Mrs. Goodwill

ELEMENTARY STATISTICS- MAT 1540

COURSE DESCRIPTION:
Students will investigate various topics in both descriptive and inferential statistics including measures of central tendency and spread, graphical analysis of data, probability, random sampling, correlation and regression, hypothesis testing and confidence intervals. Practical applications are emphasized throughout the course. **A significant part of the course is taught in a laboratory setting using a software package such as Minitab.**

Text:	Fundamentals of Statistics by Michael Sullivan III, Prentice Hall
Course Content:	Hypothesis testing, data collection, experimental design, organization of data, and analysis of data.
Relevance:	We encounter statistics nearly every day in nearly every type of media. Many of us have heard about the way people lie with statistics. The object of this course is to expose you to ways of collecting data, representing data, and analyzing data; and to help you understand the methods used in order to think critically about the claims we see in journals, newspapers, TV broadcasts, etc.

Student Learning Outcomes:
After successful completion of this course, students will be able to:
1. Interpret and draw inferences from mathematical models such as formulas, graphs, tables, and schematics.
2. Represent mathematical information symbolically, visually, numerically and verbally
3. Employ quantitative methods such as, arithmetic, algebra, geometry, or statistics to solve problems
4. Estimate and check mathematical and statistical methods
5. Recognize the limits of mathematical and statistical methods

COURSE EVALUATION:

☺ Homework	30%
☺ Projects and Quizzes	30%
☺ Tests	40%

* There will be a final project at the end of the year instead of a final exam. This will be worth 20% of your overall grade.*

Homework: will be in the form of computer lab exercises, problems from the book, in-class assignments/activities or hand-outs. There will be ungraded problems throughout each chapter which will be discussed in class but not turned in; you will be docked homework points if you are unable to participate in the class discussion. There will also be homework turned in for a grade. Homework that is turned in late will be subject to a 20% reduction in the grade and will

not be accepted after 3 school days. You will receive an automatic zero for the assignment. Class discussion work can **not** be made up.

Projects: will be assigned throughout the year. These will be hands-on activities.

Calculator: A TI-83 is required. If you do not have one, one will be assigned to you. You are responsible for keeping it in working order and providing batteries as needed.

Attendance: You are responsible for any work you miss. Work missed due to field trips is expected due on the original due date. No extension of time will be granted. Work that is missed due to illness will be given one day for each day you are absent. After that it will be considered late and be subject to a 20% reduction in the grade. Work that is more than 3 days late will receive a zero.

Credit: You will be given 3credits from JCC for completing this course and the final project. Therefore, this will be treated as a college level course and you will be expected to maintain that level of work.

If you are having trouble you can find me in room 203 or I can be reached by email: sgoodwill@pval.org. I am available during the day for help from 11:34 – 12:12 or after school.

During the course of this semester we will be coving the following topics

Chapter 1: Data Collection

- 1.1 Introduction
- 1.2 Observational Studies
- 1.3 Sampling Methods
- 1.4 Sources of Error (Bias)
- 1.5 Experimental Design

Chapter 2: Organizing and Summarizing Data

- 2.1-2.3 Graphs of Qualitative and Quantitative Data

Chapter 3: Descriptive Statistics

- 3.1 Measures of Central Tendency (and weighted means from 3.3)
- 3.2 Measures of Dispersion
- 3.4 Measures of Position
- 3.5 The 5-Number Summary

Chapter 5: Probability

- 5.1 Basic Concepts of Probability

5.2-5.3 The Addition and Multiplication Rules

5.4 Conditional Probability

Chapter 7: Normal Probability Distributions

7.1 Introduction to Normal Distributions

7.2 The Standard Normal Distribution

7.3 Application to Normal Distribution

7.4 Assessing Normality

7.5 The Central Limit Theorem

Chapter 8: Confidence Intervals

8.1 Confidence Intervals for the Mean (σ known)

8.2 Confidence Intervals for the Mean (σ unknown)

Chapter 9: Hypothesis Testing with One Sample

9.1 Introduction to Hypothesis Testing

9.2 Hypothesis Testing for the Mean (σ known)

9.3 Hypothesis Testing for the Mean (σ unknown)

Chapter 4 Correlation and Regression

4.1 Scatterplots & Correlation

4.2 Least-Squares (Linear) Regression – using Minitab

4.3 The Coefficient of Determination – using Minitab