



STAT 4301

Advanced Statistical Inference (25817)

Autumn 2026

Syllabus - Instructor Information

Sebastian Kurtek

Professional Qualifications

Ph.D. Biostatistics, Florida State University

M.S., Biostatistics, Florida State University

B.S., Mathematics, Tulane University

Syllabus - Required or Recommended Readings

Morris H. DeGroot and Mark H. Schervish, *Probability and Statistics*, Fourth Edition, Pearson, 2012

Syllabus - Course Schedule

Week	Topic
1	Review of probability
2	Review of probability, Random variables, Discrete probability distributions
3	Discrete probability distributions, Continuous probability distributions
4	Bivariate distributions, Conditional and marginal distributions
5	Functions of random variables

Week	Topic
6	Functions of random variables, Expectation and moments
7	Special distributions - Binomial, Poisson, Hypergeometric, Normal, Gamma, Beta, etc.
8	Law of large numbers, Central limit theorem
9	Estimation
10	Estimation, Sufficient statistics
11	Sufficient statistics, Bayes estimators
12	Sampling distributions of estimators, Confidence intervals
13	Confidence intervals, Unbiased estimators, Fisher information
14	Fisher information
15	Hypothesis testing
16	Hypothesis testing

Course Details - Class Meeting Details

Class Meeting Details: 10:20 AM-11:15 AM - Pomerene Hall 150 - MWF

Course Details - Course Description

Advanced probability models and fundamentals of inferential procedures; distribution functions, moment generating functions, transformations, order statistics, large-sample theory, classical hypothesis testing, distribution-free hypothesis tests. Prereq: 3201 and 3202, or 4201 and 4202; and Math 2153; or permission of instructor.

Prerequisite(s) / Corequisites: Prereq: 3201 and 3202, or 4201 and 4202; and Math 2153; or permission of instructor.

Syllabus - University Policies

Office of Undergraduate Education - Standard Syllabus Statements

- [Academic Misconduct](#)
- [Religious Accommodations](#)
- [Accommodations for Disability and Illness](#)
- [Intellectual Diversity](#)
- [Grievances and Solving Problems](#)
- [Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct](#)
- [Copyrights](#)
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- [Mental Health Support](#)
- [Resources for Military-Connected Students](#)
- [Campus-wide Class Cancellations](#)