Concentration in Applied Probability

Below we provide a list of specialized courses to be used towards the concentrations, both existing and new ones. Some of these courses will be offered on a rotational basis, but regularly nevertheless. Also, some of these courses are new and their names may change by the time they are first offered.

Required
Probability Theory and Real Analysis -I (Stat G6105)
Probability Theory - II (Stat G6106)
Linear Regression Models (Stat W4315)
Statistical Inference and Time Series Modeling (Stat G6503)

Electives (Choose 3 out of the following):
Queuing Theory and Applications (IEOR E6704)
Queuing Networks (IEOR E6706)
Seminar(s) in Management Science (MGMT B 9801), if an appropriate courses are offered.
Seminar(s) in Operations Management (MGMT B 9811), if appropriate courses are offered.
Statistical Modeling for Data Analysis- I (Stat G6101 [Gelman])
Statistical Modeling for Data Analysis -II (Stat G6102 [Gelman])
Probabilistic Analysis of Combinatorial Algorithms (ELEN W6781 [Coffman])

Concentration in Financial Engineering

The following are doctoral courses by concentration area that may be offered. The department intends to offer at least one course in each area (beyond the core) each term.

STAT G6105 Real analysis and probability I
STAT G6106 Real analysis and probability II
IEOR E6703 Advanced financial engineering
IEOR E6710 Markov decision processes
IEOR E6609 Dynamic programming
IEOR E6801 Monte Carlo and discrete-event simulation
ECON G6211 Microeconomic analysis I
ECON G6212 Microeconomic analysis II
STAT G6107 Theory of statistical inference I
STAT G6108 Theory of statistical inference II
STAT G8321 Statistical inference for stochastic processes
MNSC B9801 Computational Finance (B9801 is a Topics Course)
MNSC B9801 Monte Carlo Simulation (B9801 is a Topics Course)
MNSC B9801 Stochastic optimal control (B9801 is a Topics Course)

Not counted for breadth and depth requirements:
IEOR E4706 Financial engineering I
IEOR E4708 Financial engineering topics
IEOR E4709 Data analysis for financial engineers
IEOR E4710 Term structure models
STAT W4315 Linear regression models
STAT G6101 Statistical modeling for data analysis I
STAT G6102 Statistical modeling for data analysis II
STAT G6503 Statistical inference and time series modeling
MNSC B8835 Security pricing and computation

Concentration in Optimization (beyond the two core courses)

The following are doctoral courses by concentration area that may be offered. The department intends to offer at least one course in each area (beyond the core) each term.
IEOR E6601 Advanced topics in linear programming
IEOR E6602 Nonlinear programming
IEOR E6603 Combinatorial optimization
IEOR E6606 Advanced topics in network flows
IEOR E6608 Integer programming
IEOR E6609 Dynamic programming
IEOR E6610 Approximation algorithms
IEOR E6611 Semi-definite and second-order cone programming
IEOR E6400 Scheduling: deterministic models
MSNC B9801 Integer programming (B9801 is a topics course)

Concentration in Supply Chain Management and Logistics

The following are doctoral courses by concentration area that may be offered. The department intends to offer at least one course in each area (beyond the core) each term.

Supply Chain Management and Logistics Courses:

MSIE W6403 Routing
MSIE W6408 Inventory theory
MSIE W6410 Logistics and Distribution
IEOR E6400 Scheduling: deterministic models
IEOR E6710 Markov decision processes
IEOR E6609 Dynamic programming
IEOR E6801 Monte Carlo and discrete-event simulation
MSNC B9801 Seminar in Operations Management (B9801 is a Topics Course)

Recommended, but not counted for breadth and depth requirements:
IEOR E4000 Production management
IEOR E4406 Facilities location, routing and network design
IEOR E4407 Game theoretic models of operations
MSNC B8815 Supply chain management