

STAT 2331 Introduction to Statistical Methods

J-term 2013 (January 7 – 16, 2013)

Southern Methodist University

SMU-in-Plano Campus

Instructor: Dr. Tony Ng

E-mail: ngh@mail.smu.edu

Office: 106 Heroy Science Hall

Phone: (214) 768-2465

Office Hours: By appointment

Class Location: To be arranged

Class Time: 9:00a.m. – 4:00p.m.

Required Textbook

David Moore, William I. Notz, Michael A. Fligner (2013). *The Basic Practice of Statistics*, 6th Edition, W. H. Freeman Company: New York.

Course Description

This course provides an introduction to statistics for behavioral, biological, and social scientists. In this course, we will learn about common techniques of basic statistical inference. Topics include descriptive statistics, probability, and inferential statistics, including hypothesis testing and contingency tables.

Course Overview

In this course we will learn about common techniques of basic statistical inference. One of the most important and a major focus of STAT2331 is the confidence interval and hypothesis testing. You will learn how to calculate these, how to interpret them, and how to use them with data. We will also examine their motivation.

Course Objectives

After this course, students should be able to:

- use graphics and summary statistics to describe one or more variables
- calculate least-squared regression line and use it to do prediction
- obtain marginal and conditional distributions from two-way table and use a systematic structure to explain Simpson's Paradox
- design good sampling survey studies and experiments and avoid some common mistakes
- manage the concepts of probability, discrete and continuous probability models and random variables, sampling distribution and central limit theorem
- calculate confidence intervals and perform hypothesis testing, how to interpret them, and how to use them with data

Lectures and Attendance

Attendance is required. Failure to attend regularly will put your success in the course (and your grade) in serious jeopardy. Please participate in the lectures via questions, answers, and comments. It is also important to do the homework assignments.

Grading

Your grade will be determined as follows:

Exams (3 exams)	50%	
Assignments	35%	The lowest score of all assignments will be dropped.
Quizzes	15%	The lowest score of all quizzes will be dropped.
TOTAL	100%	

A final percentage of 90% will guarantee at least an A-, 80% guarantees at least a B-, 70% guarantees at least a C-, and 50% guarantees at least a D-. There are NO EXTRA CREDIT opportunities available for this course, so make sure you understand what is required of you.

More details about the components of your grade:

- **Exams:** Three (3) exams will be given in this class. Exams will cover material presented in class lectures, including textbook chapters, class discussions, and any other material assigned. **NO MAKE-UP EXAMS will be given, except in the case of a documented emergency or serious illness.**
- **Assignments:** During the J-Term you will be given several assignments to complete. In class assignments cannot be made up. Assignments to be completed outside of class are due at the beginning of class on the day they are due. **Except in the case of a documented emergency or serious illness, NO LATE ASSIGNMENT WILL BE ACCEPTED.**
- **Quizzes:** A short quiz will be given at the end of each day and it is due at the beginning of class on the next day. **THERE ARE NO MAKE-UP QUIZZES.**

Disability Accommodations

Students needing academic accommodations for a disability must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or www.smu.edu/alec/dass.asp to verify the disability and to establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4; an attachment describes the DASS procedures and relocated office.)

Religious Observance

Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities

Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

SMU Honor Code

The SMU Honor Code will be strictly enforced. Students caught giving or receiving unauthorized help on examinations will either be given a course grade of zero or taken before the Honor Council.

Tentative Schedule for STAT 2331 in J-term 2013

January 7 (Monday)

9:00a.m. – 9:40a.m. Course introduction
9:40a.m. – 9:50a.m. Break
9:50a.m. – 10:50a.m. Lecture (Chapter 1)
10:50a.m. – 11:00a.m. Break
11:00a.m. – 12:00noon Activities and in-class assignment (Chapter 1)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 2)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture and activities (Chapter 2)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. In-class assignment (Chapter 2)

January 8 (Tuesday)

