

Study Guide, Chapters 6, 8, 9, 10, 12
Basic Practice of Statistics, David S. Moore, 4th Edition
Davidson and Gardner, Spring 2009

Chapter 6.

Departmental “Skills and Knowledge” Goals. The “Math 1530 Resource Page” (<http://www.etsu.edu/math/price/1530/1530link.htm>) lists the following goals.

1. Know how to produce a two way table from raw data for two categorical (or categorized) variables.
2. Be able to get marginal and conditional distributions from a two way table.
3. Feel comfortable interpreting ‘row and column percentages’ (conditional distributions) and compare groups based on that interpretation.
4. An association or comparison that holds for all of several groups can reverse direction when the data are combined to form a single group. This reversal is called Simpson’s Paradox.

The topics we have emphasized in our class are: two-way table, row variable, column variable, marginal distribution, conditional distribution, Simpson’s Paradox.

Chapter 8.

Departmental “Skills and Knowledge” Goals. The “Math 1530 Resource Page” lists the following goals.

1. Distinguish between an experiment and a survey.
2. Know the difference between population and a sample.
3. Understand how bias can enter into samples or results.
4. Be familiar with the survey & sampling basic vocabulary including types of random sampling.
5. Know that individuals in the sample have to be randomly selected.
6. Be able to select a simple random sample from a sampling frame.
7. Know the consequences of incomplete/dated sampling frames and non-random sampling.

The topics we have emphasized in our class are: observational study, experiment, confounded variables, population, sample, sampling design, convenience sample, biased design, voluntary response sample, simple random sample, using a table of random digits (Table B), probability sample, stratified random sample, labeling to create a SRS, multistage sample, undercoverage, and nonresponse response bias.

Chapter 9.

Departmental “Skills and Knowledge” Goals. The “Math 1530 Resource Page” lists the following goals.

1. Distinguish between an experiment and an observational study.
2. Be familiar with the basic vocabulary of experimental design.
3. Understand what constitutes a randomized comparative experiment.
4. Be able to identify subjects, factors & treatments in a given story.
5. Know the basic types of experimental designs (double blind, completely randomized, block, matched pairs, etcetera).
6. Know the basic principles of Experimental Design: Control, Randomize, Replication.
7. Understand the meaning of statistical significance and when does it imply causation.

The topics we have emphasized in our class are: individuals (subjects), factors, treatment, randomized comparative experiment, completely randomized experimental design, control group, statistical significance, placebo/placebo effect, double-blind experiment, block/block design, and matched pairs design.

Chapter 10.

Departmental “Skills and Knowledge” Goals. The “Math 1530 Resource Page” lists the following goals.

1. Know what a random phenomenon or a random experiment are.
2. Know that chance behavior is unpredictable in the short run but has a regular and predictable pattern in the long run.
3. Be familiar with the basic probability vocabulary (sample space, outcomes, event).
4. Have an intuitive idea of probability (in the long run. . .) and a more formal idea through the basic rules of probability.
5. Be able to solve simple probability problems.
6. Know what a random variable and a probability distribution are.
7. Be able to interpret and use the information given in a simple probability table for one variable.
8. Be able to answer simple probability questions based on the information given in a two-way table.
9. Know what independent and mutually events are.

10. Have an idea of what a probability model is.
11. Know how to find the probability of an event for the normal probability model.

The topics we have emphasized in our class are: probability/random, sample space, event, probability model, the Probability Rules, disjoint events, discrete (finite) sample space, continuous probability model, and random variable.

Chapter 12.

Departmental “Skills and Knowledge” Goals. The “Math 1530 Resource Page” lists the following goals.

1. Know the basic probability rules.
2. Know how to find conditional probabilities given a two-way table.
3. Know about tree diagrams and Venn diagrams.

The topics we have emphasized in our class are: Venn diagram, independent events, $P(A \text{ and } B)$, $P(A \text{ or } B)$, conditional probability $P(B \mid A)$, the General Multiplication Rule $P(A \text{ and } B) = P(A)P(B \mid A)$, and tree diagrams.

What You Need for the Exam

You will need a calculator, a number 2 pencil, and knowledge of the topics listed above. You will be given scratch paper and a scan-tron. All questions will be multiple choice with five choices and the test will consist of approximately 40 questions. Sources of the questions will include (but may not be limited to) the online-posted sample departmental finals, chapter quizzes, daily quizzes, examples from the book, examples from the in-class notes, and exercises from the book. This exam will determine 25% of your semester grade.

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