COURSE DESCRIPTION FOR MASTER OF FINANCE (MFIN) COURSES

Advanced Corporate Finance*
This course is aimed to give students a solid understanding of theoretical and empirical contributions of modern corporate finance. Major topics of corporate finance, including valuation, equity offerings, financial leverage, payout policy, and mergers and acquisitions, will be extensively discussed. The course offers students an opportunity to appreciate how corporate managers apply financial concepts and theories to managing real business and how financial decisions generate significant impact on firm value. After taking the course, students are expected to possess the ability to logically evaluate a firm’s financial decisions and later resolve financial issues in real world.

Advanced Interest Rate Models
This course covers advanced topics in interest rate modeling and builds on material covered in earlier derivatives and mathematical finance courses. The course integrates theory and practice and focuses on the methods and models used by financial institutions to value interest-rate products. These include spot and forward rate models such as the Hull-White, HJM and the LIBOR market models and their extensions (displaced diffusion, CEV, stochastic volatility) and their calibration to market caps and swaptions. Important theoretical material needed to understand and extend these models is also be integrated into the course (e.g. forward measure, change of numeraire/measure).
Prerequisite: Fixed Income Securities and Interest Rate Modelling

Advanced Mathematical Finance
This course further develops the course Mathematical Techniques of Finance I, to cover the general principles, and current practice, in pricing and hedging derivative instruments. We first discuss hedging and spanning risk factors, and apply these concepts to option pricing with stochastic volatility and jumps, including the Heston Model. Related to this, we discuss the modeling of the price process as a Levy process, and associated Fourier Transform techniques. We then discuss finite difference methods, and apply these to various instruments, including convertible bonds. Finally, we discuss Monte Carlo methods, and techniques to make this method computationally efficient, and applicable to American options. This course will make much use of computer implementations.
Prerequisite: Fixed Income Securities and Interest Rate Modelling and Mathematical Techniques in Finance

Advanced Option Pricing Models*
This course brings together the practical and theoretical knowledge taught in the other derivatives and risk management courses in the MFin programme to introduce some of the state-of-the-art option pricing models. The course dwells on the original insights of various authors for exotic option pricing and option pricing models with volatility smiles. In addition to the plain-vanilla European option model, the course discusses the continuous and discrete barrier, lookback, Asian, American, excursion option pricing models. It also discusses the jumps and stochastic volatility option pricing models, including the latest option pricing models under Levy processes. Although this course highlights the theoretical and technical motivation of the various models, its delivery requires some hands-on knowledge of MatLab programming. Students finished this course will be conversant to the latest development and technology in option pricing.
Prerequisite: Mathematical Techniques in Finance

Applications of Derivatives in Financing and Risk Management
One of the key responsibilities of a CFO or CIO (chief investment officer) is to secure low cost funding for capex, acquisition or leveraging an investment. Reduction in funding cost can be achieved through strong credit standing, negotiation with banks or offering of security packages to lenders. With appropriate use of derivatives, not only can CFO/CIOs often further reduce their funding cost but they can also tap more sources of funding. Globalization of financial markets allows capital to flow easily across borders, thus allowing borrowers to tap offshore funding. But offshore funding is often denominated in foreign currency which then requires the use of derivatives to swap it into the desired currency. In this course, candidates study the use derivatives in financing and liability risk management. Besides getting an overview of the various forms of financing current available to corporations and financial institutions, candidates will also
learn how to take advantage of the on- and offshore funding price gap in Asia and hedging a company’s risk exposures to interest rate and currency movements. In addition, it will reinforce their derivatives knowledge acquired in other courses through case studies and recent applications as seen by financial market.

*Prerequisite: Derivative Securities*

---

**Behavioral Finance**

Behavioral finance uses insights from psychology to understand how biases, heuristics, framing and emotions influences the decisions of individual and professional investors, markets and managers. We describe how and why these suboptimal decisions might deviate from those predicted by traditional financial or economic theory. We also show why arbitrageurs such as hedge funds cannot correct but instead choose to ride on the misbehavior and mispricing. We will explore the implications of investor psychology and limitation to arbitrage in the individual trading behaviors, aggregate stock market and the cross-section of average returns, and corporate finance. We examine how insights of behavioral finance complement the traditional finance paradigm, so that students will gain an understanding of how individuals and institutions actually make financial decisions (descriptive) and guidance on how to improve financial decision making (prescriptive) in themselves and others.

