Welcome to the course! This fall semester it will be taught by:

Professor Richard C. Larson	**x 3-3604**	**Room E17-365** **rclarson@mit.edu**
Professor Arnold I. Barnett	**x3-2670**	**Room E62-568** **abarnett@mit.edu**

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The teaching assistant for the course will be:

Ms. Shujing Wang	**x8-5040**	**Room E40-103** **shujing@mit.edu**

Lectures are Monday and Wednesday, 10:30 – 12;00 Noon in Room E51-151.

Website: **http://stellar.mit.edu/S/course/15/fa17/15.073/**

The required textbook for the course is

Larson, R. C. and A.R. Odoni, *Urban Operations Research*,
available for free on the web: **http://web.mit.edu/urban_or_book/www/book/**

Practically all the other materials for the subject, including the lecture notes, will be posted on the website.

The subject will be graded on the basis of two class quizzes (scheduled for November 1 and December 11) and approximately six problem sets. Homework counts for approximately one-third of your final grade. Moreover, doing the homework is essential preparation for the quizzes.

Course Syllabus – Revised (9/7/2017)

Applied Probability and Stochastic Models
Fall Semester 2017

Lecture #	Date		Lecturer
1	6-Sep	Introduction, Overview	AIB, RCL
2	11-Sep	Poisson Process, Random Incidence	RCL
3	13-Sep	Pedestrian Crossing Problem	RCL
4	18-Sep	Functions of Random Variables 1	RCL
5	20-Sep	Functions of Random Variables 2	RCL
6	25-Sep	Geometrical Probability I	RCL
7	27-Sep	Geometrical Probability II	RCL
8	2-Oct	Introduction to Queues; Little's Law	AIB
9	4-Oct	Markov Birth-and-Death Queues	RCL
10	11-Oct	More General Markov Queues	RCL
11	16-Oct	The Queue M/G/1	RCL
12	18-Oct	Priority Queues	RCL
13	23-Oct	**No Class Today**	
14	25-Oct	Examples of Current Research	RCL
15	30-Oct	Hypercube Queueing Model 1	RCL
16	1-Nov	**QUIZ #1**	RCL
17	6-Nov	Hypercube Queueing Model 2	RCL
18	8-Nov	Simulating Randomness	RCL
19	13-Nov	Queues in Transportation Systems	RCL
20	15-Nov	Validating a Queueing Model	RCL
21	20-Nov	Psychology of Queues	RCL
22	22-Nov	Queue Inference Engine	RCL
23	27-Nov	Introduction to Networks; Edge Covering	RCL
24	29-Nov	Node Covering	RCL
25	4-Dec	Facility Location on Networks	RCL
26	6-Dec	Implementation	RCL
27	11-Dec	**QUIZ #2**	
28	13-Dec	FINAL ROUNDUP	AIB

Begins with a vigorous review of key probabilistic concepts and goes on to address developing, validating, and exploiting probabilistic models of a wide variety of real-life processes. Processes studied may vary from year to year but typically include urban systems, transportation and logistics, epidemiology, demand-responsive pricing of services, and daily life activities such as social networks and sports. Assumes some exposure to elementary probability. *A. Barnett, R. Larson*