Doctor of Business Administration
Elective Courses (22 credits)

FIN 500J – Mathematical Foundations for Finance (1.5 credits)
This course covers mathematical foundations that are essential for advanced quantitative finance courses. The main contents include, but are not limited to, matrix algebra, constrained optimization, ordinary and partial differential equations, and numerical methods for optimization and solving nonlinear and differential equations.

FIN 538 – Stochastic Foundations of Finance (1.5 credits)
This is a foundations course, which is designed as a prerequisite to FIN 539, Mathematical Finance. It is therefore mainly designed for students in the Masters in Finance program who aim at quantitative positions in investment banks, hedge funds and consulting firms. While financial examples will be given, the primary focus will be on stochastic process and stochastic calculus theory. Students interested in applications of the theory are expected to take follow-on courses. Topics to be covered include: general probability theory; Brownian motion and diffusion processes; martingales; stochastic calculus including Ito´s lemma; and jump processes.

FIN 550 - Numerical Methods and Optimization in Finance (1.5 credits)
The proposed is a project based course in which you learn how to apply numerical methods and optimization techniques to solve financial problems. The course will cover a variety of numerical methods and optimization techniques for both linear and non-linear problems with several examples of financial applications. Among the optimization methods (either exact or approximate solution techniques) covered will be: Linear and non-linear optimization, Integer programming, Stochastic Programming, Dynamic Optimization, and Robust Optimization. The numerical methods will mostly concentrate on finite difference schemes for partial differential equations as frequently encountered in financial applications.

FIN 532B – Data Analysis for Investments (1.5 credits)
The objective of this course is to obtain an in-depth understanding of some of the major empirical issues in investments. Based on recent research articles and cases, students are required to learn the facts, theories and the associated statistical tools to analyze financial data. The topics for this course include models of stock returns, Bayesian and shrinkage estimations for expected returns and covariances, multifactor asset pricing models, GARCH models, principal components, asset allocation, stock screening, predictability, performance evaluation, anomalies, limits to arbitrage and behavioral finance.

FIN 527 – Financial Markets (1.5 credits)
In this class, we study important primary and secondary markets for financial assets. Our purpose, in addition to learning about existing institutional arrangements, is to develop a theoretical foundation which will help us understand why each market is structured as it is and the strategies of market participants. Our discussions of theory will include the role of private and public information, of ethics and reputation, of government regulation and self-regulation, and of strategic behavior. A theoretical framework is crucial to successfully participating in markets which continue to evolve at a rapid rate.

FIN 523B - Mergers & Acquisitions (1.5)
The course will provide an in depth view of the theory and empirical regularities of various corporate control transactions. Specifically, we will discuss valuation of target firms, possible sources of value creation, and various motives for mergers, tax consequences of mergers, legal issues in mergers, financing an acquisition, defensive tactics in hostile takeovers, going-private transactions and bidding behavior of acquirers. The method of instruction is a mix of lecture and case analysis.

FIN 524B - Derivative Securities (1.5)
Provides an in-depth analysis of valuation and trading strategies for options and other derivative securities which have applications across areas of finance such as hedging, swaps, convertible claims, mortgage payments, index arbitrage, insurance, capital budgeting and corporate decision making, and are responsible for many new innovations and developments of the financial markets.

FIN 534C – Adv. Corporate Finance III – Frontiers of Valuation (1.5 credits)
This course covers advanced topics in valuation. Main topics covered will be the valuation of private firms and young businesses, and the valuation of financial services firms such as banks and insurance companies. The course applies both theory and practical valuation methods through the analysis of cases and real world examples.

MEC 540 - Money, Capital Markets & Economic Growth (1.5 credits)
An introduction to the U.S. monetary and financial system and its interaction with the overall economy. Among topics considered are the determinations of interest rates, the relationship between monetary and "real" sides of the economy including savings and investment decisions and inflation rates, and the role of capital markets in GDP and productivity growth.

FIN 530 – International Finance (1.5 credits)
Measuring and hedging exposures to exchange rate fluctuations is a central topic of this course. The relationships among spot and forward exchange rates, interest rates, and inflation rates are described. Additional topics include capital budgeting for international projects, international capital markets, and international portfolio diversification.

