

# BUFN - FINANCE

## **BUFN400 Introduction to Financial Markets and Financial Datasets (3 Credits)**

Provides an overview of financial concepts and markets and datasets. Company financial statements will be used to review concepts including earnings, cash flow, accruals, investment, dividends, etc. The course will introduce concepts related to portfolio theory and asset pricing. It will introduce the fundamentals of the stock market and market microstructure, including bid ask spreads and market liquidity. Advanced topics include event studies, high frequency trading, Over The Counter (OTC) bond markets, and more specialized institutional arrangements including repo markets and foreign currency exchange markets.

**Prerequisite:** STAT400, STAT401, STAT410, or STAT420.

**Recommended:** CMSC320, CMSC351, MATH240, and MATH241; and should have extensive familiarity with Python including Pandas, Numpy, Scipy, Matplotlib; and familiarity with probability and statistics, econometric modeling.

**Restriction:** Must be in the Computational Finance (#BU04) minor.

## **BUFN401 Option Theory and Derivatives (3 Credits)**

Will introduce Option Theory and the concept of a derivative financial contract whose value is based on some underlying asset, e.g., a stock or bond or commodity. Option theory based pricing models are a cornerstone of modern finance. Unlike the Capital Asset Pricing Model (CAPM) that determines an appropriate rate of return, option theory primarily relies on arbitrage arguments, and the probability that an option will be exercised during some time interval. Option theory has been very successful empirically. Common derivative types include stock and bond and index options, futures contracts, forward contract and swaps.

**Prerequisite:** BUFN400.

**Restriction:** Must be in Computational Finance (#BU04) minor.

## **BUFN402 Portfolio Management (3 Credits)**

The fundamentals of portfolio management, including asset allocation, investing strategies, and risk management. The class describes some of the main strategies used by hedge funds and provides methodologies to analyze them. The strategies are illustrated using real financial data, and students learn to apply tools for performance measurement, portfolio optimization (quadratic programming), factor models, predictive regression analysis, backtesting, and managing transaction costs.

**Prerequisite:** BUFN400.

**Restriction:** Must be in the Computational Finance (#BU04) minor.

## **BUFN403 Capstone Computational Finance Projects (3 Credits)**

This is a semester-long capstone project to be completed by student groups. The projects will range from academic research projects (co-mentored by a finance or computer science faculty member) or an industry focused project (co-mentored by an industry coach). Each project must address an interesting real world challenge faced by a researcher, an analyst or a financial regulator. The project would ideally use a real dataset. Teams can create their own datasets or re-purpose existing datasets. There will be credit given to teams who create or curate their own datasets. The project should apply methodology based in machine learning, information / data management, including NLP and text analytics. The project must include a visual analytics component so that the results from the project can be presented and explained to the user.

**Prerequisite:** CMSC320; and (BUFN401 or BUFN402; or permission of the Computational Finance Minor faculty directors).

**Restriction:** Must be in the Computational Finance (#BU04) minor.

## **BUFN602 Introduction to Financial Accounting (2 Credits)**

Overview of financial accounting, periodic financial statements and the financial reporting process. Importance of financial statements as information source for creditors and investors and as a means by which managers can communicate information about their firms.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUSI610, BUAC602, BUFN602, or BMGT602.

## **BUFN610 Financial Management (2 Credits)**

The fundamental concepts and techniques used to evaluate corporate decisions. Topics include the time value of money, valuation of common securities, investment decisions, capital budgeting, capital structure, and the weighted average cost of capital. The objectives are to develop the ability to make investment decisions, manage project finances, and analyze financial decisions.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUSI640, BUFN610, or BMGT610.

## **BUFN620 Capital Markets (2 Credits)**

Covers modern theories and techniques for analyzing investments in different securities. Introduces mathematical and statistical models to price securities and guide investment decisions. The main topics covered are portfolio theory, pricing models, market efficiency, fixed income investment, and options.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)) ; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN740 or BUFN620.

