# AP Statistics Syllabus

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**High School:** *Crater School of Business Innovation and Science*

**Length of SOU Course:** *A minimum of forty (40) lecture hours per one term*

**Length of HS Course:** *Trimester 1 and Trimester 2*

**COURSE DESCRIPTION:**
AP Statistics is a yearlong high school course equivalent to a one semester, introductory college statistics course. The purpose of this course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data.
Students are exposed to four broad conceptual themes:
• Exploring Data: Describing patterns and departures from patterns
• Sampling and Experimentation: Planning and conducting a study
• Anticipating Patterns: Exploring random phenomena using probability and simulation
• Statistical Inference: Estimating population parameters and testing hypotheses

**COURSE Objective:** In AP Statistics, students are expected to learn

*Skills*
• To produce convincing oral and written statistical arguments, using appropriate terminology, in a variety of applied settings.
• When and how to use technology to aid them in solving statistical problems
*Knowledge*
• Essential techniques for producing data (surveys, experiments, observational studies, simulations), analyzing data (graphical & numerical summaries), modeling data (probability, random variables, sampling distributions), and drawing conclusions from data (inference procedures – confidence intervals and significance tests).
*Habits of mind*
• To become critical consumers of published statistical results by heightening their awareness of ways in which statistics can be improperly used to mislead, confuse, or distort the truth.

**Technology:**
Technology is an integral part of the statistics program. The use of technology enables students to visualize, analyze, and interpret information from a variety of challenging contexts. In this course students will use the following:
**Calculator** - The use of graphing calculators (TI-83/84) with statistical capabilities and modern statistical software as problem-solving tools enables the students to visualize and explore statistical concepts. Students have access to graphing calculators for use in class and at home. A thoughtful approach to the use of graphing calculators in statistics is essential because calculators will be necessary for some questions on the AP Exam and helpful for many others.
**Computer** - The use of the computer for statistical computing and statistical graphics provides opportunities to do simulations easily, quickly, and with very large samples. The inclusion of technology also allows teachers to present motivational models to enhance learning. Statistical software such as Microsoft Excel is used to provide opportunities for students to analyze and interpret data. The Technology section of the guide provides more details on the use of the calculator on the AP examination and suggestions for computer software use in instruction.

**Textbook:**
*Advanced High School Statistics, 1st Edition (digital)*. Paper and hard back versions available for sale for those who prefer it. Available here as a pdf: https://www.openintro.org/stat/textbook.php?stat_book=aps
*Text:* Introductory Statistics, by OpenStax., 2013.
**Online Component:**
We will use *Canvas* for homework assignments, lectures, support material, tutorials, and study guides.

**Grading Policy:**

| | |
|---|---|
| *Homework……………………………………* | 25 % |
| *Quiz………………………………………..* | 25% |
| *Test…………………………………………* | 35% |
| *Labs and FRQ………………………………* | 15% |

## EXPECTATIONS FOR STUDENTS

**Late Work:**

Assignments turned in late are a detriment to a student's success in any subject. Due dates are assigned to hold students accountable for their work and to teach time management skills that are valuable in any career. Therefore, it's imperative for students to communicate with their teachers when situations arise that prevent them from completing assignments on time so the teacher(s) can help a student overcome a difficult challenge he/she may be having with the content of the assignment and/or to make the necessary accommodations or adjustments to a due date.

Every student is granted 8 late passes that allows them to complete the assignment within 48 hours after the due date. Once 48 hours passes, the assignment is locked and can only be used for practice (no grade will be assigned). If a student wishes to complete they assignment for full credit, instructor approval is required.

**Missing Assignment Policy:** Missing assignments, tests, and quizzes will result in a score of zero for the course.

**Make up Test and Corrections:** There are no test corrections available to improve a student test score. If a student cannot make the test due to an excused absence, the student has one week to make up the test. A makeup test will not be the same test as the test given to students in class.

## Attendance
Students are expected to come to class on time every day, prepared, and ready to learn. If you are anticipating being absent on a test day, you need to notify me in advance. Missing a test or quiz will result in a more difficult test/quiz when you return. If students miss test day, they revoke the privilege to over rider their midterm grade with their final grade.
### Academic Honesty

Cheating, plagiarism, and other acts of academic dishonesty are regarded as serious offenses. Instructors have the right to act on any suspected acts of academic dishonesty. Depending on the nature of the offense, serious penalties may be imposed, ranging from loss of points to expulsion from the class or college.

**Classroom Behavior**

Expectations for classroom behavior are outlined in the Student Code of Conduct, available in the catalog, schedule, and online. Students may not engage in any activity which the instructor deems disruptive or counterproductive to the goals of the class.   Instructors have the right to remove students from class for not following the Code of Conduct or other specified classroom rules.  Expectations for behavior in online classes are like what is required in the classroom.

**Course Outline**

# Trimester 1

**Data Collection** (weeks 1 – 3)
- Data Basics
- Data Collection principles
- Observational studies and sampling strategies
- Experiments

Summarizing Data (weeks 4 – 6)
- Examining numerical data
- Numerical summaries and box plots
- Considering categorical data

Probability (weeks 7-10)
- Defining Probability
- Conditional Probability
- Random Variables

Distributions of Random Variables (weeks 11-13)
- Normal Distribution
- Sampling Distribution of a sample mean
- Geometric Distribution
- Binomial Distribution
- Sampling distribution of a sample proportion

# Trimester 2

Foundation of Inferences
- Estimating unknown parameters.
- Confidence Intervals
- Hypothesis Testing

Inference for categorical data
- Inference for sample proportion
- Difference of two proportions
- Testing for goodness of fit using chi-square
- Homogeneity and independence in two-way tables

# Trimester 3

Inference for numerical data
- Inference for a mean with the t-distribution
- Inference for paired data
- Inference for the difference of two means

Introduction to Linear Regression
- Line fitting, residuals, and correlation
- Fitting a line by least squares regression
- Inference for the slope of a regression line
- Transformation for skewed data

AP Exam Prep

AP Stats exam Thursday May 13, 2021 @ 12:00pm

SOU students will complete 5 labs during AP Test taking time.

# College Credit

***Southern Oregon University***
**Cost:** $180 (a savings of $1120!!)        **Number of Credits:** 4        **Course:** Math 243

**Length of course:** All year        **DO NOT DROP IF YOU PAY FOR SOU CREDIT (College GPA and financial aid will be in jeopardy).**

**Registration Date:**  Early January and you must register with SOU https://inside.sou.edu/youth/asc/index.html

**Withdrawal Date:** If you decide that you no longer want to continue with this course, you must withdrawal from SOU before the deadline. See SOU webpage for exact dates.

***AP Central – College Board***

**Cost:** $95 per exam

**Registration Deadline**:  November 1, 2020        Mrs. Slaughter needs to order exams before 11/13/20

**Exam Date:** May 13, 2021 **Time:** 12:00 pm **Location**: TBD

**How many credits do I get?**
It depends on your score and the university. Some schools only allow advance placement, while other schools will award credit based on your score. You can use College Board's AP Credit Policy Search to find out the minimum score needed for college credit or advance placement.