



UNIVERSITY of WISCONSIN
GREEN BAY

Math 260, Elementary Statistics, 4 credits

Semester 1 and 2 course

Instructor: James Schwab

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Required Texts:

Elementary Statistics using TI-83/84 Plus Calculator third edition, by Mario F. Triola

Graphing Calculator Requirement:

A graphing calculator is required for this course. You will learn how to use the statistical calculator functions to examine and interpret data. You may use any graphing calculator that meets the criteria set by Mr. Schwab. If you have any questions on whether or not the calculator is acceptable, talk to me. For Texas Instrument, the max level for the calculator is a TI-84 Plus.

Prerequisite: Algebra 2 with a grade of C or better; minimum Math placement scores of Math Basics 376, Algebra 446, and Trigonometry 150; Minimum ACT of 24.

UW Green Bay Course description:

This algebra-based course covers the basic statistical concepts of probability, descriptive statistics (measures of central tendency and dispersion, graphs), sampling distributions and the Central Limit Theorem, hypothesis testing (including checking assumptions) and confidence intervals, type I and II errors, p-values, power, distributions of random variables and/or test statistics (normal, Z, t, F, binomial, and chi-square), t-tests (one- and two-sample, paired), analysis of categorical data (one proportion: binomial test, normal approximation; two or more proportions: chi-square tests, odds ratios). Correlation and simple linear regression are briefly

introduced. “Traditional” statistics are paired with computer-based simulation for select topics.

UW Green Bay Course Learning Outcomes:

Upon successful completion of the course, students are expected to have the ability to:

- Describe and understand graphical displays of data.
- Describe and understand numerical summaries of data.
- Calculate probabilities using the basic rules.
- Calculate areas under the normal curve.
- Develop and explain the reasoning behind sampling distributions, including the Central Limit Theorem.
- Understand and calculate the formulas for confidence intervals.
- Understand and calculate the formulas for hypothesis tests.
- Compare and contrast various tests for means and proportions for one - and two-samples.
- Understand and calculate with technology correlations and regression equations.

Methods of Evaluation

Formative Assessments (Homework, Quizzes, Investigation):

Problem sets and writing will be assigned the first day of each week and be due 3:30 PM the first day of the following week. It is the student’s responsibility to make any arrangements to turn in homework if they are absent for a due date. *Late work will not be accepted.*

To help review your notes, think about content in new ways, and to synthesize ideas, short quizzes will be administered throughout the term. Quizzes will be administered through Google Classroom and will be worth the equivalent on one homework assignment.

Formative assessments will be 20% of your quarter grade with the lowest formative assessment grade dropped each quarter.

Summative Assessments (Tests, Projects, Presentations):

Summative assessments will be administered 3 times each quarter (roughly every 3 weeks).

Tests are cumulative, meaning ALL material covered in the course up to a test may be assessed. Tests will always be announced at least four (4) days in advance with a breakdown of relevant study information. Tests will always contain problems that require you to defend your results using standard written language and mathematical language.

Projects will be assigned in place of tests at the end of quarter 2 and the end of quarter 4. The objective of the projects will be to apply statistical knowledge in authentic ways to solidify the statistical practices learned.

Summative assessments will comprise 80% of your quarter grade with each assessment accounting for 26.66% of the total quarter grade.

<p>Term Grade Calculation</p> <ul style="list-style-type: none"> ● 20 % Formative Assessments ● 80 % Summative Assessments 	<p>Semester Grade Calculation</p> <ul style="list-style-type: none"> ● 45% Quarter 1 ● 45% Quarter 2 ● 15% Semester Final 								
<p>CCIHS Grade Calculation</p> <ul style="list-style-type: none"> ● 50% Semester 1 ● 50% Semester 2 	<p>Grading Scale: UW Green Bay Grading Scale</p> <table> <tr> <td>100 – 92 = A</td> <td>78 – 70 = C</td> </tr> <tr> <td>91 – 89 = AB</td> <td>69 – 60 = D</td> </tr> <tr> <td>89 – 82 = B</td> <td>Below 60 = F</td> </tr> <tr> <td>81 – 79 = BC</td> <td></td> </tr> </table>	100 – 92 = A	78 – 70 = C	91 – 89 = AB	69 – 60 = D	89 – 82 = B	Below 60 = F	81 – 79 = BC	
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Course policies

Academic Integrity Policy: Integrity is one of the Core Values of UW Oshkosh. All students and faculty share the responsibility for academic honesty and integrity. The University expects its students to do their own academic work. In addition, it expects active participation and equitable contributions of students involved in group assignments. The following acts of academic dishonesty are not acceptable:

