



Marianas High School
Team Effort Towards Excellence
Course Syllabus
AP Statistics

Teacher Information

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School Wide Initiative:

By the end of SY 17-18, all MHS students will increase their reading comprehension by 50 Lexiles or more as measured by Achieve3000.

School Mission:

The mission of the Marianas High School is to establish, maintain, and sustain a learning environment in which all students have the opportunity to develop the competencies and the confidence necessary to enter and succeed in a post-secondary educational institution or in an employment field of their choice.

Course Description: AP Statistics

AP® Statistics involves the study of four main areas: exploratory analysis; planning a study; probability; and statistical inference. According to the College Board, upon entering this course students are expected to have mathematical maturity and quantitative reasoning ability. Mathematical maturity could be defined as a complete working knowledge of the graphical and algebraic concepts through Math Analysis, including linear, quadratic, exponential, and logarithmic functions. In contrast to many math classes, this course will require reading of the text. This AP Statistics course is taught as an activity-based course in which students actively construct their own understanding of the concepts and techniques of statistics.

Course Competencies/ Learning Objectives

Students who successfully complete AP Statistics will be competent in the following areas:

- Proper Data Collection
 - Quantitative vs. Categorical Data
- Displaying and Describing Categorical Data
 - Marginal and conditional distribution using pie and bar charts for each variable or category.
- Displaying Quantitative Data
 - Histogram/Stem and leaf display/dotplot/and time plot.
 - Shape, center, spread, and unusual distribution features (skewed).
- Describing Distributions Numerically
 - Boxplots; Measure of Center: mean and median; Measure of Spread: range, IQR, and standard deviation
- Use the Standard Deviation as a Ruler and the Normal Model
 - Z-scores, normal distribution, rescaling

- Create Scatterplots, describe the Association and Correlation
- Perform Linear Regression
 - Transforming skewed data to be more linear
- Understand Randomness and its use to reduce bias
 - Simulations using TI-83
- Conduct Sample Surveys
 - Simple Random(SRS), Stratified, Cluster, Multi-Stage, Systematic
- Work from Randomness to Probability
 - Law of Large Numbers, Properties of Probability, Independence, Addition Rule/Multiplication Rule/Complement
- Utilize all the Probability Rules
 - Conditional Probability, Bayes's Rule, Tree Diagram
- View events as Random Variables that can be modeled to calculate the following:
 - Expected Value, Center and Spread, Expected Values and Standard Deviations for Discrete Random Variables, Continuous Random Variables
- Determine types of Probability Models
 - Geometric Model (distribution), Binomial Model (distribution)
- Set up the Sampling Distribution Models for the following data types and to use following theorems to make estimates:
 - Proportion, Mean, Fundamental Theorem of Statistics, Central Limit Theorem, Standard Error
- Create and interpret Confidence Intervals for Proportions
 - Margin of Error, Critical Value, One-proportion z-interval
- Perform Hypotheses Testing About Proportions and interpret the following
 - P-value, Null hypothesis, Alternative Hypothesis, One-proportion z-test, Confidence Interval
- Determine the possible pitfalls with Hypothesis Tests
 - P-values, Alpha levels, Significance level, Critical Values, Confidence Interval, Type 1/Type 2 Errors, Power
- Compare Two Proportions with confidence intervals and hypothesis testing
 - Standard Deviation of the Difference Between Two Proportion, Two-Proportion z-test
- Conduct Hypotheses Tests to generate Inferences About Means using the following concepts:
 - Central Limit Theorem, T-values, One-sample t-interval, Degrees of Freedom, Sampling Distribution for the Difference Between Two Means, Two-sample t-test, Paired t-test
- Formally test for independency and compare groups of categorical data values using the following concepts:
 - Goodness-of-Fit, Chi-Square Test: Independence and Homogeneity
- Conduct testing on slopes to generate Inferences from Linear Regression
 - Regression Inference, Standard Error for Slope, Sampling Distribution for Regression Slopes, Intercept, Regression Slope T-test, Confidence/Prediction interval

Text book: Suggested Readings/Texts

Bock, David E., Paul F. Velleman, Richard D. De Veaux. *Stats Modeling the World*, fourth edition. Boston, MA: Pearson Education, Inc., 2015.

