



Operations Research + Information Engineering

Degree Programs and Research Areas

Degrees Awarded Annually

Bachelor's ≈ 100
MEng's ≈ 80
Ph.D.'s ≈ 8

Three Programs, All Strong

- Undergrad program: "business analytics"
- MEng program: 25% acceptance rate, 50% yield
- Ph.D. program: head-to-head with MIT, Stanford

Cornell has the Preeminent OR Department

Methodological research in statistics, logistics, probability, optimization
Application interests include healthcare systems, risk management and financial engineering, revenue management

Trends

Burgeoning student interest for risk management, data mining, financial engineering

More undergrads aiming for master's degree, but fewer U.S. students aiming for Ph.D.

Dramatic heightening in students' global perspectives and in their appreciation of the business world

Reduced funding for fundamental research
□ Narrowing of research objectives

Achievements

Continued to attract top researchers even in areas for which the competition from prestigious urban universities is intense

Established a presence on Wall Street ("Cornell Financial Engineering Manhattan") to increase ORIE ties with industry

Expanded MEng program in financial engineering and risk management to three semesters
□ Students move to Manhattan for third semester, and are taught at CFEM by (alumni) practitioners in financial services industry

Grew research ties with Cornell-Weill
□ "Disease Prevention and Disaster Preparedness"

Simultaneously increased number and quality of entering MEng students

Continued to be highly innovative in curricular development, adding new courses such as:
□ "Information Systems and Analysis"
□ "Revenue Management"
□ "Statistical Data Mining"
□ "Service Systems Modeling and Design"

Strengthened department culture focused on nurturing and fortifying junior faculty

Enhanced relationships with other Cornell units

- Concerted attempt with Johnson School to make a joint hire
- Joint bachelor's degree with Computing & Information Science
- Professor David Shmoys is co-Principal Investigator on recently announced \$10M NSF "sustainable computing" grant to Cornell

Priority Goals

Increase ORIE Faculty

- To reduce course size
- To expand research and curriculum in healthcare systems
- To meet escalating demand for statistics courses

Increase number of Ph.D. students

Introduce courses and program in healthcare systems

- Perhaps a Master's/MEng with Cornell-Weill

Develop course(s) congruent with Cornell's emphasis on sustainable energy

- "Smart grids"

Keep alive ORIE's presence in Manhattan

- CFEM and research with Cornell-Weill

Maintain research preeminence among the world's OR departments



Challenges

University pays for too few ORIE faculty positions

- Total faculty: 23
- Paid by University: 19

ORIE's student-to-faculty ratio is excessive

CFEM in Manhattan is expensive
□ College has been generous, but other funding avenues must be established soon or CFEM will close

Too few statisticians in the College

- Statistics is now key across Engineering, yet only ORIE and CEE offer basic courses
- ORIE 270, taught both semesters, often has nearly 200 students

Increasing costs of attracting top researchers

Two-body problems
□ Difficult to attract spouses to upstate, impossible to keep them here without jobs

Baby-boomers begin retiring

- More job openings than for decades, yet fewer Americans pursuing PhD's

Opportunities

The financial system, and probably the healthcare system, face significant redesign
□ ORIE is positioned to inform and participate in the debates

- ORIE is poised to be at the vanguard in introducing appropriate curricula

Capitalize on distance-learning technology

Baby-boomers begin retiring

- Opportunity for department to initiate bold new directions