- **Cheating:** using or attempting to use unauthorized materials, information, or study aids in any academic exercise (e.g. an exam).
- **Facilitating Academic Dishonesty:** helping or attempting to help another to commit academic dishonesty (e.g. allowing another to copy from your test or use your work).
- **Plagiarism:** representing the words or ideas of another as one’s own in any academic exercise (e.g. failing to cite references appropriately or taking verbatim from another source), whether it is done with the intention of being dishonest or not.
- **Fabrication:** unauthorized falsification or invention of any information or citation in an academic exercise (e.g. a paper reference).

Cheating on an exam, plagiarizing or any other form of academic dishonesty will be dealt with in accordance with the current UWO Student Discipline Code. The instructor reserves the right to assign a grade of **F** for the course should circumstances warrant.

Course content and program

Semester 1

Chapter 1: Introduction to Statistics

- 1-1: Review and Preview
- 1-2: Statistical Thinking
- 1-3: Types of Data
- 1-4: Critical Thinking
- 1-5: Collecting Sample Data
- 1-6: Introduction to the TI-83/84 Plus Calculator

Chapter 2: Summarizing and Graphing Data

- 2-1: Review and Preview
- 2-2: Frequency Distributions
- 2-3: Histograms
- 2-4: Statistical Graphics
- 2-5: Critical thinking: Bad Graphs

Chapter 3: Statistics for Describing, Exploring, and Comparing Data

- 3-1: Review and Preview
- 3-2: Measures of Center
- 3-3: Measures of Variation
- 3-4: Measures of Relative Standing and Boxplots

Chapter 4: Probability

- 4-1: Review and Preview
- 4-2: Basic Concepts of Probability
- 4-3: Addition Rule
- 4-4: Multiplication Rule: Basics
- 4-5: Multiplication Rule: Complements and Conditional Probability
- 4-6: Probabilities Through Simulations
- 4-7: Counting

Chapter 5: Discrete Probability Distributions

- 5-1: Review and Preview
- 5-2: Random Variables
- 5-3: Binomial Probability Distributions
- 5-4: Mean, Variance, and Standard Deviation for the Binomial Distribution
- 5-5: The Poisson Distribution

Chapter 6: Normal Probability Distributions

- 6-1: Review and Preview

- 6-2: The Standard Normal Distribution
- 6-3: Applications of Normal Distributions
- 6-4: Sampling Distributions and Estimators
- 6-5: The Central Limit Theorem
- 6-6: Normal as Approximation to Binomial
- 6-7: Assessing Normality

Semester 2

Chapter 7: Estimates and Sample Sizes

- 7-1: Review and Preview
- 7-2: Estimating a Population Proportion
- 7-3: Estimating a Population Mean: σ known
- 7-4: Estimating a Population Mean: σ Not known
- 7-5: Estimating a Population Variance

Chapter 8: Hypothesis Testing

- 8-1: Review and Preview
- 8-2: Basics of Hypothesis Testing
- 8-3: Testing a Claim about a Proportion
- 8-4: Testing a Claim about a Mean: σ known
- 8-5: Testing a Claim about a Mean: σ Not known
- 8-6: Testing a Claim About Variation

Chapter 9: Inferences from Two Samples

- 9-1: Review and Preview
- 9-2: Inferences about Two Proportions
- 9-3: Inferences about Two Means: Independent samples
- 9-4: Inferences from Matched Pairs
- 9-5: Comparing Variation in Two Samples

Chapter 10: Correlation and Regression

- 10-1: Review and Preview
- 10-2: Correlation
- 10-3: Contingency Tables
- 10-4: Variation and Prediction Intervals
- 10-5: Multiple Regression
- 10-6: Modeling

11. Goodness-of-Fit and Contingency Tables

- 11-1: Review and Preview
- 11-2: Goodness-of-Fit
- 11-3: Contingency Tables
- 11-4: McNemar's Test for Matched Pairs

12. Analysis of Variance

12-1: Review and Preview

12-2: One-Way ANOVA

12-3: Two-Way ANOVA

13. Nonparametric Statistics (if time allows)

13-1: Review and Preview

13-2: Sign Test

13-3: Wilcoxon Signed Ranks Test for Matched Pairs

13-4: Wilcoxon Ranked-Sum Test for Two Independent Samples

13-5: Kruskal-Wallis Test

13-6: Rank Correlation

13-7: Runs Test for Randomness