1 Instructor and Course Information

- **Instructor**: Moulinath Banerjee
- **Office**: 451, West Hall
- **Email**: moulib@umich.edu
- **Course Page**: [http://www.stat.lsa.umich.edu/~moulib/stat610.html](http://www.stat.lsa.umich.edu/~moulib/stat610.html)
- **Office Hours**: Monday and Wednesday, 2:00 – 3:30 pm.
- **Primary Text**: Statistical Theory by Robert W. Keener
- **Supplementary Text**: Theory of Point Estimation by Lehmann and Casella.

2 GSI information

- **GSI**: Toshiya Hoshikaya
- **Office**: 437, West Hall
- **Email**: toshiyah@umich.edu
- **Office Hours**: 443, West Hall. Thurs, 4:00 – 6:00.

3 Grade Distribution

- 6 (approximately Biweekly) Homeworks with the best 5 to count. **20 points**
- Test 1 on Wednesday, October 22, in class. **30 points**
- Test 2 on Monday, December 8 (time and place to be decided). **50 points**

SYLLABUS

- 1 Introduction
- 2 Probability and Measure: Measures; Integration; Events, Probabilities, and Random Variables; Null Sets; Densities; Expectation; Random Vectors; Covariance Matrices; Product Measures and Independence; Conditional Distributions.
- 3. Exponential Families: Densities and Parameters; Differential Identities; Dominated Convergence; Moments, Cumulants, and Generating Functions.
4. Sufficiency, Completeness, and Ancillarity: Sufficient Statistics; Factorization Theorem; Minimal Sufficiency; Completeness; Convex Loss and the Rao-Blackwell Theorem.


6. Curved Exponential Families.

7. Conditional Distributions: Joint and Marginal Distributions; Conditional Distributions; Building Models; Proof of the Factorization Theorem.

8. Bayesian Inference: Formulation and the Main Result; Examples; Empirical Bayes.