**Formerly:** BUFN740.

## **BUFN630 Valuation in Corporate Finance (2 Credits)**

An advanced corporate finance course focusing on valuation. The main objective is to apply the concepts covered in the introductory finance class through real-life applications (cases) and use valuation estimates to guide and communicate investment decisions. The topics include building Pro Forma statements and forecasting future cash flows, dynamic cash flow models, estimating the cost of capital, implementing the Weighted Average Cost of Capital (WACC) and Adjusted Present Value (APV) methods, and using real options techniques (binomial and Black and Scholes models as well as Monte Carlo simulations) to value companies and projects.

**Prerequisite:** BUFN610.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)) ; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN630, BUFN714, BUFN750, BUFN753, or BMGT730.

**Formerly:** BUFN750.

## **BUFN640 Financial Data Analytics (2 Credits)**

Introduces the skills and computing languages for analyzing financial data and testing financial models. Covers topics such as the ordinary least square regression (OLS) estimator, its properties and applications, statistical inference, and univariate and multivariate analysis. The focus is on working with data and applying econometric models to financial applications such as estimating asset pricing models, portfolio choice, and the efficient frontier. The course will use Python programming language, Google Colab environment, and matching learning packages.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN758N of BUFN640.

**Formerly:** BUFN758N.

**BUFN650 Machine Learning in Finance (2 Credits)**

A hands-on course on applications of cutting-edge machine learning methods to financial modeling. It builds on the Financial Analytics class to introduce students to a wide variety of machine learning techniques ranging from lasso regression to deep learning and TensorFlow. The course provides the basic ideas and intuition behind these methods, a more formal understanding of how and why they work, and opportunities to experiment with machine-learning algorithms and apply them to big data modeling in finance. It will use the Python programming language, Google Colab environment, and machine learning packages.

**Prerequisite:** BUFN640.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN7580 or BUFN650.

**Formerly:** BUFN7580.

**BUFN660 Derivative Securities (2 Credits)**

Introduces standard derivative contracts, including forwards and futures, swaps, and options. Covers the mathematical foundation of valuing derivative contracts, the use of static and dynamic replication strategies, and the concept of no-arbitrage. Derivative securities on various underlying assets (equities, indices, commodities, foreign exchange, etc.) are analyzed using different application contexts.

**Prerequisite:** BUFN610.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)) ; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN660, BUFN726, BUFN761 or BUFN773.

**Formerly:** BUFN761.

**BUFN670 Financial Mathematics (2 Credits)**

Introduction to the mathematical models used in finance and economics with emphasis on pricing derivative instruments. Topics include elements from basic probability theory, distributions of stock returns, elementary stochastic calculus, Ito's Lemma, arbitrage pricing theory, and continuous time portfolio theory. Particular focus is on the financial applications of these mathematical concepts.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**BUFN710 Financial Strategy for Corporations (2 Credits)**

An advanced course in corporate finance, focusing on the issues that firms face when they plan to raise external capital from financial markets. The focus is on the financing problems faced by mid-market to large firms and on capital raised from public markets. The forms of external finance vary from simple debt or equity to more complex securities that bundle with an element of risk management.

**Prerequisite:** BUFN610; or permission of BMGT-Robert H. Smith School of Business.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN751 or BUFN710.

**Formerly:** BUFN751.

**BUFN712 Financial Restructuring (2 Credits)**

Focuses on identifying ways to increase firm value through corporate restructuring. Specific topics include: mergers and tender offers, spin-offs, carve-outs, divestitures, takeover defense strategies, leveraged buy-outs, and international acquisitions. Additionally, the theory, practice and empirical evidence related to each of these topics will be covered. Emphasis will be placed on valuation analysis and strategic considerations.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN712 or BUFN752.

**Formerly:** BUFN752.

**BUFN714 Corporate Governance and Performance (2 Credits)**

Deals with corporate governance and its impact on shareholder value. Divergence of interests between corporate insiders and providers of funds leads to agency problems which can impair corporate performance and shareholder value. Various instruments of corporate governance - internal as well as external mechanisms - that can help align managerial incentives with those of outside investors, and hence help restore shareholder value will be studied.

**Prerequisite:** BUFN610.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN630, BUFN714, BUFN750, BUFN753, or BMGT730.

**Formerly:** BUFN753.

**BUFN716 Corporate Risk Management (2 Credits)**

Surveys the theory and practice of financial risk identification, measurement, and mitigation at financial and non-financial firms.

