



# MS IN FINANCE COURSE LIST 2019/20

Selected courses (*Course list remains subject to change*)

## PRE-SESSION

**MATHEMATICS AND INFORMATICS PRE-SESSION** | This course reviews basic concepts in mathematics and informatics required to complete subsequent courses. It covers the basics of linear algebra, calculus and probability theory. It also MS Excel training, including in the use of functions and special tools such as pivot tables, Excel Solver and Analysis ToolPak.

**MAXIMIZING YOUR FUTURE** | This course helps you connect academic learning with possible career options, gain insight into specific career fields, and perform a job search in parallel with your studies. We help in a tailor-made way with assessments, one-on-one appointments, CV and online profile critiques, mock interviews, and strategies for connecting with alumni and other mentors.

## CORE COURSES

**FINANCIAL REPORTING AND CONTROL** | This course develops an understanding of the key concepts and procedures of corporate financial reporting and control. You will learn to understand financial information, and how financial information is developed, analyzed and used by both corporations and outside stakeholders.

**FINANCIAL MANAGEMENT** | This course provides a broad understanding of the principles of finance. You will be introduced to asset valuation and the concept of risk versus return, learn about the fundamentals of stock, debt and derivatives markets, and understand how companies make investment, financing and payout decisions.

### **INVESTMENTS 1: TRADING AND PORTFOLIO THEORY | INVESTMENTS 2: ASSET PRICING**

These courses offer the financial theory and quantitative tools for understanding how asset prices are determined, and how financial assets are used for investment. The first course concentrates on risk versus return, optimal portfolio selection, money management, and practical aspects of asset allocation. The second course focuses on the pricing, trading, and use of specific assets including stocks, bonds, and derivatives.

**REGULATORY AND POLICY ENVIRONMENT** | This course provides an intensive and broad introduction to the post-crisis regulatory environment of financial markets, with particular emphasis on the US, the UK, and the evolving EU regulatory schemes. The course's focus is balanced between regulation of traditional and new/exotic financial services, institutions, and instruments.

**ECONOMIC FOUNDATIONS** | This course reviews the fundamentals of microeconomics: profit maximization, welfare, individual utility. You will learn how to use these concepts in economic models in real business settings. We add a number of elements into these settings to better approximate reality: variability, information asymmetry, risk aversion and government intervention.

**FINANCE USE CASE SEMINARS** | The Finance@CEU expert speaker series brings you industry experts working at the cutting edge of applied finance. Invited speakers deliver talks on subjects of their own choosing, with a focus on topical themes and real-life finance issues and practices. Each talk is followed by an informal meeting session, allowing you to network in a casual setting. We aim to cover a wide range of finance subjects, institutions and roles.



**CAPSTONE PROJECT** | The capstone project is an individual consulting field assignment, which you undertake as a professional consultant to a client organization. The project must answer a real client need with clear and valuable outcomes. You must use the full spectrum of knowledge and skills you have acquired. You may choose any client organization including corporates, financial institutions, startups, advisories, charities, government, or the award-winning CEU InnovationsLab startup incubator.

## FINANCIAL MANAGEMENT

**ADVANCED ACCOUNTING** | This course examines the fine lines between estimation, assumption, mistakes, and deliberately misleading information. You will learn the fundamentals of corporate group reports, and take a dive into accounting practices around the world. The course equips future analysts and investors with the advanced tools to interpret published information, and to be on the lookout for omissions and misrepresentations.

**BOARDROOM GLOBAL CHALLENGE** | This course is designed to place you into realistic business and management scenarios. An on-line, turn-based, management-level business simulation forms the basis of the class. The simulation incorporates supply chain, finance, pricing, investment and marketing-related decision-making problems. The course exposes to the need for transformational and system-wide process-oriented thinking. The pedagogical approach is strongly focused on Kolb's learning cycle and the experimental approach.

**COMPANY VALUATION** | This course equips you with the various valuation techniques used by business consultants and bankers, as well as discusses how the various elements in these models are derived, and equally, how our inherent biases and preconceptions cloud the valuation process. We draw upon illustrations faced by a range of real-world companies across a broad spectrum of industries under different circumstances.

**CORPORATE FINANCE AND RISK MANAGEMENT** | Companies are exposed to a variety of financial risks, including interest rate, currency, counterparty, commodity and M&A-related risks. You will learn what risks companies should manage and why, how risk management policies should be developed and organized, and how the various types of risk can be measured and managed. You will gain critical new insight into the operational problems that today's corporations face, and how financial market conditions interact with corporate performance and decision-making.

