List of Recommended Courses for IOE MS/MSE Degrees in Operations Research

Please note that only a subset of the courses listed below will be offered in any given year so that these are advisory only and the courses chosen will depend on availability.

Operations Research Core

Courses in this group focus on general methods and techniques for the mathematical modeling, analysis and optimization of complex systems.

IOE 416 Queueing Systems (2 credits)
IOE 460 Decision Analysis (2 credits)
IOE 474 Simulation (4 credits)
IOE 510 (Math 561, OMS 518). Linear Programming I (3 credits)
IOE 511 (Math 562). Continuous Optimization Methods (3 credits)
IOE 512 Dynamic Programming (3 credits)
IOE 515 Stochastic Processes (3 credits)
IOE 516 Stochastic Processes II (3 credits)
IOE 545 (Mfg 545) Queueing Networks (3 credits)
IOE 562 (Stat 535) Reliability (3 credits)
IOE 574 Simulation Analysis (3 credits)

Engineering Application Areas

Courses in this group include engineering application arenas that illustrate use of Operations Research models and methods.

IOE 441 (Mfg 441) Production and Inventory Control (3 credits) – NOT FOR GRADUATE CREDIT
IOE 447 (Mfg 447) Facility Planning (3 credits) – NOT FOR GRADUATE CREDIT
IOE 449 (Mfg 449) Material Handling Systems (2 credits)
IOE 513 Healthcare Operations Research: Theory and Applications (3 credits)
IOE 543 (Mfg 543). Scheduling (3 credits)
IOE 549 (Mfg 549) Plant Flow Systems (3 credits)
IOE 551 Benchmarking, Productivity Analysis and Performance Measurement (3 credits)
IOE 552 Financial Engineering I (3 credits)
IOE 553 Financial Engineering II (3 credits)
IOE 591 Fundamentals of Supply Chain Management (3 credits)

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Mathematics and Statistics Background

Courses in this group include mathematical and statistical theory and methods useful in designing and employing models, analysis, and algorithms in Operations Research.

EECS 558 Stochastic Control (3 credits)
IOE 466 (Mfg 466, Stat 466) Statistical Quality Control (3 credits)
IOE 565 (ME 563, Mfg 561) Time Series Modeling, Analysis, Forecasting (3 credits)
IOE 570 Design of Experiments (3 credits)
Math 451 Advanced Calculus I (3 credits)
Math 571 Numerical Methods for Scientific Computing I (3 credits)
Math 572 Numerical Methods for Scientific Computing II (3 credits)

Projects, Research, and Seminars

IOE 590 Directed Study
Prerequisite: permission of instructor. (3 credits maximum)

IOE 813. Seminars in Healthcare Systems Engineering (2 credits)
Instructor: Amy Cohn