Summary. The course presents modern neural networks and fuzzy systems. Lectures focus on the formal structure of fuzzy and neural systems. The required project applies these techniques to financial engineering or to some other approved area.

Kosko, B., *Neural Networks and Fuzzy Systems*, Prentice Hall, 1992

Note: Above two texts are available as a bound copy in the bookstore


COURSE OUTLINE

JAN 15: Introduction to neural networks and fuzzy systems.
FEB 5: Two-stage RAP. Multivalued set theory.
FEB 12: IP overview. Subseldom and partial equality.
MAR 5: Knowledge combination. SAM supervised learning.
MAR 12: Rule structure and approximation. *Project proposals due*.
MAR 19: No class. Spring Break.
MAR 26: Pricing derivatives. Black-Scholes equilibrium model.
APR 2: MIDTERM II. Unsupervised and competitive learning.
APR 16: Gradient systems. Classical supervised learning. Feedback SAMs.
APR 23: Project presentations. Mandatory attendance.
APR 30: Project presentations. Mandatory attendance.
1. **Midterms.** Two midterms. Each worth 25 points.

2. **Homework.** Checked and recorded. Not graded. A perfect set of worked homework problems can earn 10 points. Lesser homework sets earn fewer points. Grade stays as is if only some homework turned in. How much homework counts for how many points lies at the discretion of the instructor and teaching assistant. Students may discuss the homework problems among themselves but each student must work his or her own problems. Cheating warrants a course grade of F.

3. **Project.** Well prepared and presented project worth 50 points. Exceptional projects can earn an automatic course grade of A. Hence: *Project excellence trumps all else.* Projects must have the instructor’s written approval. Failure to present a project on schedule results in automatic course grade of F. Project evaluation at discretion of instructor and teaching assistant. View project as the final exam.

4. **Course Grade.** 100 points possible in course.
   
   - A if 90 - 100
   - B if 80 - 89
   - C if 70 - 79
   - D if 60 - 69
   - F if 0 - 59

5. **Cheating.** Not tolerated. Common errors in homework and exams can count as written evidence of cheating. Penalty ranges from F on exam to F in course to recommended expulsion.