UCSC Computer Engineering
CE 107: Probability and Statistics for Engineers
Winter 2012

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Sections/Office hours: to be announced


Grade policy: 65% examinations, 35% homework; failing grade: below 50% in either component

Planned: 3 examinations (no final), frequent homework assignments

Projected course outline

I. Introductory Notions
   probabilistic phenomena, relationship to experiments, intuitive notions
   event, random variable
   statistics, inference from limited data and outcomes of repeated experiments
   random experiment, sample space, sample points
   probability measures, probability axioms

II. Conditional Probability
   motivation, law of total probability, independence of events
   Bayes’ theorem
   application to reliability

III. Random Variables & Transforms
   distribution function, pmf, pdf (discrete/continuous random variables)
   characterization, moments
   jointly distributed random variables, covariance, independence
   generation of pseudo-random variates for simulation experiments
   sums of independent random variables, convolution
   conditional moments
   transform methods, moment generating function, generating function
   sums of independent random variables
   general inequalities and applications, bounds, application to design assessment
   relative frequency and probability, law of large numbers, precision of measurements

IV. Selected Probability Distributions & Applications, Statistics
   discrete, continuous
   negative exponential random variable
   Gaussian random variable, Central Limit Theorem, precision of repeated measurements
   applications in statistics, performance evaluation and reliability

V. Elements of Stochastic Processes
   basic notions, examples
   counting, Poisson process
   birth and death process, equilibrium, steady state
   Markov chains, state classification, ergodicity, applications

The projected course outline is only an initial plan. The actual number, order and extent of subjects covered may vary depending on a number of factors including, but not limited to, class progress.
Cheating and dishonesty are not considered acceptable.