

Suggested Courses for IE Students with Emphasis in OR / Stochastics

S. Hunter, updated Saturday 10th June, 2017.

(Always ask the course instructor about required prerequisite knowledge.)

Courses in each row of the Table 1 may require prerequisite courses from the previous rows, including the previous rows of different columns. The courses generally increase in required mathematical sophistication or “difficulty” as you proceed down the rows of each column.

Table 1: Suggested regularly offered courses for IE graduate work in operations research and stochastics

Math ^t	Probability	Stoch. Proc.	Stats/Inference	Simulation	Optimization	Computing
MA 301 ^g	IE 230 ^g	–	–	–	IE 335 ^g Linear	CS 158 ^g /CS 240 ^g , C
MA 341 ^g / MA 440 ^{f,r}	STAT 416 / STAT 516	IE 336 ^g	IE 330 ^g	–	IE 535 ^f Linear	CS 251 Algorithms
MA 504 ^{s,a}	STAT 519	IE 536 ^s	STAT 417 / STAT 517	IE 580 ^f , IE 581 ^s	IE 538 ^s Nonlin.	CS 525 ^s Parallel
MA 544	STAT 538	STAT 532	STAT 528	IE 680	IE 537 ^s Discrete	CS 520 ^s Comp. Opt.
–	STAT 539 ^b	IE 636	–	–	IE 635 Theor. Opt.	–

Yellow courses are “core” master’s-level operations research courses. Ph.D.-level knowledge is usually deeper.

Undergraduate understanding of linear algebra and differential equations is assumed.

^a Spring and summer only; fall section is reserved for math majors.

^b Prerequisites: STAT 538 and MA 530 Functions of a Complex Variable I.

^f Typically offered Fall.

^g Definitely do not count for graduate credit.

^r Enrollment may be restricted. Please check with instructor.

^s Typically offered Spring.

^t Text books: MA 341 is Bartle or Bartle and Sherbert; MA 504 is Rudin.

Additional courses may be offered:

- IE 590 Stochastic Networks with Prof. Honnappa.
- STAT 598 Monte Carlo with Prof. Pasupathy; could be taken after IE 581.
- IE 630 Multiple Objective Optimization, usually with Prof. Morin in IE.
- IE 633 Dynamic Programming.
- IE 690 Stochastic Systems Modeling with Prof. Honnappa.

Front-load your mathematical courses to ensure appropriate prerequisite knowledge for research.