IEOR DEPARTMENT OVERVIEW

WEDNESDAY, AUGUST 22, 2007

Presented By

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Department of Industrial Engineering and Operations Research
WELCOME TO THE I EOR DEPARTMENT
Agenda

Morning (10:00 – 11:30AM)
- Departmental Overview
- Departmental Highlights
- Disciplines & Degree Program Overview

Afternoon (2:00 – 4:00PM)
- Career Opportunities
- Professional Development Overview
- Admissions Overview
What is IEOR?

Department specializes in 4 disciplines:

- Engineering Management
- Financial Engineering
- Industrial Engineering
- Operations Research
The IEOR Toolkit

- We teach a toolkit to solve problems in various industries: finance, technology, service, manufacturing

- Toolkit consists of:
  - Mathematical skills (i.e. Probability, Calculus, Statistics)
  - Modeling skills (i.e. Simulation)
  - Programming skills (i.e. Java, C, SQL)
  - Soft skills (i.e. presentation, management)
  - Industry specific knowledge
Background

Founded in 1918 as the Department of Industrial Engineering

Currently:
- Undergraduates: 224
- M.S. Students: 181
- Ph.D. Students: 32
- Full-time Faculty: 16
- Adjunct Faculty: 33
- Affiliated Faculty: 13 (Business, Electrical, Statistics, Mathematics)
Department Enrollment

Number of Students

Year

Total IEOR Enrollment

Undergraduate IEOR Enrollment
Enrollment Highlights

- Tripled its enrollment of undergraduate students since 1978
- Female students in the undergraduate program has doubled since 1982
- International students in IEOR tripled since 1982
- Steady growth each year with new Program offerings
  - MS in EMS
  - BS in OR, Concentration in Financial Engineering
IEOR GRADUATE DEGREE PROGRAMS (MS & PHD)
MS in Engineering Management Systems

Provides a technology and management perspectives in solving problems, making decisions, and managing risks in complex systems

Toolkit:

- Deterministic and Stochastic Models
- Corporate Finance
- Technology & Management
MS in Engineering Management Systems

Two Concentrations
- Logistics and Supply Chain Optimization
- Revenue and Risk Management

30 Credits

Fall Semester Start, Full Time Program

Approximately 30-40 Students per Year
MS in Financial Engineering

- Provides training in the application of engineering methodologies and quantitative methods to finance

- Toolkit:
  - Statistics & Probability Theory
  - Stochastic and Optimization Models
  - Monte Carlo Simulation
  - Discrete and Continuous Time Asset Pricing
  - Finance
  - Data Analysis
MS in Financial Engineering

- 36 Credits
  - 7 core courses, 2 semi-core, 3 electives
- July Start, June end
- Full Time Program
- Approximately 70 Students per Year
MS in Financial Engineering

Curriculum

- Summer Part I: Stochastic Models, Statistics and Finance
- Fall: Optimization, Discrete and Continuous Time Asset Pricing, Monte Carlo Simulation
- Spring: Data Analysis and electives
- Summer Part II: Electives
MS in Industrial Engineering

- Provides training in production planning, inventory control, scheduling and industrial economics

- Toolkit:
  - Statistics & Probability Theory
  - Stochastic and Optimization Models
  - Production Management
MS in
Industrial Engineering

- 30 Credits
  - 4 core courses, 6 electives
- Fall & Spring start
- Full Time or Part Time Program
- Approximately 15 Students per Year
MS in Operations Research

- An applied science, concerned with quantitative decision problems, allocation and control of limited resources

- Toolkit:
  - Statistics & Probability Theory
  - Stochastic and Optimization Models
  - Simulation
MS in Operations Research

- 30 Credits
  - 4 core courses, 6 electives
- Fall & Spring start
- Full Time or Part Time Program
- Approximately 40 Students per Year
MS & MBA Joint Degree

