CS 229
Machine Learning
Handout #2: Course Schedule

Syllabus

- **Introduction** (1 class)
  Basic concepts.

- **Supervised learning.** (7 classes)
  Supervised learning setup. LMS.
  Logistic regression. Perceptron. Exponential family.
  Generative learning algorithms. Gaussian discriminant analysis.
  Naive Bayes.
  Support vector machines.
  Model selection and feature selection.
  Ensemble methods: Bagging, boosting.
  Evaluating and debugging learning algorithms.

- **Learning theory.** (3 classes)
  Bias/variance tradeoff. Union and Chernoff/Hoeffding bounds.
  VC dimension. Worst case (online) learning.
  Practical advice on how to use learning algorithms.

- **Unsupervised learning.** (5 classes)
  Clustering. K-means.
  EM. Mixture of Gaussians.
  Factor analysis.
  PCA (Principal components analysis).
  ICA (Independent components analysis).

- **Reinforcement learning and control.** (4 classes)
  MDPs. Bellman equations.
  Value iteration and policy iteration.
  Linear quadratic regulation (LQR). LQG.
  Q-learning. Value function approximation.
  Policy search. Reinforce. POMDPs.

Dates for Assignments and Midterm

- Assignment 1: Out 10/05. Due 10/19.
- Assignment 2: Out 10/19. Due 11/02.
- Midterm: 11/09 (6 PM - 9 PM) - *Venue - To Be Announced*

- Assignment 3: Out 11/02. Due 11/16.
- Assignment 4: Out 11/16. Due 12/07.

Dates for Project Related Submissions

- Project Proposal: Due 10/21 at 11:59 PM.
- Project Milestone: Due 11/18 at 05:00 PM.
- Poster Session: 12/13 (08:30 AM - 11:30 AM) at **Arrillaga Center for Sports and Recreation** (ACSR)
- Final Writeup: Due 12/16 at 11:59 PM. *(No Late Days)*

- All assignments are due at 11:00 AM after the class on corresponding Wednesdays.
- Project related submissions are due at the times specified above.
- A maximum of three late days can be applied to any single assignment, project proposal, or project milestone.
- Late days cannot be used for the poster and the final report.