---

**Corporate Finance and Asset Valuation**

This course aims to provide students with understanding of (i) fundamental approaches for equity valuation, (ii) fundamental approaches for valuation of fixed income securities, (iii) the knowledge about corporate finance and behavioral approaches in asset valuation, and (iv) the recent development of valuation techniques. On the theoretical side, this course introduces fundamental knowledge for asset valuation, investment strategies, and portfolio management. On the practical side, this course covers recent topics that are related to the asset valuation techniques used in both Hong Kong and United States. Some projects about asset valuation are specially designed to let you apply the theoretical knowledge into practice. This course is highly recommended for students who intend to pursue a career or further studies in equity valuation and securities analysis. Certainly, the knowledge from this course will also be very useful when you make your own personal investment decision.

---

**Corporate Financial and Risk Management**

This course covers a specific subset of topics in corporate finance including risk management, hedging, capital structure, and liquidity management. The basic idea of the course is that all corporate financial decision-making is some form of risk management. They are centered on notions of asset liability matching and should be well aligned with each other and with management and capital market expectations. The objective of the course is to explain the theory of corporate risk management and to demonstrate some of its real-world applications. In particular, we will describe a 4-step corporate risk management process which includes defining a consistent risk strategy; quantifying market risk exposures; establishing an efficient benchmark and implementing risk strategies. We will also touch upon some recent developments in derivative accounting and their implications for corporate hedging.

---

**Credit Risk**

A comprehensive analysis of credit risk measurement and credit derivatives. Topics include credit events, expected default frequency, expected exposure, loss given default, default correlation, KMV, Credit Metrics, credit ratings performance and migration, total return swaps, credit default swaps, basket default swaps, credit spread forwards and options, exotic credit derivatives, credit-linked notes, collateralised debt obligations, Basel II and SME lending.

*Prerequisite: Derivative Securities, Spreadsheet Modelling in Finance, and Fixed Income Securities and Interest Rate Modelling*

---

**Current Topics in Finance**

This is a special course that deals with various current topics in finance. Topics covered may vary from year to year, depending on the research interests of the instructor.
**Derivative Securities**

Derivatives have become a popular hedging and investment tool over the last few decades and derivatives concept are required for every advanced finance topic. This course provides students with a framework (1) to understand the fundamental concepts of derivative products (forward and futures, options, swaps, and basic structured products), (2) to develop the necessary skills used in valuing derivative contracts, and (3) to understand a wide variety of issues related to risk management and investment decisions using derivatives. The course intends to provide a solid foundation for other advanced courses of the program such as mathematical finance, risk management, fixed income securities, and financial engineering.

**Economics for Financial Analysis**

This module provides the foundation in economics that is essential in financial analysis. The major topics include microeconomics, macroeconomics and international economics, consumer choice, costs and the supply of goods and services, competitive and market structure, the role of government in the economy, national income accounting, business cycles, aggregate demand/supply, fiscal and monetary policies, the level and structure of interest rates, the role of expectations in economies analysis, economic analysis, economic growth, comparative advantages and international trade, international finance and foreign exchange markets. Appropriate references will be made to current issues in Hong Kong, the region and the international economy.

**Entrepreneurship in Finance: Hedge Funds, Private Equity and Venture Capital**

This course provides students with the foundations and practical knowledge enabling them to launch and manage their own entrepreneurial venture including a hedge fund, private equity, venture capital or asset management firm. Taught as a combination of practical classes and guest lectures by industry professionals, the course covers the entire fund and business launch spectrum including fund structuring, investor capital raising, investor due diligence, regulatory, tax, governance, fund terms, private placement regulations, market trading rules, service provider selection, counterparty selection, employment matters, real estate, technology, operations, etc. The course also covers the investor landscape and investor lifecycle from early stage investors to institutional capital raising from global family offices, fund of funds, endowments, private banks and pension funds. We also cover the ongoing management and deal making of such funds from angel and venture capital early investments to private equity deals and exits. The course also discusses the global trends and industry institutional best practices, the customs and usage in the industry as well as some of the future trends, including FinTech and cybersecurity, and their impact on the industry. This is a very practical course with a heavy emphasis on the latest industry trends and best practices rather than theoretical concepts.

