

## Data Driven Equity Investment Strategies Syllabus

Each lecture will last for 2 hours. There will be 8 lectures in total.

### **Week 1 Feb 16, 2019: Quant Investment Introduction**

#### Lecture 1. Introduction to Systematic Investment

- 1) Introduction to Efficient Market Hypothesis
- 2) Framework of Fundamental and Quantitative Investment
- 3) Course project explanation: Use patent application data by country to calibrate Solow Residual

#### Lecture 2. Data Driven Equity Investment Strategies Overview

- 1) Introduction to CAPM, Arbitrage Pricing Theory, and Fundamental Law of Active Management
- 2) Technical Signals: Momentum and Short – term Reversal
- 3) Fundamental Signals: Value, Growth, Quality, Profitability, Sentiment, and Behavior
- 4) Other Signals: Supply Chain, ESG, and Alternative Data

### **Week 2 Feb 23, 2019: Data Driven Investment Strategies Construction and Evaluation**

#### Lecture 3. Empirical Methodology of Factor Backtesting

- 1) Data Preprocessing and Factor Score
- 2) Fundamental Law of Active Management in Details
- 3) Single Factor Backtesting Procedure and Empirical Results
- 4) How to Use R to Implement Backtester

#### Lecture 4. Understanding Data and Hidden Problems of Backtesting

- 1) Data Management for Equity Investment
- 2) Bias in Backtesting Framework and How to Migrate Them
- 3) Course Project Preliminary Results Review

### **Week 3 Mar 2, 2019: Quant Investment More Advanced Techniques**

#### Lecture 5. Distinguish Alpha and Beta Factors

- 1) Mean – Variance Optimization and its problems
- 2) Risk Measurement – Covariance Matrix Estimation
- 3) Fundamental Risk Factor Models
- 4) Drawdown Control and Factor Orthogonalization

#### Lecture 6. Multi – Factor Investment Methodology and Investment Products

- 1) Multi – Factor Combination and Factor Timing
- 2) Portfolio Construction Framework and Sensible Constraints
- 3) Factor Indexed Products and Smart Beta ETFs

## **Week 4 Mar 9, 2019: From Knowledge on Paper to Career in the Firm**

Lecture 7. Anatomy of a Modern Investment Firm + Course Project Evaluation

Lecture 8. Guest Speakers from Industry (Sell-side ETF trader and Asset Owner Asset Allocator)

Target Students:

3<sup>rd</sup> year and above undergraduate students or master students

Preferred Student Characteristics:

1. Basic knowledge of R or Python
2. Sense of financial ratios
3. Sense of data management
4. Basic Statistics knowledge
5. Interest in the quantitative investment and data analysis

Instructor's Bio:



Lei Wan is currently working at AGFiQ Asset Management as a Quantitative Researcher and Option Trader. His major responsibilities including portfolio management, alpha factor research, portfolio construction research, portfolio risk analysis, and option trading. Before starting the current position, Lei worked for an international leading provider of factor indices and multifactor risk models based in Toronto, New York and San Francisco.

Lei is currently a registered Portfolio Manager at Ontario Securities Commission and a licensed options and futures trader at Canadian Securities Institute. He is currently a holder of Chartered Financial Analyst (CFA). Lei graduated from Master of Quantitative Finance program, University of Waterloo.