

MS in OPERATIONS RESEARCH

ACADEMIC ADVISING FOR FALL 2019

AGENDA

1. Your Arrival
2. Degree Overview and Requirements
3. Program Overview
4. IEOR E4150 Waiver Application
5. Degree Concentrations
6. Special Concentration in Business Analytics
7. Suggested Electives based on interest
8. Special CBS Electives (Registration open in late August)
9. 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**

DEGREE OVERVIEW

1. Master of Science in Operations Research
2. Awarded by The Fu Foundation School of Engineering and Applied Science, Columbia University
3. Expected Completion: May, August or December 2020
4. Expected Degree Conferral: May 2020, October 2020 or February 2021

DEGREE REQUIREMENTS

1. 30 credits: Four required core courses plus electives, 18 points minimum from IEOR
2. MSOR core: IEOR E4150, IEOR E4004-003/004, IEOR E4106, IEOR E4404
3. ENGI E4000 is an MS degree requirement (0 points)
4. No Pass/Fail courses
5. All courses must be completed at Columbia
6. Remain in good standing
7. Uphold academic integrity

MSOR PROGRAM

Fall 2019 Semester

- ENGI E4000 Professional Development
- IEOR E4004 Optimization Models
- IEOR E4150 Probability and Statistics (and/or IEOR E4106 Stochastic Models)
- Electives (choose 2)

Spring 2020 Semester

- IEOR E4106 Stochastic Models
- IEOR E4404 Simulation
- Electives (choose 2)

Summer or Fall 2020

- Electives

STARTING JULY 31, REGISTER FOR:

1. IEOR E4150 Intro to Probability & Statistics
2. IEOR E4004 (Section 003 or 004) Optimization Models and Methods
3. ENGI E4000 Professional Development
4. Choose 2 Electives

If are waived of IEOR E4150, then you should register for:
IEOR E4106 Stochastic Models

INTEREST IN FINANCE

FOUNDATIONAL:

- IEOR E4403 Quantitative Corporate Finance
(Or IEOR E4578 Corporate Finance, Accounting & Investment; may not take both)
- IEOR E4711 Global Capital Markets

ELECTIVES:

- IEOR E4576 Derivatives Marketing and Structuring (1.5)
- IEOR E4700 Intro to Financial Engineering*
- IEOR E4620 Pricing Models for FE**
- IEOR E4500 Applications Programming for FE***

*Requires IEOR E4106

**Requires IEOR E4700; can be taken simultaneously as IEOR E4620

***Requires programming proficiency & opens in late August

INTEREST IN ANALYTICS

FOUNDATIONAL:

- IEOR E4501 Tools for Analytics*
- IEOR E4523 Data Analytics*

ELECTIVES:

- IEOR E4506 Designing Digital Operating Models
- IEOR E4525 Machine Learning for Financial Engineering & Operations
- IEOR E4540 Data Mining
- IEOR E4650-001/002 Business Analytics
- DROM B8131-060 Sport Analytics (Opens late August)
- DROM B8123-060 Demand & Supply Analytics (Opens late August)

**MSBA students have priority registration*

INTEREST IN CONSULTING

- IEOR E4407 Game Theoretic Models
- IEOR E4711 Global Capital Markets
- IEOR E4998 Managing Tech. Innovations
- DROM B8107-060/061 Service Operations (Opens late August)
- DROM B8510-060 Managerial Negotiations (Opens late August)

INTEREST IN MANAGEMENT

- IEOR E4550 Entrepreneurial Business Creation
- IEOR E4998 Managing Tech. Innovations
- IEOR E4506 Designing Digital Operating Models
- DROM B8107-060/061 Service Operations (Opens late August)
- DROM B8510-060 Managerial Negotiations (Opens late August)

INTEREST IN ENTREPRENEURSHIP

- IEOR E4403 Quantitative Corporate Finance
- IEOR E4550 Entrepreneurial Business Creation
- IEOR E4570 Entrepreneurship Bootcamp (1.5 credit block weekend)
- IEOR E4998 Managing Tech. Innovations
- DROM B8510-060/061 Managerial Negotiations (Opens late August)

SPECIAL BUSINESS ELECTIVES

The following courses are courses from the Business school exclusive to MS&E & MSBA students. **MSIE/OR students may add (1) of the four courses when they open in late August.**

- DROM B8107-060 Service Operations
- DROM B8107-061 Service Operations
- DROM B8123-060 Demand & Supply Analytics
- DROM B8131-060 Sports Analytics
- DROM B8510-060 Managerial Negotiations

HELPFUL SUGGESTIONS

1. Be conservative and observe pre-requisite requirements.
2. If you are waived from taking IEOR E4150, you should take IEOR E4106 in the Fall so you are prepared to take electives in the spring.
3. Do ***not*** take the following set of courses in the same term:
 - IEOR E4150, IEOR E4106, IEOR E4404
 - IEOR E4150, IEOR E4106, IEOR E4700
 - IEOR E4106, IEOR E4404, IEOR E4700

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.

4150 PROB/STATS WAIVER EXAM

- IEOR E4150 is a required core course
- 75 minutes in length, 40-45 multiple choice and 18 true/false questions
- Closed books, no notes, no cell phone nor internet permitted
- No calculator needed
- Bring a pen/pencil and Columbia ID
- To apply to take the waiver exam, complete <https://forms.gle/VeVyGu3HKPPBQSRW9> by August 22, 2019
- **Date of the waiver exam: Monday, August 26**

IEOR E4501 PYTHON WAIVER EXAM

- IEOR E4501 is a required co-requisite for the IEOR E4523 Data Analytics for OR
- You have an option to take a waiver exam or enroll in the course this fall, in order to take advanced level Analytics electives
- To apply to take the waiver exam, complete <https://goo.gl/forms/xFJB87Vt4E8HHDOj1> by August 22, 2019
- **Date of the waiver exam: August 30, 2019**

MSOR FACULTY ADVISORS



Shipra Agrawal



Daniel Bienstock



Soulaymane Kachani



Daniel Lacker



Henry Lam



Jenny Mak



David Yao

Faculty advisor will be assigned beginning of September.

For early registration inquiries, please email info@ieor.columbia.edu.

YOUR ACTION ITEMS

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

THE IEOR OFFICE

SUITE 315 MUDD

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www.ieor.columbia.edu