Information Technology for Finance

The financial services industry is a leader in the use of information technology. Firms in banking, securities, investments, insurance and financial marketplaces are among the most information intensive and innovative users of technology. *This course will provide you a competitive advantage in getting an internship or job in Finance or Accounting by helping you understand and experience the role and potential of technology in Finance.*

The course begins with a description of the financial markets, specifically, equity, foreign exchange, and derivatives, and the systems that enable them. We consider exchanges, ECNs, ATS's Order Management Systems, Straight through Processing, Fix Protocol, and post trading clearance and settlement. We cover the design, evaluation and execution of popular trading strategies that are used by professionals in the various markets. There is increasing interest in particular, on systematic trading strategies and execution systems because of their scalability and transparency. The course covers both Algorithmic and High Frequency Trading and analyzes issues regarding latency, scalability, and reliability.

Trading Competition:

The course involves participating in three ***trading competitions***. Students will participate in teams for these competitions. The first competition involves developing a regular technical trading strategy for a pre-assigned security. The second competition involves developing a technical day-trading strategy. The third competition involves managing a portfolio. Students will be assigned securities to build trading strategies and the winner of the competition will be decided based on how their strategies perform on future data.

Through practical examples and exercises the course also teaches you financial modeling skills in excel. You will learn how to manage and optimize a $100 million portfolio in turbulent financial markets, how to plan a capital budget of $50 million over several years for a firm, and how to manage a cash flow and bond underwriting, etc.

The course is offered two times a week over 7 weeks.

Week	Topic	Sample Questions
Week 1.1	Introduction to Markets I	How are securities traded? Are all markets similar? What are auction, dealer and matching market systems? How is technology impacting their trading? What functions are needed by an institutional order management system? What technologies, communications, messaging standards are used for implementation? How are securities firms connected to clients, marketplaces and settlement processing? Order Management Systems, FIX, STP
Week 1.2	Introduction to Markets II	What is NYSE or Nasdaq? How do they work? What are the different types of orders? Orders continued. What is Reg ATS? Why were ECN's created? What are Decimalization and Reg NMS? Maker taker model. The designated market make (DMM). What is Direct Market Access (DMA)? What was SOES (small order execution systems)? What is price time priority? Dark Pools, Alternative Trading Systems (ATSs), Posit, Liquidnet, Pipeline. Alpha seeking (quant), market making.
Week 2.1	Technical Trading I	Moving Average Models

Week 2.2	Technical Trading II	Breakout Models
Week 3.1	Technical Trading III	Charts & Interactive Brokers Demo
Week 3.2	Technical Trading IV	Portfolio Trading & Strategy Optimization
Week 4.1	Technical Trading V	Advanced Trading Techniques (News Trading, Data Mining and Artificial Intelligence).
Week 4.2	Algorithmic Trading	Popular Execution Strategies
Week 5.1	High Frequency Trading	What is high Frequency trading? What technologies make high frequency trading work?
Week 5.2	*Financial Modeling Application I*	*Cash Flow Problem using Linear Programming in Excel*
Week 6.1	*Financial Modeling Application II*	*Capital Budgeting Problem using Integer Programming in Excel & Bond Underwriting using Integer Programming in Excel.*
Week 6.2	*Financial Modeling Application III*	*Determining Optimal Tax Policy for a City using Goal Programming and Non Linear Modeling in Excel*
Week 7.1	*Financial Modeling Application IV*	*Portfolio Optimization (Beating the S&P 500) Using Evolutionary Solver and Simulation in Excel*
Week 7.2	Bloomberg Terminal Presentation	