UCSC Computer Engineering  
CE 107: Probability and Statistics for Engineers  
Summer 2016

Instructor: Alexandre Brandwajn  
Office: UCSC Campus, Engineering-2 223  
E-mail: alexb@soe.ucsc.edu  
Phone: 831-459 4023  
Office hours: Tu 10:45-11:45 am UCSC Main Campus & by appointment  
TA: Samira Zare, e-mail: szare@ucsc.edu  
Sections/TA Office hours: to be announced


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

Planned: 3 examinations (no final), frequent quizzes on class material, homework assignments (ungraded)

Projected course outline

I. Introductory Notions  
probabilistic phenomena, relationship to experiments, intuitive notions  
process, 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, Bernoulli, 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.