Topics will include hedging with options and futures, interest rate risk management, Value-at-Risk (VaR), Cashflow-at-Risk (CaR), Earnings-at-Risk (EaR), credit risk, equity risk, commodities risk, exchange rate risk, and lessons from risk management disasters.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN716 or BUFN754.

**Formerly:** BUFN754.

**BUFN717 Entrepreneurial Finance and Private Equity (2 Credits)**

An advanced topics course in Corporate Finance. The major emphasis is how financiers help growing firms - and in particular young start-ups - using different types of securities at different points in the industry's and firm's life. Financing arrangements and securities studied will include private equity funds and private financings placements, Venture Capital (VC) and preferred equity, Investment Banks through Initial Public Offerings (IPOs), Private equity funds, debt and leveraged buyouts. Students will learn additional techniques that will help them understand how financiers value firms and how to understand, plan and value different financing strategies.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN755 or BUFN717.

**Formerly:** BUFN755.

**BUFN721 International Investment (2 Credits)**

Addresses international stock markets, portfolio theory, international interest rates, exchange rates and exchange rate derivatives (options, forwards, and futures), exchange rate swaps and exchange rate exposure (operating, translation, and transaction), foreign investment strategy.

**Prerequisite:** BUFN610.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN721 or BUFN770.

**Formerly:** BUFN770.

**BUFN722 Banking and Financial Institutions (3 Credits)**

The role of financial management in banking and financial institutions. The economic role and regulation of banking and financial institutions, analysis of risks and returns on financial assets and liabilities, and the structure of assets, liabilities and capital.

**Prerequisite:** BUSI640.

**Credit Only Granted for:** BUFN722, BUFN724, or BUFN772.

**BUFN723 International Corporate and Project Finance (2 Credits)**

Continuation of BUFN721. Issues addressed will include capital budgeting, project financing, exchange rate exposure (operating, translation, and transaction), foreign investment strategy, and risk management.

**Prerequisite:** BUFN610 and BUFN721.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN723 or BUFN771.

**Formerly:** BUFN771.

**BUFN724 Bank Management (2 Credits)**

Analyze and discuss readings in bank management, with primary focus on the measurement and management of risk, including credit, market, and interest rate risk. Look at the management of liquid reserves. Examine the special nature of financial institutions, incorporating their functions, policies, services, and regulation. Study the evolving nature of the financial services industry, by reading the financial press and by having outside practitioner speakers. Focus is on U.S. banks.

**Prerequisite:** BUFN610.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN724 or BUFN772.

**Formerly:** BUFN772.

**BUFN726 Institutional Asset Management (2 Credits)**

Examines how money is managed by organizations such as university endowments, pension funds, mutual funds, hedge funds, and private equity funds. Involves a mixture of finance and economics and emphasizes the incentives professional money managers face within the context of the organizational structure in which they operate. Particular attention is paid to compensation structures and monitoring mechanisms.

**Prerequisite:** BUFN610.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN660, BUFN726, BUFN761 or BUFN773.

**Formerly:** BUFN773.

**BUFN730 Advanced Financial Modeling and Equity Analysis (2 Credits)**

Provides in-depth analysis of public equities, with a focus on financial statement analysis, financial forecasting and ultimately valuation. Students will apply the primary valuation techniques used in industry to estimate market values for equities. Additionally, students learn how to stress test their financial models and interpret outcomes.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN760 or BUFN730.

**Formerly:** BUFN760.

**BUFN732 Fixed Income Analysis (2 Credits)**

Describes important financial instruments which have market values that are sensitive to interest rate movements. Develops tools to analyze interest rate sensitivity and value fixed income securities. Defines and explains the vocabulary of the bond management business.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN732 or BUFN762.

**Formerly:** BUFN762.

**BUFN734 Portfolio Management (2 Credits)**

Provides training that is important in understanding the investment process - the buy side of the financial world. Specifically, the objective is to provide graduate-level instruction in the following topics, both in theory and in using financial markets data to test the basic theory and practice of portfolio choice and equilibrium pricing models and their implications for efficient portfolios.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN734 or BUFN763.

