Professor M Hofert**
MSc *Syracuse*; Dipl.-Math. oec., Dr. rer. nat. *Ulm*
Dependence Modeling; Computational Statistics; Data Science; Quantitative Risk Management

**Dr C W Kwan**
BSc, PhD *HK*
Influential Observations; Multivariate Statistics; Non-linear Random Model

**Professor E K F Lam**
BA *St. Thomas*; MA *New Brunswick*; PhD *HK*
Survival Analysis; Biostatistics; Public Health; Analysis of Infectious Diseases

**Dr A S M Lau**
BEng *City*; MSc *HK*; PhD *CUHK*
Social Media and Big Data Analytics; Artificial Intelligence and Business/Health Informatics; Video Analytics, AI chatbot, and Metaverse; Risk Management and Business intelligence; E-learning and Knowledge Management; IS adoption, E-business Strategies and Applications (Healthcare, Finance, Marketing, and Supply Chain Management)

**Dr D Lee**
BSc(ActuSc), MPhil *HK*; PhD *British Columbia*, ASA
Copula Modelling; Extreme Value Theory; High-dimensional Dependence Structures; Multivariate Tail Dependence

**Professor S M S Lee**
BA, PhD *Cantab*
Bootstrap; Resampling Methods; Statistical Theory: Asymptotics and Applications

**Dr E A L Li**
BSc *HK*; MEcon, PhD *Syd*
Real Option Theory and Applications; Resource Economics; Quantitative Trading; Quantum Computing, Blockchain and Smart Contracts

**Professor G D Li**
BSc, MSc *Peking*; PhD *HK*
Time Series Analysis; Financial Econometrics; Quantile Regression; High Dimensional Data Analysis; Machine Learning

**Professor W Y Li**
BSc, BEc, MEc *SWUFE*; PhD *Waterloo*
Actuarial Science; Insurance Economics; Mathematical Finance

**Professor L Q Qu**
BEng *CSU*; PhD *UCAS; CityU*
AI in Healthcare; Medical Image Processing; Illumination Modeling; Deep Learning

**Professor C Wang**
PhD *NUS*
Random Matrix Theory; Time Series Analysis; High-dimensional Data Analysis

**Dr K P Wat**
BSc(ActuSc), PhD *HK*; SFHEA; FSA; FASHK; CERA; FRM
Actuarial Science; Financial Mathematics; Insurance Risk Models; Financial Risk Analysis; Enterprise Risk Management

**Professor L Q Yu**
BEng *ZJU;* PhD *CUHK*
Medical Image Analysis; Machine Learning; Computer Vision; Clinical NLP; AI in Healthcare

**Prof K C Yuen**
BSc, MSc, PhD *Calgary*; ASA
Insurance Risk Modelling; Financial Risk Analysis; Survival Analysis

**Dr C Y Zhang**
PhD *HK*

**Professor D Y Zhang**
BSc *Nankai*; MSc, PhD *NCSU*
Big Data Analytics; Bayesian Methods; Biostatistics; Statistical Genetics; Bioinformatics; Public Health and Biomedical Research

**Professor M M Y Zhang**
BS *UCSB*; MS, PhD *UT Austin*
Machine Learning; Bayesian Non-parametrics; Scalable Inference

**Dr Z Q Zhang**
BSc *Nankai*; MSc *E China Normal*; PhD *HK*
Time Series Analysis; Extreme Value Theory; Insurance Risk Modelling; Machine Learning

**Professor K Zhu**
BSc *USTC*; PhD *HKUST*
Time Series Analysis; Econometrics; Causal Inference

**Mr H Y Y Cheung**
BSc *UCL*; MSc *Imperial College London*

*Enquiries:*


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https://www.scifac.hku.hk/pg/prospective/tpg

FACULTY OF SCIENCE THE UNIVERSITY OF HONG KONG 香港大學理學院

SHKU Science

# Master of Data Science

**MDASC**

## Programme Highlights

- Interdisciplinary and comprehensive curriculum
- Solid foundation in statistical and computational analyses
- Electives cover a broad range of contemporary topics from Computer Science and Statistics
- Hands-on applications of methodologies with software
- Capstone project with real-life application

Machine Learning
Data Mining
Advanced Statistical Modelling
Spatial Data Analysis
Cloud Computing

