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Careers
The Operations Research Center at MIT was established in 1953 by renowned physicist Philip M. Morse, a pioneer in the field of operations research (OR) in World War II and the first president of the Operations Research Society of America (ORSA).

Philip M. Morse is considered to be the father of the field of Operations Research in the U.S.

Today, the ORC is an interdisciplinary research center with over 50 distinguished faculty members from a diverse array of academic specialties across MIT.
WHAT IS OPERATIONS RESEARCH?

Operations Research (OR) is the discipline of applying advanced analytical methods—such as optimization, statistics, machine learning, and probability—to make better decisions that impact society and the world positively.
# SAMPLE RESEARCH TOPICS

<table>
<thead>
<tr>
<th>Professor</th>
<th>Research Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arnie Barnett</td>
<td>Collected and cleaned congressional votes data for 30 states and conducted hypothesis tests to identify gerrymandering</td>
</tr>
<tr>
<td>Dimitris Bertsimas</td>
<td>Building a predictive model to capture risk of developing infection in patients receiving chemotherapy</td>
</tr>
<tr>
<td>Dimitris Bertsimas</td>
<td>Minimization of hospital beds occupancy peak by leveraging past possible scenarios to take uncertainty into account within the optimization model</td>
</tr>
<tr>
<td>Dimitris Bertsimas</td>
<td>Optimization of the scheduling and routing of Boston School Buses</td>
</tr>
<tr>
<td>Dimitris Bertsimas</td>
<td>Predicting stroke for patients (acuity and location if applicable) using radiology reports.</td>
</tr>
<tr>
<td>Vivek Farias</td>
<td>Researching a new algorithm to control user social behavior on a running app, in order to maximize usage/running.</td>
</tr>
<tr>
<td>Stephen Graves</td>
<td>Munging and cleaning warehouse inventory data to estimate how long products stay in the warehouse and other associated statistics</td>
</tr>
<tr>
<td>Jonas Jonasson</td>
<td>Studying the impact of experience on operational efficiency and consistency. This is in the context of healthcare operations &amp; the analysis uses a unique dataset of 10 years from the London Ambulance Services.</td>
</tr>
</tbody>
</table>
| Georgia Perakis | 1. Improve sales forecasting and optimize shop floor display assortment using RFID data for Zara  
                        2. Conduct anomaly detection for display behavior by store managers                                                                       |
| Nikos Trichakis | Optical Character Recognition (text in images) for commodity supply chain network in Indonesia                                                 |
| Karen Zheng     | Predicting crop prices and optimizing network flow for rural farmers in India                                                                   |
Boston — Tuesday, July 25, 2017

“The Boston Public Schools is proud to announce that a team of analytics and optimization experts from the Massachusetts Institute of Technology has won the first-ever BPS Transportation Challenge by developing a computer-based model that more efficiently routes school buses, generating potentially millions of dollars in cost savings that will be put back into classrooms.”


“Our solution generates thousands of possible routes, and then picks from trillions of permutations the optimal bus route to connect schools throughout the day. Creating this many permutations by hand simply is not possible. Our algorithm creatively combines optimization theory, human intuition and the power of computing,”

-Professor Bertsimas of the Operations Research Center at MIT.
WORLD CLASS ANALYTICS FACULTY

Arnold Barnett
George Eastman Professor of Management Science
Sloan School of Management
T: (617) 253-2670
E: abarnett@mit.edu
Room: E62-568
Probability modeling and statistics
Transportation systems
Health
Risk analysis and perception

Erik Brynjolfsson
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Sloan School of Management
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E: erikb@mit.edu
Room: E62-414
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Economics as it relates to the organization of work, productivity, and pricing
Digital information

Dimitris Bertsimas
Boeing Professor of Operations Research; Codirector, Operations Research Center
Sloan School of Management
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Analytics
Discrete, convex and robust optimization
Statistical learning under a modern optimization lens
Personalized medicine

Georgia Perakis
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Room: E62-565
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Optimization
Pricing and revenue management
Energy
Supply chains

Y. Karen Zheng
Assistant Professor of Operations Management
Sloan School of Management
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E: yanchong@mit.edu
Room: E62-579
Behavioral operations
Environmentally and socially responsible supply chains
Consumer bounded rationality
Pricing management
Risk management
CURRICULUM
# An Accelerated Doctoral-Level 12-Month STEM Curriculum

## Required Core:
- 15.093: Optimization Methods (12)
- 15.095: Machine Learning (12)
- 15.681: From Analytics to Action (6)
- 15.071: Analytics Edge (12)
- 15.572: Analytics Lab (9)
- 15.003: Software Tools in R, Python, SQL and Julia (3)
- 15.286: Communicating with Data (3) – taught during IAP
- 15.TBD: Ethics and Data Privacy (3) – taught during IAP
- 15.089: Analytics Capstone Project (24)

## Spring Approved Electives (27-48 units):
- 6.883: Advanced Topics in Artificial Intelligence
- 6.680: Statistical Learning Theory (taught in Fall)
- HST.953 Collaborative Data Science in Medicine (taught in the Fall)
- HST.956 Machine Learning in Healthcare
- 15.399 Entrepreneurship Lab (taught in Fall)
- 15.457: Advanced Analytics of Finance
- 15.665: Power and Negotiation
- 15.785: Digital Product Management
- 15.841: Marketing Analytics
- 15.S04: Crypto Finance
- 18.0651 Matrix Methods

... and more!

