STAT 556/557 Advanced Stat. Inference I & II Fall 2022/Spring 2023

Professor: Ronald Christensen

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Phone: They removed it in a pseudo budget cut.

Office Hours: Normally, T, Th, 12:30-1:30 and by appointment. Probably by email or Zoom appt.

Time: T, Th, 2:00-3:15

Location: Fall: T on Zoom, Th in SMLC 352.

- Prerequisites: Stat 553, 561 and Math 510 or instructor's permission. Stat 556 for Stat 557.
 - Text: Ferguson, Thomas S. (1996). A Course in Large Sample Theory, Chapman & Hall/CRC, Boca Raton.
 - Material: I will supplement the book with my own notes. I will discuss reference books the first day of class. Eventually, we will cover the book quite closely.
 - Grading: Grading will be based on some combination of quizzes, exams, and homework. You are required to keep legible copies of all work, except in-class examinations.

Additional Reading

Ferguson, T. S. (1967). Mathematical Statistics: A Decision Theoretic Approach. Academic Press, New York.

Our second text but out of print!

Rao, C. R. (1973). Linear Statistical Inference and Its Applications, Second Edition. John Wiley and Sons, New York.

Covers almost everything I want to cover. Not bad to read but impossible to teach out of.

Cramér, H. (1946). *Mathematical Methods of Statistics*. Princeton University Press, Princeton. Excellent! All the analysis you need to do math stat? Limited because of age.

Lehmann, E. L. (1983) Theory of Point Estimation. John Wiley and Sons, New York.

Lehmann, E. L. (1986) Testing Statistical Hypotheses, Second Edition. John Wiley and Sons, New York.

Berger, J. O. (1993). Statistical Decision Theory and Bayesian Analysis. Revised Second Edition. Springer-Verlag, New York.

We used to teach this course out of above three books.

- Cox, D. R. and Hinkley, D. V. (1974). Theoretical Statistics. Chapman and Hall, London. More profound on ideas, less on math.
- Manoukian, E. B. (1986), Modern Concepts and Theorems of Mathematical Statistics. Springer-Verlag, New York.

SHORT! Usually the first book off my shelf. Statements, not proofs or explanations.

Anderson, T. W. (2003). An Introduction to Multivariate Statistical Analysis, Third Edition. John Wiley and Sons, New York.

For this class, source for multivariate normal only, and we do that primarily in Linear Models.

Wilks, *Mathematical Statistics*; Zacks, *Theory of Statistical Inference*. Both old but thorough. Wilks is great for order statistics and distributions related to discrete data.

Wasserman, Larry (2004). All of Statistics. Springer, New York.

Statistical Inference

Cox, D.R. (2006). Principles of Statistical Inference. Cambridge University Press, Cambridge.

Fisher, R.A. (1956). Statistical Methods and Scientific Inference, Third Edition, 1973. Hafner Press, New York.

Geisser, S. (1993). Modes of Parametric Statistical Inference. Wiley, New York.

Bayesian Books

de Finetti, B. (1974, 1975). Theory of Probability, Vols. 1 and 2. John Wiley and Sons, New York.

Jeffreys, H. (1961). Theory of Probability, Third Edition. Oxford University Press, London.

Savage, L. J. (1954). The Foundations of Statistics. John Wiley and Sons, New York.

DeGroot, M. H. (1970). Optimal Statistical Decisions. McGraw-Hill, New York.

First three are foundational. There are now TONS of other books, see mine for other references.

Additional Large Sample Theory Books

Lehmann, E. L. (1999) Elements of Large-Sample Theory. Springer.

Serfling, R. J. (1980). Approximation Theorems of Mathematical Statistics, Wiley, (paperback, 2001) I haven't read either of these, but I hear they are good.

Probability and Measure Theory Books

Ash, Robert B. and Doleans-Dade, Catherine A. (2000). *Probability and Measure Theory*, Second Edition. Academic Press, San Diego.

I studied the first edition of this in grad school.

Billingsley, Patrick (2012). *Probability and Measure*, Fourth Edition. Wiley, New York. I haven't read this, but I hear it is good. There are lots of others.