

A red pencil is positioned diagonally across the frame, pointing towards the upper right. In the background, a ruler with numerical markings is visible, set against a grid pattern. The entire scene is overlaid with a semi-transparent, light-colored filter.

**BASIC PROBABILITY FOR STATISTICS**  
**01:960:580:01 SPRING 2014**  
**HLL 552**

**Instructor - Ravi Ramaswamy**

# My Background

- Currently working for Cisco Systems
  - Helping AT&T and VzW build the Mobile Internet
- Previously worked for AT&T Bell Labs, Holmdel, NJ
- Academic
  - Ph.D. , Department of Statistics, University of Rochester, 1985
    - Specialization – Applied Probability & Stochastic Processes
  - Masters in Statistics, Indian Statistical Institute, 1976
  - Courses Taught – Graduate and Undergraduate Level
    - Probability Theory, Linear Algebra, Statistical Inference, etc
  - Recent Courses at Rutgers
    - 463/563 - Regression Theory (Summer 2013)
    - 401 - Basic Statistics for Inference (Spring 2013)
    - 583 - Statistical Inference (Summer 2010)

# Course Information

- **Course # 01:960:580:01**
- **Location – HLL-552**
- **Schedule**
  - Mondays 6:40 – 9:30 PM
  - Break: 10 min break at 8 PM
- **Office Hours**
  - After Class or by Appt
- **Email – [rsr624@yahoo.com](mailto:rsr624@yahoo.com)**

- **Tests**
  - 3 Mid Terms
    - 65% of total grade
  - 1 Final
    - 35% of total grade
- **Homework**
  - Assigned every week
  - Will not be graded
- Homework is a fundamental part of the course. Mid terms and final exam will borrow heavily from homework problems

- **Book**
  - A First Course in Probability, 9<sup>th</sup> Ed. Sheldon Ross
  - Will cover Chapters 1 - 8

- **Math Pre-Req**
  - ▣ Elementary Calculus
  - ▣ Course will develop concepts in basic probability theory based on mathematical models

# Course Objectives

- This course enables students to
  - Understand key concepts in probability such as conditional probability and independence
  - Understand random variables and common discrete and continuous distributions
    - Binomial, Poisson, Hyper-geometric, Normal, Chi-Sq, T and F
  - Calculate mean/st dev, expectation, moments, and conditional expectation
  - Law of Large Numbers, Central Limit Theorem and applications

# Schedule

Class/Week	Focus	Reading
1/27/2014	Introductions, Combinatorics	Ch 1
2/3/2014	Review of Ch 1. Basic Concepts of Probability	Ch 2
2/10/2014	Review of Ch 2. Conditional Probability and Independence, Bayes' Theorem	Ch 3
2/17/2014	1 <sup>st</sup> Mid-Term (1 <sup>st</sup> Half of Class). Discrete Random Variables	Ch 4
2/24/2014	Review of Mid-Term. Discrete Random Variables and Computation of Mean / Std Dev	Ch 4
3/3/2014	Continuous Random Variables and Computation of Mean / St Dev	Ch 5
3/10/2014	2 <sup>nd</sup> Mid Term (1 <sup>st</sup> Half of Class), Continuous Random Variables	Ch 5
3/17/2014	Spring Break	
3/24/2014	2 <sup>nd</sup> Mid Term Review & Bivariate Random Variables + Joint Distributions	Ch 6
3/31/2014	Discrete and Continuous Conditional Distributions	Ch 6
4/7/2014	Properties of Expectations, Correlations. Covariance, Conditional Expectations, MGF	Ch 7
4/14/2014	3 <sup>rd</sup> Mid Term (1 <sup>st</sup> Half of Class),	
4/21/2014	3 <sup>rd</sup> Mid Term Review - Chebyshev's Inequality, Law of Large Numbers, Central Limit Theorem	Ch 8
4/28/2014	Buffer Space	
5/5/2014	Course Review + Final Exam Prep	
5/12/2014	Finals – In Class	