CS478 – Machine Learning
Tentative Syllabus – Spring 2000

1. Introduction (1 lecture)
   - What is machine learning?
2. Supervised Learning (10 lectures)
   - Concept learning
   - Version spaces
   - Inductive bias
   - Decision tree learning
   - Instance-based learning
   - Locally weighted regression
   - Learning rules
   - Neural networks: backpropagation
   - Recurrent Networks
   - Empirical evaluation of learning systems
3. Unsupervised Learning (4 lectures)
   - K-means clustering
   - Kohonen networks
   - COBWEB
   - The EM algorithm
4. Computational Learning Theory (4 lectures)
   - PAC learning
   - VC dimension
   - Mistake bounds
   - Winnow
   - Boosting
   - Bagging
5. Bayesian Learning (3 lectures)
   - MAP and ML learners
   - Bayes Optimal Classifier
   - Gibbs sampling
   - Naive Bayes
6. Other Topics (6 lectures)
   - Issues for knowledge discovery and data mining
   - Support Vector Machines
   - Association rules
   - Learning from sequences: HMMs
   - Transformation-based learning
   - Classification of minority instances
   - Feature selection
   - Genetic algorithms
   - Genetic programming