

## **City of Seattle Upward Bound @ Seattle University, Summer 2018**

**Course: Statistics**

**Teacher: Alex V. Thayer**

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### **Course Summary:**

- This six-week course is designed to teach the concepts necessary for success in a year-long high school Statistics class using the application of critical thinking skills, active learning, independent study, real-life applications, one-on-one assistance, and a culminating project. This comprehensive course is aligned with the Common Core State Standards, Mathematics Content Focus Statistics.
- Topics covered include constructing and analyzing distributions, gathering data, probability, normal distributions, hypothesis tests, and confidence intervals.

### **Resources:**

- *Online Stat Book* (version 2.0): [onlinestatbook.com](http://onlinestatbook.com)
- *Elementary Statistics* (13<sup>th</sup> ed), Pearson, Mario F. Triola, 2017.
- *Probability: For the Enthusiastic Beginner* (1<sup>st</sup> ed), David J. Morin
- [ixl.com](http://ixl.com)
- [khanacademy.org](http://khanacademy.org)
- [math.com](http://math.com)

### **Structure of Daily Lessons:**

- For this course, the student will need to have a device with internet access to view the website [onlinestatbook.com](http://onlinestatbook.com) which will contain the majority of the course content. If the student does not have access, please inform me, and I will seek to provide it.
- Each day, the student will be assigned classwork from a section of the Online Stat Book (or in some cases, they may continue their work from the previous day). This work should be turned in at the end of the class period. I will review the work and write feedback which the student will receive the following class day.
- A list of assigned classwork, past quiz questions and answers, and any other relevant files will be posted at [alexthayer.net/ub/stat/](http://alexthayer.net/ub/stat/) for the student's reference.

## Washington State Common Core Standards:

- **Interpreting Categorical and Quantitative Data (S-ID)**
  - Summarize, represent, and interpret data on a single count or measurement variable.
  - Summarize, represent and interpret data on two categorical and quantitative variables.
- **Making Inferences and Justifying Conclusions (S-IC)**
  - Understand and evaluate random processes underlying statistical experiments.
  - Make inferences and justify conclusions from sample surveys, experiments, and observational studies.
- **Conditional Probability and the Rules of Probability (S-CP)**
  - Understand independence and conditional probability and use them to interpret data.
  - Use the rules of probability to compute probabilities of compound events in a uniform probability model.
- **Using Probability to Make Decisions (S-MD)**
  - Calculate expected values and use them to solve problems.
  - Use probability to evaluate outcomes of decisions.

## Grading System:

- **Daily Lessons (25%)**
  - You are expected to turn in your assigned classwork each day. If you are unable to complete the assignment, please turn in what you have completed by the end of class.
  - If you are having trouble understanding a chapter of the Online Stat Book or a particular assigned problem, please let me know, and I will assist. If you have further questions beyond what I can answer in class, remember you can contact me via e-mail at [alex.thayer@seattle.gov](mailto:alex.thayer@seattle.gov).
  - Although I will mark incorrect problems and provide feedback, grading of lessons is only done on a “completion” basis. You receive 2 of 2 points for work completed in a timely manner and 1 of 2 points for work over a day late.
- **Participation (25%)**
  - Since this class is run mostly as an independent study, you are expected to be proactive in working on the assigned problems and reading the parts of each chapter which you’ll need to answer those problems.
  - Assuming you are on-task the entire period, that is an easy 2 of 2 points each day. If you are off-task or disruptive toward other students, you may lose 1 or both points.
- **Quizzes (25%)**
  - There will be several short quizzes throughout the summer. They will be taken during the first 10 minutes of class, so please arrive on-time every day.
  - Each quiz will consist of only 2 questions: a concept question and an example.
  - For the concept question, you will be asked to give a mathematically accurate explanation for how something works. For example, “explain how to calculate the standard deviation of a list of numbers”. This question will be worth 4 points.

- The example question is more like a traditional math problem, and it will relate to what you were asked to explain in the concept question. It will be worth 6 points.
- If you would like to re-take a quiz, please let me know. You may arrange to re-take it on another date (as long as we don't have another quiz scheduled for that date). Example problems will be different from originals on re-takes.
- **Culminating Project (25%)**
  - The culminating project for this course will be conducting a survey of individuals on two questions of your choice and producing a professional-looking analysis of the inferences you can draw from your survey.
  - There should be both a physical project (to display at the banquet at the end of the summer) and a speech (for which you may use the board or a projector as an aid).
  - Your two questions must first be approved. One must have a “yes/no” answer while the other has a numerical answer. This will allow for inferential statistics of both proportions and means.
  - We will use a computer lab for 1-2 class periods toward the end of the summer so that you may type your project during class.

Your final average will be rounded to the nearest integer percentage and assigned a letter grade according to the following scale:

	A = 93 – 100	A- = 90 – 92
B+ = 87 – 89	B = 83 – 86	B- = 80 – 82
C+ = 77 – 79	C = 73 – 76	C- = 70 – 72
D+ = 67 – 69	D = 63 – 66	D- = 60 – 62
	F = 0 – 59	

### **Homework:**

As mentioned above in the Grading System, there is nothing specifically called “Homework”, but you are expected to complete the assigned problems, be proactive during class, prepare yourself for quizzes, and complete and present your final project.

### **Absences and Late Assignments:**

If you are absent, you must be given the same number of days you were gone from school to turn in missing work for full credit. Assignments completed later than this time must be accepted at 50% credit. If you missed or expect to be missing class, I encourage you to contact me by e-mail and check the website for any new files.