**Financial Econometrics**

This course intends to be a highly applied one. The knowledge of econometrics that has immediate applications in finance will be imparted to students. This course is not a pure econometrics theory course, nor is it a course to exhaust financial applications of econometrics. It is designed to equip students with knowledge of relevant econometric theories and the ability to apply such knowledge to several finance models. Students are required to do computer exercises to implement relevant econometric techniques during the course. Upon completing the course, students are expected to appreciate usual practical applications of econometrics in finance and carry out their own empirical investigations. The course should help students gain access to more advanced topics if they so wish.

**Financial Engineering**

Financial engineering is the process of constructing new instruments by using bonds and individual derivatives such as forwards, calls, puts, and common exotic options as basic building blocks. The process involves designing, pricing and managing the instruments. In this course, we anatomicize a few popular structured products. Some of them have been traded in the Chicago Board Options Exchange, and Hong Kong Exchanges and Clearing Limited. And others, such as equity-linked high yield notes and capital guarantee funds are sold by the commercial banks in Hong Kong. We then discuss how to price these products by studying the price of the embedded exotic options. We study the risk exposure of the retail investors and risk management for the commercial banks. We also discuss some topics on the market for volatility trading, recent development of option-pricing models and global financial crisis.
Financial Engineering in Practice
This course is designed to provide a holistic view of financial engineering. We introduce the students to the whole workflow of product design, pricing, packaging and post-execution management. The emphasis is on real-life practical concerns and on financial markets in Asia region. We aim to provide a comprehensive and consistent view of the various underlying financial assets and their characteristics. We emphasize the importance of a client-oriented engineering process and aim to illustrate the characteristics of various client segments with different investment and hedging needs. As part of the course, students are introduced to several financial products such as FX carry strategy and commodity derivatives etc. After course completion, a student should have a better understanding not only of the process of financial engineering but also of how financial engineering fits into the machinery of a modern investment bank.

Financial Services Regulations*
This course provides students with the legal background necessary to comply with the regulatory requirements in banking and finance. It covers the legal aspects of corporate governance, the legal framework of banking and finance, and financial products, including derivatives. This course also provides students with background on market access in financial services, as China embarks on liberalisation of its financial markets as a member of the WTO.

Financial Statement Analysis and Business Ethical Standards*
This course provides an introduction to the financial statements and financial reporting process from a user’s perspective. The course focuses on fundamental accounting concepts and principles as well as techniques related to financial statements analysis. Ethical and professional standards that persons engaged in the professional practice of financial analysis and investment management should know, understand, and apply are also covered.

Fixed Income Securities and Interest Rate Modelling*
This course introduces various state of the art techniques in modeling fixed income securities. In particular, the course starts with the discount factor approach in pricing all kinds of bonds. Then we focus on modeling the discount factors. Models are introduced in two major parts. First, the course emphasizes discrete-time models based on binomial trees in order to understand the economic insight of the risk-neutral pricing. Second, extensions to continuous-time models are also discussed in detail. Calibration and implementation of the models will be studied. Other related topics may include interest rate risk management, interest rate derivatives, and monetary policy.

Prerequisite: Derivative Securities, Corporate Finance and Asset Valuation, Mathematical Techniques in Finance and Spreadsheet Modelling in Finance

Fund Management and Alternative Investments*
Hedge funds are one of the fastest growing sectors of asset management. This course studies the styles of hedge funds and management strategies from an investment decision-making perspective. Topics covered in this module include environment and micro-structure of capital market, investment strategies, quantitative tools, derivative products, investment performance evaluation and discussions of some hedge funds failures. Special attention is given to various practical investment strategies and their risks, including equity selection techniques, market-neutral portfolio constructions, arbitrage strategies, emerging market investment, shortselling problems, etc.

