(—–; 3-0-0) **Probability II** STAT-353*

Textbook: *Fundamentals of Probability*, 2nd Edition
by S. Ghahramani (Prentice Hall)

Instructor: G. Takahara

Prerequisite: STAT-251*; MATH 110 or 111 or 112*; MATH 281*.

Evaluation:		
	Homework	20%
	Midterm Test	20%
	Final Examination	60%

Outline:

- *Multiple Random Variables*: multivariate distributions, joint probability, density, and distribution functions, marginal distributions, independent random variables; order statistics; multinomial distribution; transformations of n random variables; beta, t, χ^2 and F distributions (Sections 8.4-8.7 of text and class notes).
- *Expectations Involving Multiple Random Variables*: expectation of a sum of random variables; covariance and correlation; calculating expectations by conditioning; multivariate normal distributions (Sections 9.1-9.5 of text and class notes).
- *Limit Theorems*: moment generating functions; sums of independent random variables; markov and chebyshev inequalities; laws of large numbers; chernoff bounds and large deviations; central limit theorem (Sections 10.1-10.5 of text and class notes).
- *Statistics*: statistical inference, maximum likelihood estimation, bayesian estimation; confidence intervals (Class notes).
  and/or
  Random Walks and Brownian Motion: random processes, counting sample paths, time and spatial homogeneity, independent increments, Markov property (Class notes).