Students must maintain a **minimum 4.5/5.0** GPA in order to graduate.
The Analytics Capstone Project allows students to work in teams of 2 on real-life data science research problems with industry practitioners.

- **7-month project** course with guaranteed full-time, **summer work experience** at a company location within the U.S. or abroad.

Students complete a written final report as well as presentation to the host company and MIT Sloan/ORC faculty for the Capstone Showcase in August.

Sample projects include:

- **MBTA**: Multi-model optimization tool for the Boston paratransit service
- **StubHub**: Creating a pricing prediction engine
- **BCG Gamma**: Building a demand forecasting and supply chain model
Sample Capstone Companies

ABInBev
BCG GAMMA
BMW
GM
groupm
IBM Watson
Massachusetts Bay Transportation Authority
MFS Investment Management
MIT Lincoln Laboratory
Quest Diagnostics
StubHub
Walmart
Swiss Re
tripadvisor
Unilever
Wayfair
MASTER OF BUSINESS ANALYTICS
CLASS OF 2020 PROFILE*

1010 Applications
62 Class Size

3.9 Mean GPA
168 Mean GRE Quant Score

73% International
40% Female

Steady Growth in Class Size

- Class of 2020: 62
- Class of 2019: 44
- Class of 2018: 30
- Class of 2017: 16

Program established in 2016

*Interim
THE DATA SCIENCE UNICORN

Mathematics, Statistics Knowledge

Domain Expertise & Business Communication

Computer Science & Engineering Skills
CAREERS
COMPREHENSIVE CAREER SERVICES

- Resume and Cover Letter Development
- LinkedIn Profile Development
- Networking Strategies
- Ongoing Industry Speaker Series
- 1-Week Immersion on the West Coast Data Science Trek
- Analytics Career Fair & Networking Events
- Career Research Resources
- Behavioral and Technical Mock Interviewing
West Coast Data Science Trek

March 16-17, 2020
Amazon, Blue Origin, Boeing, Gates Foundation
Microsoft, Nordstrom, Starbucks, Zillow

March 18-20, 2020
Uber, Gap, Google, Facebook, Tesla, LinkedIn,
StubHub, Netflix, Walmart, Yelp
MIT ANALYTICS CAREER NIGHT

- Each year, the MBAn students organize a networking evening dedicated to exposing the MIT community to graduate opportunities in data science and business analytics
- Held each year during one night of the first week of Feb
- Companies from all sizes and industries come to the MIT Media lab to showcase their analytics excellence and recruit future talent

60+ Company Sponsors
600+ Graduate students from across the MIT from all different departments
800+ Attendees
Website: www.AnalyticsFair.mit.edu
Analytics Career Night
MIT Media Lab
Feb 4, 2020
WHERE OUR GRADUATES WORK

Sample Job Titles

- Data Scientist *(most common)*
- Research Scientist
- Analytics Associate
- Business Intelligence Engineer
- Machine Learning Scientist
- Data Science Consultant
- Operations Analyst
- Research Engineer
- Product Analyst
- Portfolio Manager

For more examples, visit:

[www.AnalyticsFair.mit.edu/jobs](http://www.AnalyticsFair.mit.edu/jobs)
STRONG CAREER OUTCOMES

$87,000–$190,000
Range in Base Salary

$110,000+
Average Base Salary

100%
Received an Offer Before Graduation

Refer to the 2018 MBAn Employment Report for more details
## Our Portfolio of Programs

### Areas of Excellence

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>Finance</td>
</tr>
<tr>
<td>Entrepreneurship, Innovation &amp; Technology</td>
<td>Average Age</td>
</tr>
<tr>
<td>EMBA &amp; SFMBA</td>
<td>MBA / LGO</td>
</tr>
<tr>
<td>MAJOR &amp; MINOR</td>
<td>MAJOR &amp; MINOR</td>
</tr>
</tbody>
</table>

**Sloan Certificates:** Open to all MIT students

- Healthcare
- Sustainability
- Analytics
Contact:
BusinessAnalytics@mit.edu

Website:
mitsloan.mit.edu/master-of-business-analytics

THANK YOU