FIN 533 – Real Option Valuation (1.5 credits)
This is an applied course in capital budgeting under uncertainty and flexibility. Traditional NPV analysis assumes that corporate investments are "now or never" and that they are irreversible. However, most corporate projects have a great deal of flexibility in their timing, scale, etc. Our goal is to develop more advanced capital budgeting skills so that the student may attack real-world corporate investment decisions in a sophisticated way.

FIN 537 – Advanced Derivative Securities (3 credits)
This courses focuses on implementation of models for pricing and hedging derivative securities in the equity, currency, and fixed-income markets. Students will learn to write programs in a programming environment such as MATLAB to implement the Black-Scholes model, binomial models, Monte-Carlo methods and finite-difference methods. The derivatives studied will include exotic equity and currency derivatives and caps, floors and swaptions. The goals of the course are to learn more about the various instruments that are traded, the various assumptions and methods that may be chosen in modeling them, and the importance of the assumptions in determining the prices and hedges that are chosen. The course will be especially useful to students pursuing careers in sales and trading who will interact with research departments and students pursuing careers in asset management.

FIN 539 – Mathematical Finance (3 credits)
This course focuses on continuous-time derivative pricing and optimal security trading. In the first half of the course, students will learn how to derive partial differential equations and pricing formulas for various derivative securities including options with stochastic volatility, options with jump diffusion, and American style options. In the second half of the course, students will learn how to solve optimal portfolio selection problem with or without portfolio constraints through both the Hamilton-Jacob-Bellman equation approach and the martingale approach. The course is mainly designed for students in the Masters in Finance program who aim at quantitative positions in investment banks, hedge funds and consulting firms. The course might also be of interest to those who want a more theoretical approach to analyze embedded derivatives and risk management issues at corporations.

FIN 551 – Advanced Fixed Income and Credit Risk Modeling (1.5 credits)
This course is an advanced course in fixed-income. This means that a basic knowledge of fixed-income markets and concepts is assumed. The focus of the course is on the modeling of fixed-income securities. We will examine the behavior of the yield curve and discuss what this suggests for hedging liabilities. We will cover models of the term structure and of various types of fixed-income derivatives including caps, floors, and swaptions. We will also introduce credit-risk modeling, credit-default swaps, and collateralized debt obligations.

FIN 552 – Fixed Income Derivatives (1.5 credits)
This course builds on the materials developed in Fin 537, Advanced Derivative Securities. Here we will cover market-model pricing of LIBOR caps and floors, swap market model pricing of swaptions, Hull-White and Heath-Jarrow-and-Morton models, and the LIBOR market model for pricing swap derivatives via Monte Carlo techniques. We will also consider how to use these models to price various types of exotic interest rate derivatives commonly seen in practice.

FIN 549H - Special Topics: Real Estate Finance (1.5 credits)
This course provides a broad introduction to real estate finance and investments. Topics include both equity and debt. We begin with an overview of real estate markets in the United States. On the equity side students will be introduced to the fundamentals of real estate financial analysis, including pro forma analysis and cash flow models, and elements of mortgage financing and taxation. Ownership structures, including individual, corporate, partnerships and REITS will also be covered. On the debt side, we examine a number of financing tools in the context of the evolution of the secondary mortgage market, both residential and commercial. Those wishing to pursue more advanced topics in real estate finance could follow this course with Fixed Income and Mortgage-Backed Securities.

FIN 500Q - Risk Management (3 credits)
Thorough overview of the risk management process and the use of derivatives to manage risk. Objectives are: provide a framework that managers can employ to make strategic risk management decisions; integrate risk management into a broader understanding of corporate financial policy; introduce techniques that managers can use to identify risk exposures; identify the basic derivative market instruments available to manage risk and the uses, advantages, and disadvantages of each; present analytical and statistical techniques that managers can employ to reduce exposures to particular risks; and present an overview of the oversight of the risk management process.

ANY GRADUATE COURSE (500 and above)
With the approval of the faculty advisor, director of DBA program and the instructor of the specific course.