Core requirements for ISE Master’s Program

1. **Optimization methods requirement:** An optimization methods course beyond what may be found in a first course in operations research at the undergraduate level. Evidence of a second level optimization methods course in a student’s undergraduate record allows this requirement to be met. Examples of courses that would satisfy this requirement would be:
   a. ISE 406 – Introduction to Mathematical Optimization
   b. ISE 416 – Dynamic Programming
   c. ISE 418 – Discrete Optimization
   d. ISE 426 – Optimization Models and Applications
   e. ISE 455 – Optimization Algorithms and Software

   Alternatively, a student may propose to the master’s program adviser, in advance, an appropriate advanced level optimization methods substitute.

2. **Data analysis course requirement:** A course beyond a first course in probability and statistics at the undergraduate level. Evidence of a second level data analysis course in a student’s undergraduate record allows this requirement to be met. Examples of courses that would satisfy this requirement would be:
   a. ISE 364 – Introduction to Machine Learning
   b. ISE 409 – Time Series Analysis
   c. ISE 410 – Design of Experiments
   d. ISE 465 – Applied Data Mining
   e. MATH 312 - Statistical Computing and Application
   f. MATH 338 - Linear Models in Statistics with Applications

   Alternatively, a student may propose to the master’s program adviser, in advance, an appropriate data analysis substitute.

3. **Stochastic processes methods requirement:** A stochastic processes methods course beyond what may be found in a first course in operations research at the undergraduate level. Evidence of a second level stochastic processes methods course in a student’s undergraduate record allows this requirement to be met. Examples of courses that would satisfy this requirement would be:
a. ISE 339 – Stochastic Models and Applications
b. ISE 439 – Queueing Systems
c. ISE 404 – Simulation
d. Math 310 – Random Processes and Applications

Alternatively, a student may propose to the master’s program adviser, in advance, an appropriate advanced level stochastic processes methods substitute.