Global Investing*
The global financial market is flat. International financial markets have experienced an explosive growth in the past two decades. Financial innovations, deregulation of national markets, the rise of emerging markets and the massive increase in international assets held by governments have fuelled a global liquidity wave and opened new avenues for international investments. At the same time, the speed and depth of the global contagion experienced in the wake of the US subprime crisis has underscored the financial
markets/products’ interconnectedness. The purpose of this seminar would be to offer a framework for the analysis of international investment decisions. The seminar will extend the standard investments theories and products to a global setting through a series of introductory lectures, but the focus will be hands-on interaction with the students through case studies and analysis of materials in class.

Introduction to FinTech and its Impact on the Future of Banking and Finance*
The world of global finance, banking and financial services is changing rapidly with the emergence of start-up financial technologies, commonly referred to as FinTech that may disrupt the status quo. Taught as a series of practical courses and guest lectures by industry entrepreneurs and professionals, the course covers the main pillars of the FinTech start-up ecosystem in Asia, including peer to peer lending platforms, internet finance, online finance, bitcoin, digital currencies, digital payments, big data, cybersecurity, cryptography, etc and their practical impact on global banking and finance. This course will provide students with the latest empowering and practical knowledge on FinTech enabling them to understand some of the FinTech changes taking place currently in the financial services industry and, most importantly, the trends that will impact the industry in the future. This is a very practical course with a heavy emphasis on guest lectures on the latest industry trends and best practices by industry experts and entrepreneurs rather than theoretical concepts.

Investment Analysis and Portfolio Management*
This course aims to provide students with understanding of (i) fundamental knowledge for asset valuation, (ii) portfolio management techniques for risk management and speculation, (iii) investment strategies adopted in financial market, and (iv) the recent development of portfolio management tools and investment strategies. On the theoretical side, this course introduces fundamental knowledge for asset pricing, investment strategies, and portfolio management. On the practical side, this course covers recent topics that are related to the investment strategies and portfolio management in both Hong Kong and United States. Some projects about portfolio management and asset valuation are specially designed to let you apply the theoretical knowledge into practice. This course is highly recommended for students who intend to pursue a career or further studies in investment strategies and portfolio management. Of course, the knowledge will also be very useful when you make your own personal investment decision.

Macroeconomic Analysis and Forecasting Divided into two parts, the first half deals with the theory and practice of modern macroeconomic analysis. The design of the course aims at making close contact with current macroeconomic events and providing an integrated view of macroeconomics. To achieve such goals, the introduction of a unified model that concentrates on the implications of equilibrium conditions in three sets of markets: the goods market, financial markets, and the labour market. A variety of applications and examples will be offered to show how economic concepts can be put to work in explaining real-world issues. The second half of the course concerns the forecasting of economic time-series, and focuses on techniques and models that are routinely used in applied work. Topics include ARIMA models, trends and seasonality, aberrant observation, non-linearity, ARCH and GARCH models, multivariate time-series and VAR models. As part of the course requirement, students are expected to generate and evaluate their own forecasts by using appropriate time-series models that are supported by key features of the data.

Mathematical Techniques in Finance*
There are three main approaches to mathematical finance: the tree approach, the martingale approach and the partial differential equation approach. This course will present these three approaches and their applications to pricing and hedging financial derivatives. The corresponding numerical methods of the three approaches are lattice method, Monte Carlo simulation method, and finite difference method. We might briefly introduce them. Along the lectures, we will also review necessary mathematics, such as calculus, partial differential equation, applied probability and stochastic calculus. After taking this course, students should be able to fully understand no-arbitrage theory, risk-neutral probability, martingale, and Black-Scholes equation. The purpose of this course is to lay down a solid mathematical foundation for students to learn more advanced topics in financial engineering and risk management, such as exotic options, interest rate derivatives and credit risk models.

Prerequisite: Derivative Securities
Mergers, Acquisitions and Corporate Restructuring*
This course is designed to develop a solid understanding of commonly discussed and applied issues in merger and acquisitions (M&As). The topics covered in this course include the M&A process, methods of valuing a target firm, valuing synergies, the form of payment and financing, assessing the highly levered transaction, governance in M&A, and M&A negotiation. Cases in M&As will be used in the discussion of the various topics. By going through analyses and discussions of real-life M&As, students will gain experiences in the application of financial theory and techniques to evaluate a M&A decisions and transactions.

