

Stats 201C Advanced Modeling and Inference

Course moodle site: <https://ccl.e.ucla.edu/course/view.php?name=12W-STATS201C-1>.

Instructor: Qing Zhou (zhou@stat.ucla.edu), OH: Wed 3:30–5pm MS 8979.

Prerequisite: Stats 200B and 201B (recommended). Programming skills (R, by default).

Grading

Your final grade of this course will be composed of three parts:

1. Homework assignments (30%). We will have biweekly assignments. Some problems need computer programming.
2. Midterm exam (30%, in-class). 12-1:15pm, Wed (5/3).
3. Final exam (40%, in-class, 3 hours).

Topics

Introductions to advanced topics in statistical modeling and inference, including Bayesian hierarchical models, missing data problems, mixture modeling, hidden Markov models, and Bayesian networks. The course will also cover computational methods used and developed for these models and problems, such as the EM algorithm, data augmentation, the Gibbs sampler, dynamic programming, and belief propagation. The topics are grouped into five chapters:

1. Bayesian hierarchical models.
2. Missing data problems.
3. Mixture modeling.
4. Hidden Markov models.
5. Bayesian networks.

References

- Lecture notes: Will be posted on the Moodle site weekly.
- Gelman, A. et al. Bayesian data analysis. (Second edition, 2004).
- Schafer, J.L. Analysis of incomplete multivariate data. (First edition 1997).