**CORPORATE GOVERNANCE** | This course studies problems related to the separation of ownership and control in modern corporations. The course presents the main questions and answers related to corporate governance, the theories describing them, and the empirical evidence. Topics include the structure of corporate ownership, the effect of ownership concentration on firm performance, the market for corporate control, and the effects of different types of owners on firm and managerial behavior.

**CORPORATE RESTRUCTURING** | This course covers both aspects of corporate restructuring: financial and operational. Financial restructuring considers various improvements made to a firm's capital structure, in line with their cash flow needs to promote efficiency, support growth, and maximize the value to shareholders, creditors and other stakeholders. Operational restructuring is the process of increasing the economic viability of the underlying business model through mergers and acquisitions or divestitures.

**STRATEGIC MANAGERIAL ACCOUNTING** | This course presents and analyzes a framework for creating a value-based performance management system. The techniques, methodologies, theories and practices behind organizational and customer value creation are presented in an analytical and critical manner.



## INVESTMENTS & BANKING

**BANKING AND FINANCIAL INSTITUTIONS** | This course covers financial institutions from banks through asset management firms to insurance firms and pension plans, and their role in the economy from safekeeping through investment to wealth preservation and social functions. Much of the focus is on commercial banks and their interconnectedness with monetary policy and financial stability. The course also covers standard and new bank risk management tools and review recent developments in the regulatory environment.

**BEHAVIORAL FINANCE** | This course reviews the effects of social, cognitive, and emotional factors on the financial decisions made by individuals and institutions. Psychological biases inhibit the individual's ability to make good investment decisions. This has consequences for market prices and returns, and the resource allocation decisions made by corporate decision makers.

**DERIVATIVES** | Derivatives are not financial weapons of mass destruction, as Warren Buffet once labeled them. If used in the proper manner, they are useful investment, speculative and hedging tools for corporates, individuals and financial institutions. We cover linear and non-linear products like forwards, futures, swaps and options. The material's theoretical parts are analyzed with practical real-life examples and real type pricing using Bloomberg.

**FINANCIAL ECONOMETRICS** | This course introduces basic concepts and methods in financial econometrics. We introduce methods of predicting returns and volatility of financial assets, and for computing the levels of risk that investors face given a portfolio. Key terms covered include log returns, volatility, autocorrelation, AR, MA, ARMA, ARCH, GARCH and Value-at-Risk.

**FINANCIAL TRADING DESIGN AND TECHNOLOGY** | This course introduces to the art and science of trading. Various timeframes, markets, instruments and analytical methods are discussed. Success factors of automated and semi-automated trading strategies are explored. You will, in groups, design, backtest and forward-test your own trading strategies, and trade them in simulation mode on the Chicago Mercantile Exchange. Software tools used include NinjaTrader, BlackBird and BloodHound.

**FIXED INCOME ANALYSIS** | This course covers analytical tools and techniques required to analyze fixed-income securities in modern financial markets. Theories, models, quantitative methods and their applications are emphasized. Reuters examples, case studies and a trading game are used to illustrate how market practitioners undertake fixed-income analysis, investment and trading.

**STOCHASTIC FINANCE** | This course provides an overview of stochastic processes, including continuous time Markov processes. Main topics include Brownian motion (Wiener process), martingales, stochastic (Ito) integration, stochastic differential equations, diffusion processes. The course also covers applications such as the Black-Scholes model of financial mathematics.

## INNOVATION & FINTECH

**BANKING IT AND FINTECH: BANK TO THE FUTURE** | This course covers the various dimensions of the banking IT operating model: infrastructure, application and data landscape, organization, business-IT interface, key IT processes, as well as major challenges arising from the technology-native fintech world. In the process, you will gain critical new insight into the operational problems that today's banks face and what the typical responses to those problems are.



**ENTREPRENEURIAL FINANCE** | This course introduces you to both short and long-term financial planning for entrepreneurial ventures. We discuss how to measure a venture's financial performance, how to evaluate budgeting technique and develop financial plans, and familiarize with international financial and tax planning and management. The course consists of a combination of lectures, case discussions, and building and analyzing financial models.

