Exam Guidelines
Statistics 20 : Introduction to Probability and Statistics
Summer 2014

Exam Details: The first exam will be Wednesday, July 16 in lecture, lasting 80 minutes. It will begin promptly at 9:10am, so arrive early if possible. It will end at 10:30am and will be held in the regular classroom. The exam is worth 30% of your grade. The exam will cover material from the beginning of class (23 June 2014) up to and including material from lecture 13 (14 July 2014). There will be an exam review in lecture on Tuesday, 15 July 2014, so come prepared with questions. No notes will be allowed on the exam.

What to bring: You will need a working calculator, pencils or pens, and erasers. I will supply normal tables, and there will be room to work on the exam itself. There will also be scratch paper available to you as necessary. No notes will be allowed on the exam.

How to study: Go over problems–don’t just read the text. First, go over the sample exams, being sure to time yourself to simulate the 80 minutes you will have. Then, go over problems done in lecture, section, quizzes, and homework. Finally, if you have the time, work the problems recommended here. Work problems on your own, before consulting with a fellow student, the GSI, the instructor, or the answers. This will indicate what you should focus on when you review. Answers to the Exercise Sets are found in the back of your book. Some of the Review Exercises have been assigned as homework; all homework (and quiz) solutions are found in the glass cases on the third floor of Evans Hall. Come to office hours or the midterm review (July 15) with any questions you might have.

Material: Chapters 1 through 15, Chapter 19, Chapter 22

- Data collection and studies: Chapters 1, 2, 19, 22, SticiGui Chapter 24
  - controlled experiments, observational studies, sample surveys
  - method of comparison, confounding, controlling, Simpson’s Paradox
  - different kinds of biases
  - types of samples (and their strengths and weaknesses).
- Univariate data and normal curve: Chapters 3, 4, 5, 6, 7
  - types of data, data displays (qualitative and quantitative) with emphasis on histograms
  - calculation and position of average, median, mode, SD, percentiles, IQR
  - notions of symmetry, skewness, tails
  - normal curve approximation to data, use of normal table
  - measurement error, repeated measurements
  - effect of change of location and spread on statistics
- Bivariate data and regression: Chapters 8, 9, 10, 11, 12
  - correlation (calculation, appropriate times to use, interpretation, properties)
  - regression method and equation (when to use, how to predict for individuals/groups, including using percentiles, regression effect/fallacy, interpretation of slope/intercept, regression line)
  - RMS Error (accuracy, SD of strip, normal curve within a strip)
- Basic probability: Chapters 13, 14, 15, SticiGui Chapter 13
  - properties of probability
  - multiplication, addition, complement rules
  - a few draws from a box, tree diagrams
  - independence, mutual exclusivity
**Recommended Problems:** All problems are from Freedman, Pisani, and Purves, 4th edition. Answers to the Exercise Sets are found in the back of your book. Some of the Review Exercises have been assigned as homework; all homework (and quiz) solutions are found in the glass cases on the third floor of Evans Hall.

- Chapter 2
  - Set A: 1, 5, 8
  - Review: 1, 7, 8, 11, 12
- Chapter 19
  - Set A: 1-4, 11, 12
  - Review: 2, 4, 5, 6, 12
- Chapter 22
  - Review: 5, 7, 9
- Chapter 3
  - Set A: all
  - Set B: 1, 2
  - Set C: all
  - Set D: 1, 2
  - Review: 2, 4, 6, 7, 8, 12
- Chapter 4
  - Set A: 1-7
  - Set B: all
  - Set C: all
  - Set D: 1-6
  - Set E: all
  - Review: 1-3, 5-11
- Chapter 5
  - Set A: all
  - Set B: all
  - Set C: all
  - Set E: all
  - Review: 2-11
- Chapter 6
  - Review: all
- Chapter 8
  - Set A: 6
  - Set B: 1-7
  - Set D: 1
  - Review: 1, 3, 5, 9, 11
- Chapter 9
  - Set A: 1-6, 9, 10
  - Set B: all
  - Set C: 1, 2, 4
  - Set E: 2, 3, 4
  - Review: 2, 8, 10, 11
- Chapter 10
  - Set A: 1, 2, 4
  - Set B: 1
  - Set C: 1, 2
  - Set D: all
  - Set E: 1, 3
  - Review: 2, 3, 4, 7, 9, 10
- Chapter 11
  - Set A: 4-7
  - Set B: all
  - Set C: 1, 2
  - Set D: 1-4, 6-7
  - Set E: all
  - Review: 2-7
- Chapter 12
  - Set A: 1-3
  - Set B: all
  - Review: 2, 3, 8, 9
- Chapter 13
  - Set A: all
  - Set B: all
  - Review: 2, 3, 8, 9
- Chapter 14
  - Set A: 1, 2, 4
  - Set B: All
  - Set C: 3-5
  - Set D: 1-5
  - Review: 1-4, 6-9, 11-12
- Chapter 15
  - Set A: 3-5
  - Review: 1-6, 8-10