9:00a.m. – 9:50a.m. Lecture (Chapter 3)
9:50a.m. – 10:00a.m. Break
10:00a.m. – 10:50a.m. Lecture and activities (Chapter 3)
10:50a.m. – 11:00a.m. Break
11:00a.m. – 12:00noon In-class assignment (Chapter 3)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 4)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture and activities (Chapter 4)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. In-class assignment (Chapter 4)

January 9 (Wednesday)

9:00a.m. – 10:00a.m. Lecture (Chapter 5)
10:00a.m. – 10:20a.m. Break
10:20a.m. – 11:10a.m. Lecture (Chapter 5)
11:10a.m. – 11:20a.m. Break
11:20a.m. – 12:00noon Lecture and activities (Chapter 5)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. In-class assignment (Chapter 5)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture (Chapter 6)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. Review on Chapters 1-5

January 10 (Thursday)

9:00a.m. – 9:50a.m. Exam 1 (Chapters 1-5)
9:50a.m. – 10:00a.m. Break
10:00a.m. – 10:50a.m. Lecture and activities (Chapter 6)
10:50a.m. – 11:00a.m. Break
11:00a.m. – 12:00noon In-class assignment (Chapter 6)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 8)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture (Chapter 9)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. In-class assignment (Chapters 8 and 9)

January 11 (Friday)

9:00a.m. – 10:00a.m. Lecture (Chapter 10)
10:00a.m. – 10:20a.m. Break
10:20a.m. – 11:10a.m. Lecture and activities (Chapter 10)
11:10a.m. – 11:20a.m. Break
11:20a.m. – 12:00noon In-class assignment (Chapter 10)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 11)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture (Chapter 11)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. Lecture and activities (Chapter 11)
In-class assignment (Chapter 11)

January 14 (Monday)

9:00a.m. – 9:50a.m. Review on Chapters 6, 8, 9 and 10
9:50a.m. – 10:00a.m. Break
10:00a.m. – 10:50a.m. Exam 2 (Chapters 6, 8, 9 and 10)
10:50a.m. – 11:00a.m. Break
11:00a.m. – 12:00noon Lecture (Chapter 14)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 14)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture and activities (Chapter 14)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. In-class assignment (Chapter 14)

January 15 (Tuesday)

9:00a.m. – 9:50a.m. Lecture (Chapter 15)
9:50a.m. – 10:00a.m. Break
10:00a.m. – 10:50a.m. Lecture and activities (Chapter 15)
10:50a.m. – 11:00a.m. Break
11:00a.m. – 12:00noon In-class assignment (Chapter 15)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 16)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. Lecture (Chapter 17)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. In-class assignment (Chapters 16 and 17)

January 16 (Wednesday)

9:00a.m. – 10:00a.m. Review on Chapters 11, 14, 15, 16 and 17
10:00a.m. – 10:10a.m. Break
10:10a.m. – 11:10a.m. Exam 3 (Chapter 11, 14, 15, 16 and 17)
11:10a.m. – 11:30a.m. Break
11:30a.m. – 12:00noon Lecture (Chapter 18)

12:00noon – 1:00p.m. Lunch

1:00p.m. – 1:50p.m. Lecture (Chapter 19)
1:50p.m. – 2:00p.m. Break
2:00p.m. – 2:50p.m. In-class assignment (Chapters 18 and 19)
2:50p.m. – 3:00p.m. Break
3:00p.m. – 4:00p.m. Course Review

Topics for each chapter:

Chapter 1 Picturing distributions, Histogram, stemplot, mean, median
Chapter 2 Variability using standard deviation, IQR
Chapter 3 Normal distributions
Chapter 4 Scatterplots, correlation
Chapter 5 Regression
Chapter 6 Two-way tables, Simpson's paradox
Chapter 8 Sampling
Chapter 9 Experiments
Chapter 10 Randomness and probability, random variables
Chapter 11 Probability distributions, sampling distribution, central limit theorem
Chapter 14 Confidence Intervals: The Basics
Chapter 15 Tests of Significance: The Basics
Chapter 16 Inference in Practice
Chapter 18 Inference about a Population Mean
Chapter 19 Two-Sample Problems