**Formerly:** BUFN763.

**BUFN736 Quantitative Investment Strategies (2 Credits)**

Provides an introduction to quantitative techniques of selecting equities, as used commonly among long-short equity hedge funds and other quantitative equity asset management companies. Statistical factor models are developed to locate stocks with higher expected returns, based on the observable characteristics of the stocks. Implementation issues, including statistical estimation, backtesting and portfolio construction, are covered, as is performance evaluation.

**Prerequisite:** BUFN610.

**Restriction:** Must be in a major in BMGT-Robert H. Smith School of Business; or must be in Business and Management (Master's) program.

**Credit Only Granted for:** BUFN764 or BUFN736.

**Formerly:** BUFN764.

**BUFN738 Investment Fund Management (3 Credits)**

Provides second-year Master in Business Administration students with the opportunity to apply the skills learned in finance classes to actual investment decisions through management of an investment fund.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Repeatable to:** 9 credits.

**BUFN740 Capital Markets (2 Credits)**

Designed to deepen the foundations necessary to finance focused students, especially those intending to specialize in the quantitative areas of finance including investments, fixed income, and financial engineering.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN740 or BUFN620.

**BUFN741 Advanced Capital Markets (2 Credits)**

This course covers modern theories and techniques for investments and asset pricing. The main topics covered are: portfolio theory, pricing models, market efficiency, fixed income investment, forwards and futures, and options.

**Prerequisite:** BUFN620; or permission of BMGT-Robert H. Smith School of Business.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN758P or BUFN741.

**Formerly:** BUFN758P.

**BUFN742 Financial Engineering (2 Credits)**

Introduces and applies various computational techniques useful in the management of equity and fixed income portfolios and the valuation of financial derivatives and fixed income securities. Techniques include Monte Carlo Simulation and binomial/lattice pricing models. Emphasis is on bridging theory with the design of algorithms and models that can be directly applied in practice.

**Prerequisite:** BUFN610.

**Restriction:** Permission of BMGT-Robert H.

**Credit Only Granted for:** BUFN742 or BUFN766.

**Formerly:** BUFN766.

**BUFN744 Fixed Income Derivatives (2 Credits)**

Surveys fixed income assets and related securities such as Exchange-traded bond options; bonds with embedded options; floating rate notes; caps, collars, and floors; floating rate notes with embedded options. Also surveys advanced tools for interest-rate and fixed-income portfolio management, including the use of derivative securities, and the application of binomial trees for analysis of options, and a sound understanding of stochastic yield curves.

**Prerequisite:** BUFN610; and BUFN732.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN765 or BUFN744.

**Formerly:** BUFN765.

**BUFN745 Financial Programming (2 Credits)**

This course introduces basic and innovative statistical modelling methods for financial markets, and equips students with analytical and programming tools for modelling and analyzing financial data. Examples of applications include portfolio management and risk management.

**Prerequisite:** BUFN650.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN758E or BUFN745.

**Formerly:** BUFN758E.

**BUFN746 Enterprise and Credit Risk Management (2 Credits)**

Surveys the theory and practice of credit risk identification, measurement and mitigation along with understanding the principles of enterprise risk governance and risk-adjusted returns. The course examines how to develop credit loss distributions via Monte Carlo simulation or copula methodologies for consumer assets such as mortgages, credit cards and auto loans, developing commercial loan scorecards for rating credit risk. Pricing and use of various credit structures such as credit default swaps, collateralized debt obligations and credit-linked notes is examined.

**Prerequisite:** BUSI640; and BUFN740.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**BUFN747 Asset-Liability and Nonfinancial Risk Management (2 Credits)**

This course surveys risks and techniques associated with asset-liability and nonfinancial risks including market and interest rate risk, liquidity risk, operational risk and model risk, among others. Techniques such as portfolio value-at-risk (VaR) are used in realistic empirical examples to illustrate the methods. Key rate duration, principal components analysis and analytical and simulation-based VaR techniques are used to estimate interest rate risk exposure for financial firms. Hedging these risks using various financial derivative products such as options, swaps and futures contracts is explored. Operational risk is estimated leveraging Poisson loss distributions and model risk and validation techniques are reviewed.

