

AP Statistics Syllabus

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Corbett High School
2018-2019

Course Information:

Available for Mt. Hood CC credit (Probability & Statistics I – MTH 243).

Required Materials:

Stats: Modeling the World, 2nd edition, by Bock, Velleman, and De Veaux
Graphing calculator

Course Description:

This course is a descriptive statistics course including frequency distributions, common measures of central tendency and variability with elementary concepts of probability. Certain probability distributions, such as the normal and binomial distributions are covered. The Central Limit Theorem is included, as are confidence intervals for the mean and for the population proportion. The last part of the course covers statistical studies, including inferential statistics for one and two populations, linear regression, and contingency tables. A cumulative review of the year will lead up to the AP Statistics Exam.

Standards

- Personal Management: Exhibit appropriate work ethics and behaviors in school, community, and/or workplace.
- Problem Solving: Apply decision-making and problem-solving techniques in school, community, and/or workplace.
- Communication: Demonstrate effective and appropriate communication skills to give and receive information in school, community, and/or workplace.
- Teamwork: Demonstrate effective teamwork in school, community, and/or workplace.
- Employment Foundations: Demonstrate academic, technical, and organizational knowledge and skills required for successful employment.

Things to bring to class every day:

- Graphing Calculator- REQUIRED (TI-84 Plus recommended)
- Textbook
- Unit Packet

Grading Information & Course Requirements:

Unit Packets:

Each unit will be accompanied by a Unit Packet, complete with learning objectives, a homework and assessment calendar, guided chapter notes, class activity handouts, practice exams, etc. The packets will be completed through in-class notes and activities, assigned reading in the textbook, and homework. These packets are due for credit the day of the Unit Exam. These packets can also be used as notes on Chapter Quizzes.

Bookwork Problems:

There will be problems assigned from the end of each chapter to help reinforce concepts. These will typically be completed out of class and are outlined on the calendar in the Unit Packet. All Bookwork Problems for a unit will be turned in for credit the day of that Unit Exam.

Chapter Quizzes:

Chapter Quizzes will be given at the end of most chapters to assess understanding of the material. There are NO quiz retakes. Unit Packets and calculators can be used on quizzes.

Unit Exams:

Unit Exams will be given at the end of each unit, and there will be about two each trimester. These exams will consist of multiple choice and free response problems. A 3x5 card is allowed for notes on these exams, as well as the AP formula sheet, when applicable.

Retake Exam Procedure & Scoring:

After a Unit Exam, there will be one opportunity to earn additional percentage points on the exam. A shortened "retake exam" will be given on a specified day and time outside of class. If the Retake Exam is passed (70% or above), then the following changes will be made to the original Unit Exam score:

If you scored a 50% or above, then your original score will be increased by 10%.

If you scored below a 50%, then your original score will be increased to a 60%.

This score change CANNOT affect exam scores for MTH 243 credit listed in the syllabus. Retake exams are not mandatory, so this serves as the only extra credit opportunity for AP Statistics.

Final Exam:

There will be a **comprehensive final exam before the AP Exam**. There will be no retake exam for the final. A full sheet of notes is allowed on this exam.

AP Exam:

The AP Statistics exam is on Thursday, May 16, from 12-3 pm. You MUST take the AP exam to receive credit for the Spring Trimester of this course.

Absence Policy:

If you miss class, regardless of the reason, you will still be responsible for the subject matter and Unit Packet material covered the day of your absence. Remember to use your Unit Packet calendar to see what the homework assignment is for the day of your absence. If you miss a quiz or exam, it must be made up outside of class within 2 class days. If you miss multiple days in a row, it is imperative that you contact Mrs. Dudley to discuss how you will get caught up in class.

Grading Categories & Weights for each trimester of AP Statistics:

Unit Exams (& Final Exam)	60%
Unit Packets, Bookwork Problems	10%
Chapter Quizzes	30%

Grading Categories & Weights for MHCC MTH 243 credit:

Unit Exams	50%
Unit Packets, Bookwork Problems	10%
Chapter Quizzes	20%
Final Exam	20%

Letter grades will be given on the following scale:

A 100% – 90 B 89 – 80 C 79 – 70 D 69 – 60 I 59 & Below

**** Grading policy and grade weights are subject to change throughout the course.**

Signatures

"We have read and understand the expectations and grading procedure for Mrs. Dudley's AP Statistics class."

