

# MS in FINANCIAL ENGINEERING

## ACADEMIC ADVISING FOR FALL 2019

# AGENDA

1. Your Arrival
2. Degree Overview and Requirements
3. Program Overview
4. Fall FE Electives
5. Concentrations
6. Faculty Advisors

# YOUR ARRIVAL

- Monday August 12 - Columbia IEOR Beer & BBQ at Brooklyn Brewery
- Thursday August 15 - Program Kick-Off **MANDATORY**
- Friday August 16 - Classes begin! **MANDATORY**
- Saturday August 17 - Columbia Engineering Welcome Day **MANDATORY**

# MSFE DEGREE OVERVIEW

- Master of Science in Financial Engineering
- Awarded by The Fu Foundation School of Engineering and Applied Science, Columbia University
- Expected Completion:
  - May, August or December 2020
- Expected Degree Conferral:
  - May 2020, October 2020 or February 2021

# DEGREE REQUIREMENTS

1. 36 credits
2. Core requirements (18 points) and electives
3. ENGI E4000 is an MS degree requirement (0 points)
4. No Pass/Fail courses
5. Attend and submit Learning Journals for the FE Seminar Series (Fall 2019 & Spring 2020)
6. All courses must be completed at Columbia
7. Remain in good standing
8. Uphold academic integrity

# MSFE PROGRAM

## *Fall 2019 Semester*

- *IEOR E4799 MSFE Quantitative and Computational Bootcamp*
- *ENGI E4000 Professional Development*
- *IEOR E4007 Optimization Models*
- *IEOR E4701 Stochastic Models*
- *IEOR E4706 Foundations of Financial Engineering*
- *FE Electives (choose 2)*

## *Spring 2020 Semester*

- *IEOR E4703 Monte Carlo Simulation*
- *IEOR E4707 Continuous Time Models*
- *IEOR E4709 Statistical Analysis and Time Series*
- *FE Electives (choose 1 or 2)*

## *Summer or Fall 2020*

- *Electives*

# STARTING JULY 31, REGISTER FOR:

1. IEOR E4799 MSFE Quantitative and Computational Bootcamp
2. ENGI E4000 Professional Development
3. IEOR E4007 Optimization Models
4. IEOR E4701 Stochastic Models
5. IEOR E4706 Foundations of Financial Engineering
6. FE Electives (choose 2)

# FALL 2019 FE ELECTIVES

CHOOSE 2:

1. IEOR E4403 Quantitative Corporate Finance  
*(Or IEOR E4578 Corporate Finance, Accounting & Investment; may not take both)*
2. IEOR E4500 Application Programming for FE
3. IEOR E4525 Machine Learning for Financial Engineering & Operations Research
4. IEOR E4722 Stochastic Control & Financial Applications
5. IEOR E4726 Applied Financial Risk Management
6. IEOR E4727 Programming for Financial Engineering
7. IEOR E4731 Credit Risk & Credit Derivatives
8. IEOR E4735 Structured Hybrid Products
9. IEOR E4742 Deep Learning for OR & FE
10. IEOR E4732 Computational Methods in Derivatives Pricing (Instructor's permission only; 2<sup>nd</sup> year elective)



# CONCENTRATIONS

The MSFE Program offers (7) concentrations:

- Asset Management
- Computation & Programming
- Computational Finance/Trading Systems
- Derivatives
- Finance & Economics
- Financial Technology
- Machine Learning for Financial Engineering

For requirements, see:

<https://ieor.columbia.edu/masters/financial-engineering/concentrations>

# DESCRIPTION OF COURSES

Please visit

<https://bulletin.engineering.columbia.edu/courses-1>

to see our course catalogue with brief course descriptions.

**IEOR E4650 Business Analytics. 3 points.**

Lect: 3. Recit: 1.

Prerequisites: (STAT GU4001) or (IEOR E4150)

In this course, you will learn how to identify, evaluate, and capture business analytic opportunities that create value. Toward this end, you will learn basic analytical methods and analyze case studies on organizations that successfully deployed these techniques. In the first part of the course, we focus on how to use data to develop insights and predictive capabilities using machine learning and data mining techniques. In the second part, we focus on the use of optimization and simulation to support prescriptive decision-making in the presence of a large number of alternatives and business constraints. Finally, throughout the course, we explore the challenges that can arise in implementing analytical approaches within an organization.

# MSFE FACULTY ADVISORS



Agostino Capponi



Emanuel Derman



Ali Hirsa



Daniel Lacker



Dylan Possamai



Xunyu Zhou

Faculty advisor will be assigned beginning of September.  
For early registration inquiries, please email [info@ieor.columbia.edu](mailto:info@ieor.columbia.edu).

# YOUR ACTION ITEMS

1. Activate your UNI
2. Login to SSOL <https://ssol.columbia.edu/>
3. Register for your courses (core & electives)
4. Review your tuition e-Bill
5. Review academic calendar  
<http://registrar.columbia.edu/>

THE IEOR OFFICE

SUITE 315 MUDD

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