**FINTECH IN TRANSACTION SERVICES: TRADING, SETTLEMENT, AND E-PAYMENT** | This course covers technology applications in the finance industry related to transaction services: trading and settlement technologies related to trading platforms, clearing and settlement services; settlement services and technologies with emphasis on the alternative real time gross settlement technologies with links to the traditional banking system; and non-bank and hybrid payment, trading and settlement platforms.

**FINTECH IN DEPTH** | This course covers recent trends in financial technologies (fintech), examines how those technologies function, and summarizes the academic research on fintech. Among the technologies receiving a great deal of attention today, we discuss Bitcoin and blockchain, peer-to-peer (P2P) lending, and equity crowdfunding.

**PRIVATE EQUITY AND VENTURE CAPITAL** | A key issue for all entrepreneurs is to secure adequate financing for their ventures. This course provides an overview of external financing options and the related considerations (terms and conditions), with a focus on equity financing. The course helps understand the structure and operations of the PE/VC industry, using up-to-date case studies, situation games and joint discussions.

## DATA ANALYTICS & TECHNOLOGY

### **DATA ANALYSIS 1: EXPLORATION IN R AND VBA**

### **DATA ANALYSIS 2: FINDING PATTERNS IN R AND VBA**

These courses introduce you to data manipulation and visualization in R and VBA. The first course covers descriptive statistics and fundamental data analysis. The second course covers inferential statistics with a particular focus on evaluating relationships and analyzing data using regressions. The courses focus on technical requirements, mathematical foundations and key techniques to be effective in data manipulation and visualization.

### **DATA VISUALIZATION 1: INTRODUCTION TO DATA VISUALIZATION WITH TABLEAU**

Business intelligence and data visualization are core components of the analytics skill set. This course provides an introduction to the main concepts in data visualization (reports, dashboards, data visualizations), together with a hands-on introduction to Tableau, a leading self-service business analytics and data visualization tool. Each session consists of a lecture and a hands-on Tableau seminar.

**PROGRAMMING FOUNDATIONS WITH PYTHON** | This course introduces the fundamental building blocks of Python programming and how to write handy Python programs. We start with the introduction to fundamental concepts including variables, conditionals, functions, sequences, collections and iterations, lists, dictionaries, and regular expressions. We finish with an introduction to scientific computing such as Numpy, Matplotlib, and Pandas.

**PYTHON FOR FINANCE** | This course provides a broad understanding of the principles and techniques of Python's finance applications through the use of coding in Jupyter notebooks with intuitively visualized output. These objectives are achieved by discussing theory, solving tasks and an interactive trading game.

**SQL FOR BEGINNERS** | This course introduces the basics of SQL from the perspective of database users in large organizations. You will learn how to structure queries for desired results, and how to link different data tables.



**SQL INTERMEDIATE** | This course covers techniques to create powerful queries that provide complex searches and sorts on datasets. You will understand what data management means, and the way that SQL can be used to understand the business and capture data changes. The course will also equip you with skill to create sophisticated queries to create pivots / data for reporting purposes.

## FURTHER ELECTIVES

### **SHARED BY MS IN BUSINESS ANALYTICS** |

Data Analysis 3: Prediction and Introduction to Machine Learning  
Data Science 1: Data Architecture  
Data Science 2: Machine Learning Concepts  
Data Science 3: Machine Learning Tools  
Data Visualization 2: Practical Data Visualization with R

### **SHARED BY LLM IN INTERNATIONAL BUSINESS LAW** |

Comparative Bankruptcy Law  
International Investment Law and Regulation

Legal Aspects of Corporate Finance  
Law for Small and Mid-Scale Startup Enterprises

### **UNIVERSITY-WIDE COURSE** |

Workshop – Strategic Management in Your Career and Life

## FINTECH MANAGEMENT PARALLEL STUDIES

Combine the MS in Finance with the MS in Technology Management and Innovation to become a fintech leader, or develop your own startup in the award-winning CEU InnovationsLab incubation.

The two programs share 13 credits-in-common and avoid class overlaps. Thus, you may earn both degrees within 10 months at a reduced workload.

Together, the two programs prepare for fintech leadership and entrepreneurship by holistically combining

- finance and data analytics
- technology and architecture
- digital transformation and e-leadership
- innovation, strategy, management and entrepreneurship.

## **FIND OUT MORE AT**

[economics.ceu.edu/program/master-science-finance](http://economics.ceu.edu/program/master-science-finance)

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