

Statistics

Robb T.
Koether

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Lecture 1 Introduction

Robb T. Koether

Hampden-Sydney College

Wed, Jan 14, 2009

Outline

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- Dr. Robb T. Koether
- Office: Bagby 114
- Office phone: 223-6207 (9:00 am - 5:00 pm)
- Home phone: 392-8604 (6:00 pm - 11:00 pm)
- e-mail: rkoether@hsc.edu
- Office hours: MWF 1:30 - 3:20, T 1:30 - 2:20; other hour by appointment.

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- Meeting time: MWF 12:30; T 2:30.
- Meeting place: Bagby 111.
- Text: Interactive Statistics, 3rd ed., by Martha Aliaga and Brenda Gunderson.

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- Daily assignments.
 - Read the section.
 - Read the examples and work through them yourself.
 - Do the “Let’s Do It!” exercises.
 - Do the assigned exercises at the end of the section.
- Do the homework every night; do not put it off.

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- If you are not able to work all the problems, then you need to seek help.
- Departmental tutors will be available Sunday through Thursday nights, 8:00 - 11:00, in Bagby 111, starting next week.

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- There will be a quiz every Tuesday during the first 10 minutes of class.
- The quiz questions will be taken verbatim from the previous week's homework.
 - Except for the first quiz (next Tuesday), which will be on the content of the syllabus.
- I will drop the two lowest quiz grades.

Tests

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- There will be three tests

Test	Date	Chapters
#1	Fri, Feb 13	1 - 4
#2	Fri, Mar 20	5 - 8
#3	Fri, Apr 17	8 - 11

Final Exam

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- The final exam will be given on Wed, May 6, at 2:00 p.m. in Bagby 111.
- It will be cumulative, covering chapters 1 - 11, 13, 14.
- Everyone must take the final exam.
- It will not be rescheduled.
- Plan now to be there.

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- Final grade in the course is a weighted average of the quiz average, the test average, and the final exam grade.

Component	Weight
Quiz avg.	30%
Test avg.	50%
Final exam	20%

Attendance Policy

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- I will check attendance every day.
- If you arrive after the bell, it is your responsibility to tell me after class that you arrived late.
- Based on your attendance, I will take the following actions.

No. of Absences	Action
0 - 3	Raise final grade one part
4 - 6	No action
7 - 9	Lower final grade one part
> 9	Withdraw you with WF

Classroom Etiquette

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- During a lecture, you are free to ask questions. It is polite to raise your hand first and wait to be called on.
- While working assigned problems in class, you are free to talk to other students provided you are talking about the assigned problems.

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- Do not talk to other students while I am talking.
- Do not make a habit of leaving the room during the class. If necessary, use the bathroom before coming to class. If you are thirsty, get a drink before class.
- Do not sleep in class.
- Do not work on assignments from other classes during class.
- Do not read the newspaper during class.
- Do not use a cell phone during class.

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- If I toss a fair coin 12 times, how many heads would I expect to get?
- What if I tossed it 12 times and got 7 heads?
- What if I got 8 heads?
- What if I got 12 heads?
- Statistical theory says that if I toss a fair coin 12 times, there is better than a 95% chance that I will get from 3 to 9 heads.

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- The Mars candy company advertises that the distribution of colors in plain M&Ms candy is

Color	Proportion
Blue	24%
Orange	20%
Green	16%
Yellow	14%
Brown	13%
Red	13%

- How can we tell if the distribution of colors in a package of peanut M&M's also has that distribution?

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- The naive answer is to count the colors and see whether they match the advertised proportions.
- What is wrong with that approach?

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- We must make an allowance for **randomness** in packaging.
- Does that mean that the observed distribution could be anything at all?
- What is wrong with that approach?

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- We expect the observed distribution to be close to, but not exactly the same as, the advertised distribution.
- How close is close enough?
- That's a VERY good question.
- In fact, that is the **FUNDAMENTAL** question in statistics.

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- I will open up to three bags of peanut M&Ms and count the colors.
- Then I will do a calculation that will be explained in Chapter 13.
- My calculation will measure how close the observed distribution is to the Mars Company's claim.
- The closer the calculation is to 0, the better the match.

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- Statistical theory says that if the Mars Company's figures are correct, then the number that I calculate
 - Is "expected" to be 5.
 - With 95% probability, will not be more than 11.07.
- So if my calculation produces a value greater than 11.07, then I conclude that peanut M&M's do not have the same color distribution as plain M&M's.

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Homework

- Read the syllabus carefully.
- Read Sections 1.1 - 1.2, pages 1 - 4.