- Earn both MS and MBA
- Available in four disciplines (EMS, FE, IE, OR)
- MS/MBA (EMS, IE, OR)
  - 24 points in SEAS, 45 points in GSB
  - 2 semesters in SEAS, 3 semesters in GSB
- MS/MBA (FE)
  - 30 points in SEAS, 45 points in GSB
  - 2.5 semesters in SEAS, 3 semesters in GSB
Professional Degree (PD)

- Earn both MS and PD
- Available in two disciplines (FE & IE)

**MS/PD (IE)**
- 30 points for MSIE
- Additional 30 for PDIE

**MS/PD (FE)**
- 36 points for MSFE
- Additional 24 for PDFE
PhD in OR & PhD in IE

- 60 Credits
  - 6 residence units
- Fall start only
- Full Time or Part Time Program
- Approximately 8-10 Students per Year
Recent Graduates

Recent graduates have found positions in prestigious organizations:

- Major Financial Services: Barclay's Capital, Bank of America, BlackRock, Citigroup, Credit Suisse, DE Shaw & Co., Deutsche Bank, JPMorgan Chase, Goldman Sachs, HSBC, Lehman Brothers, Merrill Lynch, Morgan Stanley, UBS
- Technology: Google
- Service/Manufacturing: FreshDirect
- Public Service Agencies: Port Authority of NY/NJ, UPS
QUESTIONS
Afternoon Agenda

Afternoon (2:00 – 4:00PM)

- Career Opportunities
- Professional Development Overview
- Admissions Overview
Career Opportunities: MSEMS

Engineering Management Systems
- Consulting
- Technology
- Finance
- Logistics/Supply Chain
- Operations
Career Opportunities: MSFE

Roles:
- Front, Mid, Back Office
- Trading, Structuring, Risk Management, Consulting, Programming

Levels:
- Analyst, Associate, VP
- Dependent on previous experience

Firms:
- Investment Banks, Hedge Funds, Software and Service Providers, Insurance Companies, Consultancies

Locations:
- US, London, Hong Kong, Tokyo
Career Opportunities: MSOR

**Roles:**
- Problem solvers across industries

**Levels:**
- Analyst, Associate, Manager
- Dependent on previous experience

**Industries:**
- Finance, Consulting, Technology (Software), Manufacturing, Public Sector

**Locations:**
- Global
Career Opportunities: MSIE

Roles:
- Problem solvers across industries, with manufacturing focus

Levels:
- Analyst, Associate, Manager
- Dependent on previous experience

Industries:
- Finance, Consulting, Technology (Software), Manufacturing, Public Sector

Locations:
- Global
Career Opportunities: PhD

Roles:
- Academic
- Industry

Levels:
- Researcher, Professor
- Associate +

Industries:
- Finance, Consulting, Technology (Software), Manufacturing, Public Sector

Locations:
- Global
IEOR Professional Development Initiatives

- Individual Career Plan & Personalized Meetings
- Workshops & Training
  - Professional Etiquette
  - Resume Workshop
  - Interview Workshop
  - Mock Interviews (Taped)
- Resume Portfolio
- Industry Network & Corporate Affiliates
- Networking with Alums & Professionals
- Internships (Summer & Academic Year)
ADMISSIONS
Program Start Dates

- MSEMS: Fall only
- MSFE: Summer only
- MSOR: Fall & Spring
- MSIE: Fall & Spring
- PDFE: Summer only
- PDIE: Fall & Spring
- PhD: Fall only
Application

- Application Form (online)
- (2) Official Transcripts
  - In English
  - Officially translated in English
- (3) Letters of Recommendations
- GRE (within 5 years)
- TOEFL
- Personal Statement
- Resume or CV
- Application Fee
Admissions Deadline

- **MSEMS**: February 15
- **MSFE**: December 1
- **MSOR, MSI E & PDIE**:  
  - Fall: February 15  
  - Spring: October 1
- **PDFE**: December 1
- **PhD (& MS/PhD)**: December 1
Contact Information

- **SEAS Admissions**
  - seasgradmit@columbia.edu

- **IEOR Admissions**
  - admit@ieor.columbia.edu

- **Websites**
  - http://www.engineering.columbia.edu
  - http://www.ieor.columbia.edu