Master of Science (MSc) Program in Financial Mathematics

Program Director:

Yue-Kuen KWOK, Professor of Mathematics

The Master of Science (MSc) program in Financial Mathematics aims to prepare students from quantitative disciplines for contemporary finance and wealth management. The curriculum includes mathematical, statistical and computational methods for security pricing, asset allocation, speculative trading, and risk management, and offers comprehensive coverage on financial markets and valuable insights on the performance of various pricing models in market practice. This degree program upgrades students' knowledge in probability, statistics and stochastic calculus to a level beyond the bachelor's degree in mathematics, trains students with theories, tools and skills of programming for quantitative investment and risk management.

Contemporary financial industry is featured by the extensive use of mathematical models for security pricing, dynamical asset allocation, high-frequency trading and quantitative risk analysis. Graduates from this program are well prepared for jobs in trading and market making of derivatives, financial product development (structured products, insurance products etc.), investment decision making (fund management, trading, speculation strategies, etc.), and risk management (risk assessment, stress testing, etc.).

On completion of the program, students are expected to have:

- Comprehensive knowledge of financial products commonly traded in the markets and solid understanding of models of security pricing and hedging in equity, fixed-income, forex and credit markets.
- Solid understanding of the principles and technologies for risk management and algorithmic trading; and
- The ability to construct quantitative models and use them for production through quantitative programming.

Admission Requirements

Applicants must possess a bachelor's degree in Mathematics / Engineering / Physical Sciences or an equivalent qualification from a recognized university or tertiary institution.

Program Duration

The normal period for completing the program is one year in full-time mode and two years in part-time mode.

Program Fee

The program fee is HK$140,000 for 30 credits.

Curriculum

Students are required to complete 30 credits, including:

- 15 credits of financial mathematics courses;

- 9 credits of statistics courses; and

- 6 credits of free electives* and/or MAFS 6100 Independent Project#.

<u>Financial Mathematics Course List</u>

MAFS	5030	Quantitative Modeling of Derivatives Securities
MAFS	5040	Quantitative Methods for Fixed-income Instruments
MAFS	5210	Mathematical Models of Investment
MAFS	5230	Advanced Credit Risk Models
MAFS	5240	Software Development with C++ for Quantitative Finance
MAFS	5250	Computational Methods for Pricing Structural Products
MAFS	5270	Mathematical Market Microstructure
MAFS	6010	Special Topics in Financial Mathematics
MATH	5311	Advanced Numerical Methods I
MATH	5510	Mathematics Models of Financial Derivatives
MATH	5520	Interest Rate Models

<u>Statistics Course List</u>

MAFS	5010	Stochastic Calculus
MAFS	5020	Advanced Probability and Statistics
MAFS	5110	Advanced Data Analysis with Statistical Programming
MAFS	5130	Quantitative Analysis of Financial Time Series
MAFS	5220	Quantitative and Statistical Risk Analysis
MATH	5411	Advanced Probability Theory I
MATH	5431	Advanced Mathematical Statistics I

Credit transfer may be granted to students in recognition of studies satisfactorily completed in other universities or tertiary institutions. Applications must be made to the Department in the first term of study after admission. All credit transfer must be approved by the Program Director and is subject to University regulations governing credit transfer.

Graduation Requirements

Students must complete the program with a graduation grade average (GGA) of 2.850 or above as required of all postgraduate students at the University.

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* *Free electives can be any mathematics courses at 4000-level or above, or any courses outside the department at 5000-level or above.*

Number of credits earned from an independent project can be 3 to 6 credits.