PATTISON HIGH SCHOOL

We don't teach a class; we teach individual students in a class

Statistics 12

WINTER 2020 | Period 2 | Mr. Joel

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Description

Statistics is a study on how to best describe the world based on the data available. It is rooted in probability however uses larges amounts of data to explain a phenomenon until enough data and confounding variables are eliminated to make predictions. Its study is often unintuitive and requires rigorous thinking as the human mind is not adapted to thinking about large data sets.

Overview

Data Visualizations and Descriptions

How to represent a given set of data using the most appropriate graphs such as histogram, boxplot, scatterplot, etc. In addition, we'll explore the terms and vocabulary to describe the graphs such as mean, median, mode, etc.

Using Technology

How to use excel to quickly calculate the data and complete a visualization of the graph. I will be providing the formulas and functions necessary.

Elementary Probability

Basic probability rules involving the combinatoric formulae, conditional probability, Baye's Theorem and independence.

Discrete and Continuous Probability

Overview and introduction to the various distributions seen throughout statistics. There will be a focus on the Normal, Uniform, and Binomial distributions and how they are connected. In addition, will see how the numerical descriptions can be used to draw conclusions and make predictions.

Sampling Practices

Exploring the differences between census and sample and how to gather data. Identifying and eliminating bias in data gathered, along with understanding outliers and best practice in handling them.

Final Project (Groups of 2-3: teacher assigned)

Choosing a topic of your choice and gather data, analyze the findings drawing conclusions, and presenting them to the class. Communication is key in statistics; numbers are not easily processed for the human mind and will require analysis to draw meaningful conclusions then communicated properly.

Expectations

As with all classes, you are expected to arrive on time and prepared to work. It is advantageous to bring your own laptop with you and apply the skills learned directly on the computer. Statistics is different from the most mathematic courses in that it is significantly more difficult to use only pen and paper, requiring the use of technology to ease the calculations. However, even though that may be the case, this class will use the pen and paper to get a feel for the process before moving on. Thus, please be prepared to calculate significant amounts of data.

Assessment & Evaluation

Category	Timeline	Weight
Homework	When appropriate	10%
Quiz	Weekly (at random)	10%
Chapter Test/Project	When Appropriate	20%
Lab Reports	Bi/Tri-Weekly	15%
Midterm	Week 6-7	20%
Final	Week 14-15	25%

During homework, one should self-assess against the solutions to be sure of their understanding. Upon the return of Chapter Tests, the correction marks present a chance of self and peer-assessment as well.

Materials and Resources

The following are materials that will help you succeed in this course.

1. USB – for storing digital text
2. Binder – for organizing the paper-based materials given
3. Paper – for taking notes (recommended due to the number of diagrams that will appear)
4. Pen/Pencil – for taking notes
5. Scientific Calculator – a calculator can only be used on the test
6. Computer – you'll only be allowed to use the computer during homework and study