

Department of Management Science and Engineering
Stanford University
Course Outline and Tentative Schedule
MS&E 251: Introduction to Stochastic Control with Applications
Winter Quarter 2017-2018

4/3: Introduction to Stochastic Control, Problem Formulation and Example Applications

4/5: Dynamic Programming for problems with Perfect State Information

4/10: Linear Quadratic Stochastic Optimal Control Problem with Perfect State Information

4/12: Neural Network Approximation with Application to Dynamic Programming

4/17: Inventory Control Example

4/19: Dynamic Portfolio Analysis

4/24: Optimal Stopping Problems

4/26: Stochastic Shortest Path Problems

5/1: Discounted Problems and average cost infinite time problem

5/3: Mid-term Exam

5/8: Dynamic Programming for problems with Imperfect State Information

5/10: Sufficient Statistics and Dynamic Programming in terms of Sufficient Statistics, Problem of Instruction

5/15: LQ with Imperfect State Information

5/17: Kalman Filter and Least Square Estimation

5/22: Certainty Equivalence, Separation, Classes of Suboptimal Control

5/24: Dual Control: Active Learning in Adaptive Control

5/29: Sequential Hypothesis Testing, Finite State Markov problems

5/30: Approximation of by Model Aggregation

6/5: Project Presentation