## Target Students

The programme is ideal for:

**Those interested in acquiring analytical skills in areas ranging from statistics to computational analytics, and**

**those who wish to pursue further studies in data science after having completed undergraduate studies in areas such as science, engineering, medical sciences, social sciences, information systems, computing and data analytics.**

## Graduates' Career Prospects in Recent Years

- Machine Learning Engineer
- AI Engineer
- Algorithm Engineer
- Data Analyst
- Trader
- Data Scientist
- Senior Algorithm Engineer
- Product Manager
- Senior AI Engineer
- Manager of International Cooperation

## Scholarships and Awards

### Entrance Scholarship for Master of Data Science* NEW!

Entrance scholarship for Master of Data Science of HK$20,000 will be offered annually to new MDASC students on the basis of academic merit and financial need upon admission.

### Master of Data Science Outstanding Performance Award* NEW!

One scholarship of HK$50,000 will be awarded annually to MDASC student on the basis of academic merit and quality of coursework.

### Lifelong Learning Prizes in Data Science* NEW!

Multiple Lifelong Learning Prizes in Data Science, each from HK$5,000 to HK$10,000, will be awarded to MDASC students on the basis of academic achievement.

### Belt and Road Scholarship in Statistics and Data Science (Taught Postgraduate)* NEW!

This scholarship is awarded annually to outstanding new students from participating Belt and Road countries. Composition fees of MDASC could be waived for awardees, and additional allowance of HK$10,000 will be provided to support their studies.

** To be approved by the University.*

政府資助計劃
Government-funded programme

### Targeted Taught Postgraduate Programmes Fellowship Schemes

The Master of Data Science programme is one of the eligible programmes under the University Grants Committee for Targeted Taught Postgraduate Programmes Fellowships Scheme. Each local applicant who is selected for the fellowships scheme will be granted an award of HK$120,000.

### Reimbursable Course(s) by Continuing Education Fund (CEF)#

The following courses have been included in the list of reimbursable courses under the CEF:

| | |
|---|---|
| COMP7503 | Multimedia Technologies |
| COMP7506 | Smart Phone Apps Development |
| COMP7507 | Visualization and Visual Analytics |
| COMP7906 | Introduction to Cyber Security |
| STAT6013 | Financial Data Analysis NEW! |
| STAT7008 | Data Mining Techniques NEW! |
| STAT8003 | Programming for Data Science NEW! |
| STAT8017 | Time Series Forecasting |
| STAT8019 | Marketing Analytics |

All CEF applicants are required to attend at least 70% of the concerned courses before they are eligible for fee reimbursement under the CEF.

*# The mother programme (Master of Data Science) of these courses is recognised under the Qualifications Framework (QF Level 6).*

## Programme Curriculum

For successful completion of the programme, student is required to complete a total of **72 credits** of courses in either **full-time study** or **part-time study**. Please refer to the programme website for the latest information. Students must obtain a cumulative GPA of at least 2.0 for graduation.

**Course Descriptions**

https://saasweb.hku.hk/programme/mdasc-structure.php

### Compulsory Courses *(24 credits)*

| | |
|---|---|
| COMP7404 | Computational intelligence and machine learning |
| DASC7011 | Statistical inference for data science |
| DASC7104 | Advanced database systems |
| STAT7102 | Advanced statistical modelling |

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### Disciplinary Electives *(36 credits)**

**List A** *(at least 12 credits)*

| | |
|---|---|
| COMP7107 | Management of complex data types |
| COMP7305 | Cluster and cloud computing |
| COMP7409 | Machine learning in trading and finance |
| COMP7503 | Multimedia technologies |
| COMP7506 | Smart phone apps development |
| COMP7507 | Visualization and visual analytics |
| COMP7906 | Introduction to cyber security |
| DASC7606 | Deep learning |
| FITE7410 | Financial fraud analytics |
| ICOM6044 | Data science for business |