Parent Signature: _____ Date: _____

Student Signature: _____ Date: _____

****Seniors & Parents of Seniors:** Since four years of math credits are required for graduation, passing each trimester of this class is essential. If you have questions or concerns throughout this school year, please do not hesitate to email me. I keep grades updated on StudentVue/ParentVue for you to track progress in the class.

Student Learning Outcomes:

In Unit I, upon successful completion of this course, students will be able to:

- Identify categorical data, summarize the data with charts and graphs, and use two-way tables to find associations between two categorical variables.
- Identify quantitative data, use data displays (histograms, box plots, stem plots) appropriately, describe the distributions (shape, center, spread, outliers), and find the five-number summary.
- Use standard deviation to determine how unusual an observed value is.
- Shift and rescale distributions.
- Use the Normal model when applicable to calculate percentages and probabilities.
- Use the graphing calculator to compute numerical descriptions of data and to display histograms and box plots.

In Unit II, upon successful completion of this course, students will be able to:

- Create a scatterplot, identify the explanatory and response variables, and describe the association between two quantitative variables (direction, form, strength).
- Use a graphing calculator to calculate a correlation coefficient and a regression analysis for linear relationships.
- Use the regression equation to make predictions about the response variable.
- Calculate and interpret a residual.
- Interpret the slope of the regression line in context with the correct units.
- Interpret R-squared in context.
- Use computer printouts to create an equation of the least squares line and find the correlation.

In Unit III, upon successful completion of this course, students will be able to:

- Use simulation, including random number tables, to gain insight into what might happen in a real situation.
- Within a survey, identify sampling methods (SRS, stratified, systematic, clustered) for collecting data, identify kinds of bias (under-coverage, response bias, convenience sampling, volunteer response bias), understand sampling error, and identify confounding variables.
- Identify whether an observational study is retrospective or prospective.
- Design an experiment with the necessary components (randomization, control/blocking, replication).

In Unit IV, upon successful completion of this course, students will be able to:

- Contrast the Law of Large Numbers with the “Law of Averages” misconception.
- Calculate probabilities using rules for “or” versus “and” and conditional probability.
- Determine whether events are disjoint and whether they are independent.
- Calculate the expected value of a random variable.
- Calculate the expected value and standard deviation for the sum or difference of independent random variables.
- Calculate probabilities of geometric and binomial models.

In Unit V, upon successful completion of this course, students will be able to:

- Describe a sampling distribution and why the Central Limit Theorem allows use of the Normal model for proportions and means.
- Understand the effect of sample size on variability.
- Perform an appropriate statistical inference procedure (one proportion z-test, two proportion z-test), including null and alternate hypotheses, checking conditions, and interpreting the P-value and its ramifications on the null hypothesis.
- Calculate and interpret, in context, confidence intervals for one and two proportions, given a confidence level.
- Determine the sample size for a given confidence level and margin of error.
- Describe Type I and Type II errors in a given context, and discuss the consequences of each.
- Understand the connection between Type I and II errors and the power of a test.

In Unit VI, upon successful completion of this course, students will be able to:

- Perform an appropriate statistical inference procedure (one sample t-test for means, two independent samples t-test for means, matched pairs t-test for means), including null and alternate hypotheses, checking conditions, and interpreting the P-value and its ramifications on the null hypothesis.
- Calculate and interpret, in context, confidence intervals for one and two sample means, given a confidence level.
- Determine when to use the Normal model versus the Student's t-model for statistical procedures.
- Determine when to use a matched pairs procedure versus a two sample procedure.

In Unit VII, upon completion of this course, students will be able to:

- Perform an appropriate chi-square procedure (goodness of fit, homogeneity, independence), including null and alternate hypotheses, checking conditions, interpreting the P-value, and conduct follow-up analysis of the standardized residuals.
- Perform a linear regression slope t-test to check for an association between two quantitative variables, including null and alternate hypotheses, checking conditions, and interpreting the P-value and its ramifications on the null hypothesis.