Real Options and Dynamic Corporate Finance*
A real option is a right—not an obligation—to take an action on an underlying real asset. The action may involve, for example, abandoning, expanding, contracting a project or even deferring the decision until a later time. Real options analysis (ROA) is a tool that helps to quantify the value of a real option. This course provides a synthesis of modern asset pricing and corporate finance via the framework of ROA. The course compares and contrasts ROA with the traditional tools of valuation. The benefits and limitations of ROA in terms of practical applications are also discussed.

Risk Management*
The objective of this course is to introduce concepts, techniques and framework for quantitative risk management at financial institutions. Financial firms, with their complicated list of positions in a mixture of instruments, are exposed to various sources of financial risk. This class focuses mainly on market risk, the risk of unexpected changes in prices and rates. The first part of the course introduces basic concepts in risk management and builds the toolkit for measuring risk quantitatively. The second part of the course is devoted to studying the widely accepted Value at Risk (VAR) systems, including calculations, back testing and flaws of VAR. The course also touches on other aspects of financial risk such as liquidity risk, credit risk and operational risk.
Prerequisite: Derivative Securities and Spreadsheet Modelling in Finance

Risk Management for Insurance Companies and Financial Conglomerates
This course offers latest developments in the theory and practice of risk measurement and management in the areas of (i) life insurance, (ii) property-casualty insurance, (iii) natural catastrophic risks, and, (iv) commodity price risk.

Seminar in Commercial Banking and Real Estate Financing*
This course covers bank management techniques that include asset and liability management, liquidity and reserve management, credit analysis, loan pricing and off-balance-sheet banking, as well as regulatory issues of commercial banks. It also discusses issues related to mortgage loan products and how real estate risks may affect the market value of mortgages.

Special Topics in Finance: Market Microstructure
This course examines the effects of market designs and trading mechanisms on various dimensions of trading quality. Its main objective is to help candidates to understand how markets work, and how governments and exchanges regulate them. Candidates will learn who makes market liquid; why some traders consistently profit from trading while others lose; and how trading rules/mechanisms affect price efficiency, liquidity and trading profits. With this knowledge, they can improve their trading strategies. If candidates are regulator or exchange officials, this knowledge will help them to design better markets. This course is also practical and covers many realistic trading mechanisms around the world. To develop candidates’ ability to apply theories into practices, this course covers several contemporary issues on market microstructure.

Spreadsheet Modelling in Finance*
This course is intended to introduce spreadsheet (MS Excel) as a financial modelling tool and understand its capabilities and limitations. It is designed to teach students to apply Visual Basic for Applications (VBA) to automate spreadsheet applications and extend the functionality of the spreadsheet. Numerical derivative
pricing by implementing models in VBA will be illustrated. Examples include Black-Scholes formula, Greeks Parameters, Binomial Tree and Monte Carlo Methods Statistical computations with application to Risk Management will also be demonstrated. This course will also explore to optimise the computational power of Excel through the C API.  

Prerequisite: Derivative Securities and Mathematical Techniques in Finance

Trading Workshop
This course covers financial data and software tools as well as the operational side of derivatives trading in a trading lab environment. Students will learn how the major systems such as Reuters and Bloomberg work in trading. Students will be shown the manner in which transactions are executed, either across telephone lines, telex or electronic trading devices, and the manner in which systems are used to help dealers update their trading blotters, and how positions are updated and risk monitored. Students will also learn the pre-settlement stage of each transaction and the settlement issues, including back-office support in accounting and handling of counter-party risk.

Assessment
Candidates shall normally be examined at the end of each course, unless otherwise specified. Candidates shall be assessed for each of the courses for which they have registered, and assessment is normally conducted in the form of coursework assessment and examinations in the range of 40% to 60%, unless otherwise specified by the course instructor.

Note:
Not all the courses listed above will necessarily be offered each year.  
* Courses offered in the 2016-17 academic year.