

	<b>Time</b>	<b>Location</b>
<b>Lecture</b>	MW 3:15-4:30pm	Perlstein Hall 108

**Instructor:** Robert Ellis, Assistant Professor of Applied Mathematics

**Office Info:** Eng. 1 Bldg. Rm. 105C, 567-5336, rellis@math.iit.edu (with appropriate modification)

**Office hours (tentative):** M 2:00-3:00pm (Math 152 Priority)  
 T 11:20am-12:20pm (General)  
 W 1:15-2:15pm (Math 475 Priority)  
 F 8:30-9:30am (General)

Appointments and emailed questions are also welcome. I encourage you to request joint appointments so that more people can benefit from the discussion, or simply bring others with you. Any changes to office hours will be posted on the course homepage.

**Course Home Page:** <http://math.iit.edu/~rellis/475F07/> **Assignments posted here, check often!**

**Prerequisites:** Math 251

**Text:** *Mathematical Statistics with Applications*, Wackerly, Mendenhall, and Scheaffer, 6th edition, Duxbury.

**Supplementary Material:** *Virtual Laboratories in Probability and Statistics*, an excellent suite of probability and statistics applets and exposition at <http://www.math.uah.edu/stat/>.

<b>Course Outline</b>	<b>Hours</b>
Basics of probability including counting and conditional probabilities, Bayes Rule.	7
Introduction to random variables both univariate and multivariate.	6
Mathematical expectation, variance, conditional expectations, covariances and correlations.	7
Various discrete distributions such as binomial, geometric, negative binomial, Poisson, hypergeometric.	5
Various continuous distributions such as the Normal, Beta, Gamma, which includes the $\chi^2$ and exponential distributions.	5
Transformations of random variables via both the moment generating function and through Jacobians.	8
Various asymptotics such as laws of large numbers and the Central Limit Theorem.	5

**Grade Breakdown.** There will be three in-class midterms worth 15% each, on September 26, October 31, and November 28. The final exam, taking place Thursday December 13, 2:00-4:00pm in PH Rm. 108, is worth 35%. Homework is worth 20%. Up to 5% of the homework grade and 5% of the final exam grade (10% total) may instead come from a final project, to be determined. The grading scale will be no more strict than A:85-100, B:75-84, C: 65-74, D:55-64.

**Class Attendance.** The text is excellent, but prompt and regular class attendance is required, as the lectures and discussions are an indispensable means of mastering the material. Attending every class is strongly expected, although absences are not penalized per se, except that they are virtually guaranteed to reduce your grades on exams and homeworks.

**Homework and objectives.** Homework will serve to improve students' clarity of thought and language when writing or communicating mathematics. Each week there will be one or more assignments consisting of a number of problems each. Solutions should be presented carefully, and will be graded both on correctness of mathematics and on presentation. Write solutions so that a fellow student can understand – an un-annotated sequence of calculations is generally not well-communicated mathematics.

**Homework collaboration.** You are encouraged to discuss homework problems but **only** with another student in **this** class or the instructor. When you **write up** the solution, however, **you must not consult any notes or other aids from these discussions**. Then you may only use the textbook unless otherwise instructed. For example, if you start to write the solution, get stuck, and consult someone half-way, you must start the solution over without referring to the first attempt. You may not consult 3rd party resources such as the internet to find solutions to particular homework problems. Use your common sense to extrapolate from these guidelines or contact the instructor regarding uncertainties.

**Academic Integrity.** The Code of Conduct and applicable penalties in the IIT Student Handbook apply.

**Missed Work.** Assignments and exams cannot be made up except as approved by the instructor (e.g., due to official IIT activity or documented emergency). Work missed for an excused reason must be made up promptly upon the student's return, the time frame being at the discretion of the instructor.

**Disability Assistance.** IIT and this instructor are committed to accommodating students with disabilities. Students desiring such consideration must immediately contact the Center for Disability Resources and Educational Development at 567-5744. (Their approval must be had for any exceptions regarding exam guidelines.)