

# MSE, MSFE, MSIE, MSOR ACADEMIC ADVISING SUMMER & FALL 2017



# MSFE & MSE DEGREE REQUIREMENTS

- 36 credits
  - Core & Elective Requirements
- No Pass/Fail Courses
- All courses must be completed at Columbia
- Remain in good standing
- Academic integrity

# MS&E PROGRAM

- Core, 12 points: IEOR E4004, 4111, 4101, 4102
- Semi core, 18 points:
  - Decision, Risk & Operations (9 points)
  - Analysis (min. 3 points)
  - Management (min. 3 points)
  - Analysis + Management = 9 points
- Breadth electives (in consultation with advisor), 6 points

# MSOR & MSIE DEGREE REQUIREMENTS

- 30 credits
  - Four required core courses plus electives
- MSOR CORE: IEOR E4150, IEOR E4004, IEOR E4106 & IEOR E4404
- MSIE CORE: IEOR E4150, IEOR E4000, IEOR E4004 & IEOR E4106
- At least 6 courses (18 credits) must be in the IEOR department (IEOR, SIEO, IEME, CSOR designation).
- No Pass/Fail Courses
- All courses must be completed at Columbia
- Remain in good standing
- Academic integrity



# IEOR SUMMMER OFFERINGS

- IEOR E4721 Correlation Risk Modeling and Management (3)
- IEOR E4722 Modeling and Market Making in Foreign Exchange (1.5)
- IEOR E4900 Independent Research (Faculty supervision and approval)
- [IEOR E4999 Fieldwork](#) (Departmental approval)

# OPT & FIELDWORK APPLICATION

## Industrial Engineering & Operations Research

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NEWSLETTER OF THE INDUSTRIAL ENGINEERING & OPERATIONS RESEARCH DEPARTMENT  
VOL. 3 | NO. 1 FALL/WINTER 2016 - 2017

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### LETTER FROM THE CHAIR



IEOR kicked-off the 2016-17 academic year in high gear. We welcomed three new faculty members: Yuri Faenza, Hardeep Johar, and Xunyu Zhou. Kristen Maynor joined Team IEOR serving as an advisor for undergraduate and graduate students.

We congratulate Professor Emanuel Derman for publishing another book, "The Volatility Smile". Professor Dan Bienstock and his collaborators were awarded an \$8M grant to work on defending the U.S. power grid from malicious hackers.

We are excited to expand course offerings this fall in Business Analytics and Human Centered Design. New spring courses include Cloud Computing, Data Analytics, and Hacking for Energy.

Congratulations to our upcoming February 2017 graduates who are starting their careers in exciting roles in analytics, financial services, professional services, and technology.

Stay in touch and engage in our various activities and initiatives!

### DEPARTMENT NEWS

Vice Dean Soulaymane Kachani completed his annual Asia & Europe Roadshow where he connected with prospective students and alumni.




The Department hosted its 8th annual Executive Education class in collaboration with the Academy of Certified Portfolio Managers.

#### Faculty News

IEOR Professor Dan Bienstock's research on the U.S. power grid from malicious hackers has been supported by an \$8M grant from DARPA, ONR, and DOE.

Professor Derman published a new book: The Volatility Smile.

Professor Agostino Capponi was awarded the 2016 Bar-Ilan Prize for General Research in Financial Mathematics for his research on Systemic Risk in Inter-bank Networks.



### SEMINARS

1 2 3 4 5



#### IEOR-DRO Seminar: Mengdi Wang (Princeton)

**Speaker:** Mengdi Wang  
**Date:** 04-11-2017  
**Location:** Mudd Hall 303

Classical stochastic optimization models usually involve expected-value objective functions. However, they do not apply to the minimization of a composition of two or multiple expected-value functions, i.e., the stochastic nested composition optimization problem.

[MORE ►](#)

**SCROLL TO:**  
**OPT REQUEST FORM**  
**FIELDWORK**

# DRO SUMMER OFFERINGS

- DROM B8106-060 Operations Strategy (1.5)
- DROM B8858-060 Data-Driven Entrepreneurship (3)
- Additional CBS electives are offered during cross registration starting first week of May

# ADDITIONAL SUMMER OFFERINGS

- Refer to approved Summer 2017 elective list
- Additional courses offered in:
  - Computer Science
  - Economics
  - Mathematics
  - Statistics
  - Business School (Cross Registration)
- **If a course is not listed on the Summer 2017 elective list, you must seek explicit approval from [info@ieor.columbia.edu](mailto:info@ieor.columbia.edu) or it may not be counted towards your degree requirement.**



