

ICS 471 : Probability, Statistics, and Queueing (3 cr.)			
Description	A hands-on approach introduction to probability, statistical inference, regression, markov chains and queueing theory. Use of R, a free downloadable statistical graphics environment		
Prerequisites	241 , or consent		
Learning Objectives	<ul style="list-style-type: none"> • have learned elementary probability theory • have learned elementary statistical theory • have learned elementary queueing theory • have gained some expertise in the use of R an interactive statistical graphics environment • be able to study random phenomena through simulation • be able to do elementary statistical analyses • have some understanding and experience with the bootstrap • have some understanding and experience with simple and multiple regression 		
Topic List	#	Topic	Lecture Hours
	1	Elementary probability theory	3.0
	2	Introduction to the R environment	3.0
	3	Sorting, probabilistic analyses	3.0
	4	Discrete random variables and their properties	3.0
	5	Study of some particular discrete random variables	3.0
	6	Descriptive statistics and parameter estimation	3.0
	7	Confidence intervals and hypothesis testing	3.0
	8	Goodness of fit test and Kolmogorov-Smirnov test	3.0
	9	Introduction to the bootstrap	3.0
	10	Introduction to Markov chains	3.0
	11	Markov chains and dynamic processes	3.0
	12	Elements of queueing theory	3.0
	13	More elements of queueing theory	3.0
	14	Simple regression	3.0
15	Multiple regression	3.0	