**Prerequisite:** BUSI640; and BUFN740.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**BUFN750 Valuation in Corporate Finance (2 Credits)**

An advanced topics course in Corporate Finance dealing with valuation. Main topics will be, building pro forma statements, cost of capital, using ratios and comparables to value projects and firms, discounted cash flow valuations, WACC and APV methods of valuation and Real Option Valuations.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN630, BUFN714, BUFN750, BUFN753, or BMGT730.

**Formerly:** BUFN714.

**BUFN751 Financial Strategy For Corporations (2 Credits)**

An advanced course in corporate finance, focusing on the issues that firms face when they plan to raise external capital from financial markets. The focus is on the financing problems faced by mid-market to large firms and on capital raised from public markets. The forms of external finance vary from simple debt or equity to more complex securities that bundle with an element of risk management.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN751 or BUFN710.

**BUFN752 Financial Restructuring (2 Credits)**

Focuses on identifying ways to increase firm value through corporate restructuring. Specific topics include: mergers and tender offers, spin-offs, carve-outs, divestitures, takeover defense strategies, leveraged buy-outs, and international acquisitions. Additionally, the theory, practice and empirical evidence related to each of these topics will be covered. Emphasis will be placed on valuation analysis and strategic considerations.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN712 or BUFN752.

**Formerly:** BUFN712.

**BUFN753 Corporate Governance and Performance (2 Credits)**

Deals with corporate governance and its impact on shareholder value. Divergence of interests between corporate insiders and providers of funds leads to agency problems which can impair corporate performance and shareholder value. Various instruments of corporate governance - internal as well as external mechanisms - that can help align managerial incentives with those of outside investors, and hence help restore shareholder value will be studied.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN630, BUFN714, BUFN750, BUFN753, or BMGT730.

**BUFN754 Corporate Risk Management (2 Credits)**

Surveys the theory and practice of financial risk identification, measurement, and mitigation at financial and non-financial firms. Topics will include hedging with options and futures, interest rate risk management, Value-at-Risk (VaR), Cashflow-at-Risk (CaR), Earnings-at-Risk (EaR), credit risk, equity risk, commodities risk, exchange rate risk, and lessons from risk management disasters.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN716 or BUFN754.

**BUFN755 Entrepreneurial Finance and Private Equity (2 Credits)**

An advanced topics course in Corporate Finance. The major emphasis is how financiers help growing firms - and in particular young start-ups - using different types of securities at different points in the industry's and firm's life. Financing arrangements and securities studied will include private equity funds and private financings placements, Venture Capital (VC) and preferred equity, Investment Banks through Initial Public Offerings (IPOs), Private equity finds, debt and leveraged buyouts. Students will learn additional techniques that will help them understand how financiers value firms and how to understand, plan and value different financing strategies.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN755 or BUFN717.

**BUFN758 Special Topics in Finance (1-4 Credits)**

Selected advanced topics in the various fields of graduate study in finance.

**Prerequisite:** Permission of BMGT-Robert H. Smith School of Business.

**Repeatable to:** 9 credits if content differs.

**Formerly:** BMGT798.

**BUFN759 Independent Study in Finance (1-6 Credits)**

Independent study for Masters students in finance.

**Repeatable to:** 6 credits if content differs.

**Formerly:** BMGT708.

**BUFN760 Applied Equity Analysis (2 Credits)**

Students will learn to analyze equity securities using the basic EIC (Economy/Industry/Company) framework used in the financial industry, paying special attention to financial statement analysis. Students also will learn the primary valuation techniques used to estimate market values for equity securities.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN730 or BUFN760.

**BUFN761 Derivative Securities (2 Credits)**

Standard types of derivatives contracts are presented, and illustrated as to how they are used in practice. The theory of pricing these contracts is then presented in detail. The use of static and dynamic replication strategies, and the concept of no-arbitrage strategies is illustrated in numerous ways. Standard valuation techniques are covered, and standard formulas are presented. The theory is then applied to develop specific pricing and hedging strategies for various types of derivatives on different underlying assets. The management of the exposure of various risks is covered in detail as well.

**Prerequisite:** BUFN740.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN660, BUFN726, BUFN761 or BUFN773.

**Formerly:** BUFN726.

**BUFN762 Fixed Income Analysis (2 Credits)**

Describes important financial instruments which have market values that are sensitive to interest rate movements. Develops tools to analyze interest rate sensitivity and value fixed income securities. Defines and explains the vocabulary of the bond management business.