# FALL REGISTRATION

- Analytics
- Consulting
- Decision, Risk, Operations
- Entrepreneurship
- Finance/Financial Engineering
- Management

# INTEREST IN ANALYTICS

- IEOR E4404 Simulation (MSOR & MSIE Only)
- IEOR E4407 Game Theoretic Models of Operations
- IEOR E4522 Python for Operations Research
- IEOR E4523 Data Analytics for OR
- IEOR E4524 Industry Projects in Analytics (By [Application](#))
- IEOR E4540 Data Mining
- IEOR E4575 Designing Digital Operating Models
- IEOR E4650 Business Analytics (two sections)
- DROM B8127-060 Immersion Seminar in Big Data
- DROM B8131-060 Sports Analytics

# INTEREST IN CONSULTING

- IEME E4310 The Manufacturing Enterprise
- IEOR E4000 Operations Management
- IEOR E4407 Game Theoretic Models
- IEOR E4507 Healthcare Operations Management
- IEOR E4550 Entrepreneurial Business Creation
- IEOR E4555 Design and Agile Project Mgmt. Eng. Lab ([By Application](#))
- IEOR E4711 Global Capital Markets (two sections)
- IEOR E4998 Managing Tech. Innovations
- DROM B8107 Service Operations (two sections; 060 & 061)
- DROM B8510 MSE Managerial Negotiations (two sections; 060 & 061)

# DECISION, RISK, OPERATIONS

The following courses are special courses from the Business school exclusive to MS&E students:

- DROM B8107 Service Operations (two sections: 060, 061)
- DROM B8116-060 Risk Management
- DROM B8127-060 Immersion Seminar in Big Data
- DROM B8131-060 Sports Analytics
- DROM B8510 MSE Managerial Negotiations (two sections: 060, 061)

**Opened to MSOR & MSIE in late August 2017**

# INTEREST IN ENTREPRENEURSHIP

## FOUNDATIONAL:

- IEOR E4550 Entrepreneurial Business
- IEOR E4555 Design and Agile Project Mgmt. Eng. Lab (by [application](#))
- IEOR E4998 Managing Tech. Innovations

## OPTIONAL:

- DROM B8510 MSE Managerial Negotiations (two sections; 060 & 061)

# INTEREST IN FINANCIAL ENGINEERING

**FOR MSE, MSIE and MSOR ONLY (NOT INTENDED FOR MSFE)**

HIGHLY SUGGESTED, FOUNDATIONAL:

- IEOR E4700 Intro to Financial Engineering
- IEOR E4711 Global Capital Markets

ELECTIVES:

- IEOR E4620 Pricing Models for FE
- IEOR E4726 Applied Financial Risk Management
- DROM B8116-060 Risk Management



# APPROVED MSFE ELECTIVES

## ADVANCED COURSES (MSFE ELECTIVES):

- IEOR E4500 Applications Programming for FE
- IEOR E4718 The Implied Volatility Smile
- IEOR E4727 Programming for FE
- IEOR E4731 Credit Risk and Credit Derivatives
- **IEOR E4732 Computational Methods in Derivatives Pricing**
- IEOR E4733 Algorithmic Trading
- DROM B8116-060 Risk Management

# INTEREST IN MANAGEMENT

- IEOR E4000 Operations Management
- IEOR E4507 Healthcare Operations Management
- IEOR E4550 Entrepreneurial Business
- IEOR E4998 Managing Tech. Innovations
- DROM B8107 Service Operations Negotiations (two sections; 060 & 061)
- DROM B8510 MSE Managerial Negotiations (two sections; 060 & 061)



# CROSS REGISTRATION

- COLUMBIA BUSINESS:
  - Summer 2017: Starts first week of May
  - Fall 2017: Starts last week of August
  
- COLUMBIA SIPA:
  - No summer courses
  - Fall 2017: Rolling basis, on SSOL

# YOUR ACTION ITEMS

- Research your courses:  
[ieor.columbia.edu/ieor-courses-topics](http://ieor.columbia.edu/ieor-courses-topics)
- Discuss selections with your advisor
- Register [ssol.columbia.edu/](http://ssol.columbia.edu/)
  - Summer 2017 courses (now opened)
  - Fall 2017 courses (opens 4/17)
  - Review your tuition e-Bill
- Review academic calendar  
[registrar.columbia.edu/](http://registrar.columbia.edu/)

# THE IEOR OFFICE

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