EECS 861
Test 1
Topics

Probability

Axioms
Random Variables
- Discrete
- Continuous

Distributions
- Marginal
- Joint
- Conditional

Expect Value
- Mean
- Variance
- Covariance
- Correlation coefficient

Characteristic and moment generating functions
Random vectors
- Mean Vector
- Covariance Matrix
- Multivariate Gaussian RVs
  - Linear Transformations of Multivariate Gaussian RVs
  - Linear transformation to form i.i.d. Gaussian components

Nonlinear Transformations of RVs
Bounds and Approximations
- Chebyshev Inequality
- Chernoff Bound

Sequences of RV's
- Central Limit Theorem

Random Processes

Definition
Autocorrelation function- $R_{xx}(t_1,t_2)$
Example RPs
- $E[X(t)]$, $R_{xx}(t_1,t_2)$

Stationarity
- SSS
- WSS