**Prerequisite:** BUFN740.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN732 or BUFN762.

**BUFN763 Portfolio Management (2 Credits)**

Provides training that is important in understanding the investment process - the buy side of the financial world. Specifically, the objective is to provide graduate-level instruction in the following topics, both in theory and in using financial markets data to test the basic theory and practice of portfolio choice and equilibrium pricing models and their implications for efficient portfolios.

**Prerequisite:** BUFN740.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN734 or BUFN763.

**BUFN764 Quantitative Investment Strategy (2 Credits)**

Provides an introduction to quantitative techniques of selecting equities, as used commonly among long-short equity hedge funds and other quantitative equity asset management companies. Statistical factor models are developed to locate stocks with higher expected returns, based on the observable characteristics of the stocks. Implementation issues, including statistical estimation, backtesting and portfolio construction, are covered, as is performance evaluation.

**Prerequisite:** BUFN763.

**Restriction:** Must be in a major in BMGT-Robert H. Smith School of Business.

**Credit Only Granted for:** BUFN764 or BUFN736.

**BUFN765 Fixed Income Derivatives (2 Credits)**

Surveys fixed income assets and related securities such as Exchange-traded bond options; bonds with embedded options; floating rate notes; caps, collars, and floors; floating rate notes with embedded options. Also surveys advanced tools for interest-rate and fixed-income portfolio management, including the use of derivative securities, and the application of binomial trees for analysis of options, and a sound understanding of stochastic yield curves.

**Prerequisite:** BUFN762.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN765 or BUFN744.

**BUFN766 Financial Engineering (2 Credits)**

Develop Excel and Visual Basic (VBA) models to solve problems related to portfolio management, options valuation, fixed income securities, interest rate processes, and risk management. This course thus bridges theory with the design of algorithms and models that can be directly applied in practice.

**Prerequisite:** BUFN740.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN742 or BUFN766.

**BUFN768 Special Topics in Finance (1-4 Credits)**

Selected experiential learning opportunities in advanced topics in the various fields of graduate study in finance.

**Prerequisite:** Permission of BMGT-Robert H. Smith School of Business.

**Restriction:** Must be in Business and Management (Master's) program; or permission of BMGT-Robert H. Smith School of Business.

**Repeatable to:** 9 credits if content differs.

**BUFN770 International Investment (2 Credits)**

Addresses international stock markets, portfolio theory, international interest rates, exchange rates and exchange rate derivatives (options, forwards, and futures), exchange rate swaps and exchange rate exposure (operating, translation, and transaction), foreign investment strategy.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN721 or BUFN770.

**BUFN771 International Corporate and Project Finance (2 Credits)**

Continuation of BUFN770. Issues addressed will include capital budgeting, project financing, exchange rate exposure (operating, translation, and transaction), foreign investment strategy, and risk management.

**Prerequisite:** BUFN770.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN724 or (BUFN770 and BUFN771).

**Formerly:** BUFN724.

**BUFN772 Bank Management (2 Credits)**

Analyze and discuss readings in bank management, with primary focus on the measurement and management of risk, including credit, market, and interest rate risk. Look at the management of liquid reserves. Examine the special nature of financial institutions, incorporating their functions, policies, services, and regulation. Study the evolving nature of the financial services industry, by reading the financial press and by having outside practitioner speakers. Focus is on U.S. banks.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN722, BUFN724, or BUFN772.

**Formerly:** BUFN722.

**BUFN773 Institutional Asset Management (2 Credits)**

Examines how money is managed by organizations such as university endowments, pension funds, mutual funds, hedge funds, and private equity funds. Involves a mixture of finance and economics and emphasizes the incentives professional money managers face within the context of the organizational structure in which they operate. Particular attention is paid to compensation structures and monitoring mechanisms.

**Prerequisite:** BUSI640.

**Restriction:** Must be in one of the following programs (Business and Management (Master's); Business and Management (Master's)).

**Credit Only Granted for:** BUFN660, BUFN726, BUFN761 or BUFN773.