Instructor:   Dr. Shih-Chun Chang

Office:   Engineering 3234        Classroom:   S&T II 018

Office Hour:   Tuesday 3-5 PM  Class Time:   7:20-10 PM Thursday

Phone:   (703) 993-1617        Mail:   schang@ gmu.edu

Textbook:


Reference:


Outline:

1. Introduction
2. MAP, ML and Minimax Decisions
3. Optimum Receiver Design
4. Signal Constellation and Geometry Interpretation
5. Channel Capacity and Information Theoretical Bounds
6. Channel Coding and Reliable Communication
7. Fading Channel and Noncoherent Communications
8. Composite Hypothesis Testing
9. Estimation Problems
10. Waveform Communication

Grading:

1. HW   10%
2. Test 1   3/4   25%
3. Test 2   4/8   25%
4. Final   5/6   40%
Schedule:

Week 1: 1/21 Discrete Channel and Decision Rules
Week 2: 1/28 Gaussian Random Process and Continuous Channel
Week 3: 2/4 Chernoff Bound and Optimum Detection
Week 4: 2/11 Optimum Receiver and Geometrical Interpretation
Week 5: 2/18 Signal Constellation and Efficient Design
Week 6: 2/25 Shannon Capacity and Gallager Bound
Week 7: 3/4 Test 1
Week 8: 3/11 Spring Break (no class)
Week 9: 3/18 Coded Systems and Reliable Communication
Week 10: 3/25 Multipath Communication and Fading Channel
Week 11: 4/1 Noncoherent Communications
Week 12: 4/8 Test 2
Week 13: 4/15 Composite Hypothesis Testing
Week 14: 4/22 Estimation Problems: Random Amplitude and Phase
Week 15: 4/29 Waveform Communications
Week 16: 5/6 Final Examination