

**Tennessee Technological University
Mathematics Department**

MATH 6370-6380: Probability Theory and Stochastic Processes I-II

- I. COURSE DESCRIPTION FROM CATALOG:** Probability theory of sets, random variable distribution and characteristic functions, convergence, limits and law of large numbers, convolutions, compound distribution, recurrent events, random walk models, Markov chains, homogeneous, and queuing processes. Lec. 3. Cr. 3.
- II. PREREQUISITE(S):**
MATH 6370: C or better in MATH 4480 or MATH 5480.
MATH 6380: C or better in MATH 6370.
- III. COURSE OBJECTIVE(S):** To study the Combinatorics, Theoretical Probability, Conditional Probability, Bayes Rule, Expectations Covariances, Generating Functions, Conditional Expectations, Chebysheves and other Inequalities, Limit Theorems, Stationary Stochastic Processes, Markov Chain, Random Walk, Markov Processes and Queuing Process.
- IV. TOPICS TO BE COVERED:**
Chapter 1: Elements of Stochastic Processes
Chapter 2: Markov Chains
Chapter 3: The Basic Limit Theorem of Markov Chains and Applications
Chapter 4: Classical Examples of Continuous Time Markov Chains
Chapter 5: Renewal Processes (Through section 4)
- V. ADDITIONAL INFORMATION:**
- VI. POSSIBLE TEXTS AND REFERENCES:**
A Introduction to Stochastic Modeling, 3rd edition by Karlin and Taylor
A First Course in Stochastic Processes, 2nd edition by Karlin and Taylor
- VII. ANY TECHNOLOGY THAT MAY BE USED:**

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). 1
An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119.