## Math 4221 Stochastic Processes I

Math 4221 is not taught on a regular basis and is currently inactive.

# Stochastic Processes I

**Department:** MATH
**Course Number:** 4221
**Hours - Lecture:** 3
**Hours - Lab:** 0
**Hours - Recitation:** 0
**Hours - Total Credit:** 3
**Typical Scheduling:** Typically every fall semester
**Description:**
Simple random walk and the theory of discrete time Markov chains
**Prerequisites:**

Math 3215 or Math 3225

**Course Text:**

At the level of *Introduction to Stochastic Processes*, Lawler, 2nd edition or *Introduction to Probability Models*, Ross, 10th edition

**Topic Outline:**

Simple random walk Applications of weak law and central limit theorem Reflection principle and combinatorial approach Techniqu
difference equations and generating functions Gambler's ruin and expected gain problems
Markov Chains Conditional probability and conditional expectation Renewal theory with limit theorems Markov chains using renev
state space and matrix approach Countable state spaces with examples and applications Absorption probabilities Sojourn times,
duration, etc. Limiting and stationary distributions Reversibility and applications
Introduction to continuous state, discrete time, Markov processes Applications to IFS