**List B** *(at least 12 credits)*

| | |
|---|---|
| STAT6008 | Advanced statistical inference |
| STAT6013 | Financial data analysis |
| STAT6015 | Advanced quantitative risk management |
| STAT6016 | Spatial data analysis |
| STAT6019 | Current topics in statistics |
| STAT7008 | Programming for data science |
| STAT8003 | Time series forecasting |
| STAT8017 | Data mining techniques |
| STAT8019 | Marketing analytics |
| STAT8300 | Career development and communication workshop (Non-credit-bearing) NEW! |
| STAT8306 | Statistical methods for network data *(3 credits)* |
| STAT8307 | Natural language processing and text analytics *(3 credits)* |
| STAT8308 | Blockchain data analytics *(3 credits)* |

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### Capstone requirement *(12 credits)*

| | |
|---|---|
| DASC7600 | Data science project *(12 credits)* |
| DASC8088 | Data science practicum *(6 credits)* NEW! + a 6-credit course *(from List A or List B)* |

**Total: 72 credits** — **Full-time (1.5 years)** OR **Part-time (2.5 years)**

** Students who have completed the same courses in their previous studies in HKU, e.g. Master of Statistics or Master of Science in Computer Science may, on production of relevant transcripts, be permitted to select up to 36 credits of disciplinary electives from either List A or List B above if they are not able to find any untaken options from either of the lists of disciplinary electives.*

Remarks:
1. If a student selects a course whose contents are similar to a course (or courses) which he/she has taken in his/her previous study, the Department may not approve the selection in question.
2. The programme structure will be reviewed from time to time and is subject to change.

### Programme Duration and Class Schedules

The programme normally extends over 1.5 academic years for full-time study, and 2.5 academic years for part-time study. Teaching will take place mostly on weekday evenings, and Saturday mornings and afternoons. All lectures are conducted in English at HKU.

### Optional Preparatory Courses

- Preparatory course in matrices and calculus for students who need to rejuvenate their mathematical skills *(August, 2024)*
- Preparatory course in Python provides a quick overview of the Python programming language *(August, 2024)*
- Review course on basic probability and statistics concepts to solidify students' conceptual understanding *(August, 2024)*
- Workshop in R covering data handling, graphics, mathematical functions and some basic statistical techniques *(August, 2024)*
- Workshop in SAS for students who need to rejuvenate their skills in data management using SAS *(August, 2024)*

## Graduates Testimonial

**Luo Yuxin** *MDASC Part-time Graduate 2023*
Trader, Credit Suisse

As a trader in financial industry, I need to deeply interact with data in my daily tasks. The MDASC program provides a comprehensive and flexible curriculum, which benefits me a lot in many aspects. Data visualization helps me to extract key insights from millions of financial data more simply and clearly. Machine learning enables me to explore automated algorithm trading techniques. Statistical inference and models give me the ability to capture hidden trading opportunities from data. Furthermore, after taking this program, I can have more technically understanding of real-world applications like AlphaZero and ChatGPT. I believe this program will be beneficial to not only students with interests in IT, but also students who want to engage in financial and business industries.

**Wong Stephanie** *MDASC Part-time Graduate 2023*
Deputy Manager, Orient Overseas Container Line Ltd

What first attracted me to the MDASC programme, was its interdisciplinary approach to analysing data and the focus on applying such findings to solving real life problems. The programme courses touched upon many latest technologies used in data analysis and offered in-depth discussions in many statistical techniques. Furthermore, the course assignments were all very hands-on, equipping students with the ability to apply their knowledge in practical settings.

The programme has benefitted my career as it allows me to discover hidden trends & patterns in data and helps me become someone that can transform data into actionable insights.

Regardless of what your career role may be, I'm sure the knowledge you gain from this programme will come into good use, as data has become such an integral part of our life.

**Cheung Ngai Yin** *MDASC Part-time Graduate 2022*
Co-Founder, Mach Innovation

The MDASC programme is both academically challenging and commercially relevant allowing me to enhance my skills, experience and knowledge in various areas of data science. The learning experience through the MDASC is unparalleled. Not only do I learn from top professors in their fields, but also from talented and experienced classmates who come from different industries.

Specifically, the Data Science Project provides an excellent opportunity for the students to explore deeply in an interested field of data science and artificial intelligence or even commercialize their ideas. With the department's tremendous support and the programme's professional training, I have equipped with the knowledge, confidence and connections to start an artificial intelligence startup after graduation.

No matter where you come from or what you are looking for, I believe the MDASC programme will definitely open the door for a new career path for you in the future.