

Syllabus for STAT 1221

Note: see important exam information at the end of this syllabus.

Text: D. S. Shafer and Z. Zhang. Introductory Statistics.
Published by Flatworld Knowledge (flatworldknowledge.com).
Print ISBN 978-1-453-34485-9. Electronic ISBN 978-1-453-34487-3.
Digital versions (bundled downloadable pdf and files for e-readers,
tablets, and smartphones) available from the bookstore;
online, online + digital, and online + digital + B&W print
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Section	Topic
1.1—1.3	Introduction to statistics and presentation of data (brief overview, not more than one period) [not covered on the final exam]
2.1	Organizing and presenting data; shapes of histograms [not covered on the final exam, but on the final exam data could be presented in a stem-and-leaf diagram]
2.2	The mean, median, and mode [mode not covered on the final exam]
2.3	The range, variance, and standard deviation [variance not covered on the final exam]
2.4	Percentile rank and z -score (omit quartiles, IQR, and boxplots)
2.5	The Empirical Rule (omit Chebyshev's Theorem)
3.1	Sample spaces, events, and their probabilities
3.2	Complements, intersections, and unions
3.3	Conditional probability and independent events
4.1	Random variables
4.2	Probability distributions for discrete random variables Mean and standard deviation of a discrete random variable
4.3	The binomial distribution
5.1	Continuous random variables
5.2	The standard normal distribution
5.3	General normal random variables
5.4	Areas of tails of distributions
6.1	The mean and standard deviation of the sample mean
6.2	The sampling distribution of the sample mean; the Central Limit Theorem
6.3	The sampling distribution of the sample proportion
7.1	Large sample estimation of a population mean
7.2	Small sample estimation of a population mean; Student's t -distribution
7.3	Large sample estimation of a population proportion
7.4	Sample size considerations

- 8.1 Introduction to hypothesis testing; the critical value approach
- 8.2 Large sample tests for a population mean
- 8.3 The observed significance of a test;
the p -value approach to hypothesis testing
- 8.4 Small sample tests for a population mean
- 8.5 Large sample tests for a population proportion

- 9.1 Comparing two population means: large, independent samples
- 9.2 Comparing two population means: small, independent samples
- 9.3 Comparing two population means: paired samples
- 9.4 Comparing two population proportions
- 9.5 omitted

- 10.1 Linear relationships between two variables
[not covered on the final exam]
- 10.2 The linear correlation coefficient
- 10.3 The linear regression model
[not covered on the final exam]
- 10.4 The least squares regression line
- 10.5 Inferences about the slope of the population regression line
- 10.6 The coefficient of determination
- 10.7 Confidence and prediction intervals
- 10.8 A complete example
- 10.9 [Formula list: all formulas are included on the course formula sheet]

- Ch 11 omitted

Pace of the course: near the end of Chapter 3 one-quarter of the way through the term, completion of Chapter 4 at the halfway point, and close to starting Chapter 11 three-fourths of the way through the term (allowing for review for the final exam at the end of the term).

Examinations

The number and timing of in-class exams is the prerogative of the individual instructor. Three equally spaced examinations is recommended. The final exam is a common final exam given at a special examination period announced at the beginning of each semester. All students enrolled in the course must take the common final at the specially designated time, and it must constitute a significant component of the student's grade in the course. A formula sheet, scratch paper, and all necessary tables will be provided with the exam. Old final exams are posted on the web page of the Department of Mathematics and Statistics.

The notation "not covered on the final exam" means that there will be no question devoted specifically to this concept, not that the concept is irrelevant to the course or the exam.

Calculators

Students are strongly encouraged to purchase a calculator with a built-in statistical package for use on homework, in-class exams, and the final exam.