

Instructor: Dr. Wije Wijesiri

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Office Hours: MTF 1:30-2:45, W 1:30-2:20 or by an appointment

Time and Place: MWF 12:30-1:20 at BA 234

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Text: Basic Statistics and Data Analysis by Larry J Kitchens

Pre requisite: Math 110 or three years of High School Mathematics

Description:

This course is designed to give students both the theoretical and practical aspects of Statistics.

Goals:

After the completing the course successfully students must be able to:

1. Identify the underlying population of a statistical study.
2. Identify the variables of interest.
3. Collect data on a random sample using an appropriate sampling technique.
4. Identify outliers in the data.
5. Use graphical and numerical method to summarize data.
6. Estimate the population parameters.
7. Check for model assumptions.
8. Conduct proper hypotheses testing.
9. Reach valid conclusions.
10. Use Statistical Software.

Topics:

1. Population, Sample, Parameters, and Statistics.
2. Sampling techniques
3. Experimental design
4. Types of Data
5. Graphical Method of Summarizing Data
Bar Chart, Pie Chart, Stem and Leaf Plot, Histogram, Box Plot, Scatter Plot
6. Numerical Methods of Summarizing Data
Mean, median, trimmed mean, quartiles, variance, standard deviation, range, inter quartile range.
7. Probability and Distributions.
Basic Probability concepts
Binomial Distribution
Normal Distribution
t-distribution
Chi-square Distribution
8. Sampling Distributions for sample Mean
Proportion
9. Confidence intervals for population:
Mean
Proportion
Median
Difference of two means (both equal and unequal variances)
Difference of two proportions.
10. Hypothesis testing for population:
Mean
Proportion
Median
Difference of two means (equal and unequal variances, paired data)
Difference of two proportions.

11. Analysis of Bivariate Data:

Correlation
 Least Square regression.
 Inferences about the regression
 Model.
 Checking for model Adequacy.

12. Analysis of Categorical Data:

Chi-square goodness of fit test
 Chi-square Test of independence
 Chi-square test of Homogeneity

Grading:

The grades will be based on the assignments, three midterm exams, and a final.

Exam 1	50 points	90-100%	A
Exam 2	50 points	80-<90%	B
Exam 3	50 points	60-<79%	C
Assignments	50 points	50-<60%	D
Final	100 points	<50%	F

Homework

Homework will be assigned in each class session but I will collect them on Fridays. It is very important to do the homework on time. There will be a penalty for turning in late homework. No more than two late homework are allowed and they should be turned within one week of the due date. Homework should be neat, organized and complete. I expect you to show all the work not just an answer.

Attendance:

Your attendance is expected in each class session. If you miss a class you are responsible for the material covered in class as well as assignments. Attendance will be taken daily and you will receive 10 extra credit points at the end of the semester for perfect attendance. A point is deducted for each absence. No makeup exams will be given without an excused absence. Cell phones are not allowed to use as a calculator. Turn off your cell phone during the class. Texting is not allowed during class hours and violators will lose attendance credit.

We will use MINITAB during the semester. You are expected have a basic knowledge of working with windows applications. Mathematics requires regular practice. Do not wait until the last minute to get help. Visit Academic Commons to get help on mathematics courses. No cellular phones are allowed during exams. Do not make travel arrangements on exam days.

Academic Honesty Policy

The aim of the academic honesty policy is to maintain the academic integrity of Southwest Minnesota State University and promote an intellectual climate of honesty and integrity. To maintain an environment of academic integrity all students are required to accept personal responsibility for their work at Southwest Minnesota State University. Any offense against the academic honesty policy compromises the educational integrity of Southwest Minnesota State University and will be considered a grave offense.

Tentative Schedule

MONDAY	WEDNESDAY	FRIDAY
8/22 1.1	8/24 1.2	8/26 1.3
8/29 1.3, 1.4	8/31 1.4	9/2 MINITAB
9/5 Labor Day	9/7 1.5	9/9 3.1
9/12 3.2	9/14 3.2, 3.3	9/16 3.3
9/19 Exam 1	9/21 Strategic Planning Day	9/23 4.1
9/26 4.2	9/28 4.3	9/30 5.1
10/3 5.2	10/5 5.4, 5.3	10/7 Break
10/10 5.3	10/12 5.5	10/14 6.1
10/17 6.1, 6.2	10/19 6.2	10/21 6.3
10/24 Review	10/26 Exam 2	10/28 7.1
10/31 7.2	11/2 Advising	11/4 7.2, 7.3
11/7 7.3	11/9 7.4	11/11 Veteran's Day
11/14 7.5	11/16 2.1	11/18 2.2
11/21 2.3	11/23 Thanksgiving Break	11/25
11/28 2.4	11/30 Exam 3	12/2 8.1
12/5 8.2	12/7 8.3	12/9 Review

Final Exam: Monday December 12, 12:00-1:50 pm.

Assignments

Pages	Section	Questions (* indicates MINITAB exercises).
7	1.1	1.2, 1.4, 1.5, 1.7, 1.10
16	1.2	1.19, 1.24, 1.26, 1.29, 1.31
29	1.3	1.41, 1.42, 1.46, 1.49, 1.53
44	1.4	1.60, 1.61, 1.62, 1.63, 1.72, 1.77
58	1.5	1.81, 1.82, 1.83, 1.90*
148	3.1	3.1, 3.8, 3.9, 3.10, 3.11, 3.16, 3.19
164	3.2	3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.44
180	3.3	3.53, 3.54, 3.58, 3.59, 3.62, 3.63
195	4.1	4.4, 4.5, 4.8
207	4.2	4.14, 4.15, 4.16, 4.19
215	4.3	4.31, 4.34, 4.37, 4.40
231	5.1	5.1, 5.2, 5.4, 5.6*, 5.7*, 5.13*
243	5.2	5.16, 5.17, 5.19, 5.25
268	5.4	5.46, 5.47, 5.49, 5.50, 5.53, 5.54, 5.55, 5.56, 5.61, 5.64*, 5.65*
256	5.3	5.28, 5.29, 5.30, 5.32, 5.39, 5.41
279	5.5	5.70, 5.71, 5.74, 5.75, 5.81*
308	6.1	6.1, 6.2, 6.3, 6.4, 6.5, 6.9, 6.10
316	6.2	6.16, 6.18, 6.19, 6.26, 6.29, 6.30
324	6.3	6.31, 6.32, 6.34, 6.37, 6.39, 6.44*, 6.46*
334	6.4	6.51, 6.53, 6.55, 6.57, 6.62*
361	7.2	7.14, 7.15, 7.19, 7.21, 7.23
371	7.3	7.26, 7.27, 7.28, 7.31, 7.36*
387	7.4	7.37, 7.39, 7.42, 7.50*
401	7.5	7.52, 7.53, 7.61*
84	2.1	2.1, 2.3, 2.6
97	2.2	2.20, 2.22, 2.23, 2.30*
107	2.3	2.34, 2.36, 2.37, 2.40, 2.42*, 2.43*
115	2.4	2.53, 2.61*
425	8.1	8.1, 8.3, 8.7, 8.8
434	8.2	8.13, 8.19, 8.20*
442	8.3	8.27, 8.28, 8.31, 8.35*

No photocopies are allowed for Minitab exercises. Your name should be printed on the Minitab printouts. For hypotheses testing questions chose a value for α from 0.05, 0.025, 0.01. You are expected to write down the six steps for all hypotheses questions.

Your name, assignment number, class time, and the date should be written on assignments. Homework should be neat, organized and complete. There will be a penalty for failing to follow these guidelines.