Materials:

You are expected to bring the following materials to class everyday.

- Notebook (note taking)
- Pencils and erasers
- **A Graphing Calculator** such as the TI-83+ or TI-84+ is recommended but not required. [Class set is available for use during class time only].
- Gmail account (for Google Drive sharing of ebook)

Student Evaluation

The CNMI Public School System grading policy suggests the following breakdown for scores:

Percent Letter Grade

93 – 100 A

83 – 92 B

73 – 82 C

63 – 72 D

0 – 62 F

Grading System (Weights)

Tests/Quizzes = 25%

Practice Assignments = 25%

Quarter Projects = 20%

Journal/Notes = 10%

In-Class/Group Activities = 10%

Final Exam = 10%

Final Projects (after AP exam) = 100%

Attendance Policy

Regular and prompt class attendance is an essential part of the educational experience. Marianas High School expects students to exercise good judgment regarding attendance and absences. Students will accept full responsibility for ensuring their work does not suffer because of absences. All students are expected to attend every scheduled class on time. Exceptions may be made for illness and valid emergencies. **Refer to student handbook for information.**

Classroom Expectations

The purpose of the class is to learn algebra. Any behavior that distracts significantly from this purpose can not be accepted.

1. Students will come to class on time prepared and ready to learn.
2. Students will complete all assignments, including homework, by all deadlines. Make-up work is only accepted after an excused absence. It is your responsibility to see me for your work before or after school.
3. All students will be silent and respectful while other students read aloud.
4. The teachers and students will work together for a respectful, safe classroom.
5. Participation in class discussions will enhance all students' learning experiences.
6. Students are expected to have all assigned readings completed; this may require some reading to be completed outside of the classroom.
7. Cell phones and any other electronic devices are prohibited in class at any time, unless directed otherwise by the teacher.
8. Sleeping is not allowed in the classroom and will be interrupted by the teacher.
9. Students are expected to talk to the instructor if you have a special problem that hinders your progress in the course in order to get the help you need.

Class Requirements

Students will be required to successfully and correctly complete tests, exams, quizzes, and homework. Students will be required to complete some of these outside of school hours. Students will participate meaningfully and respectfully in classroom discussions, maintain good attendance, have a respectful and positive attitude, and come to class ready to learn.

Plagiarism, Cheating, and Academic Integrity

Plagiarism is the practice of copying words, sentences, images, or ideas for use in written or oral assessments without giving proper credit to the source. Cheating is defined as the giving or receiving of help on anything that has been determined by the teacher to be an individual effort. Both are considered serious offenses and will significantly affect your course grade. Please refer to the Student Handbook booklet for additional information.

Achieve3000 Lessons:

Students will be completing a minimum of 3 lessons per week in their LA, Science, & Social Studies class. Students are welcome to do more lessons. Please see teacher for more info.

Course Calendar

Students will be given an update by the teacher if changes are made

Unit/ Topic	Course Activities	Unit Learning Outcomes	Assessments/ Assignments	Timeframe
<p>PART 1: Exploring and Understanding Data (total time: 20 days)</p> <ul style="list-style-type: none"> · Chapter 1: Stats Starts Here. An introduction to Statistics o Activity: Game of Greed · Chapter 2: Data o Quantitative vs. Categorical Data · Chapter 3: Displaying and Describing Categorical Data o Marginal and conditional distribution using pie and bar charts for each variable or category. · Chapter 4: Displaying Quantitative Data o Histogram/Stem and leaf display/dotplot/and time plot. o Shape, center, spread, and unusual distribution features (skewed). o TI-83 activity · Chapter 5: Describing Distributions Numerically o Boxplots o Measure of Center: mean and median o Measure of Spread: range, IQR, and standard deviation o TI-83 activity · Chapter 6: The Standard Deviation as a Ruler and the Normal Model o Z-scores, normal distribution, rescaling o TI-83 activity · Review of Part 1: Exploring and Understanding Data <p>Assessment: Quiz/Test on Chapters 1-6 (total time: 3 days)</p> <ul style="list-style-type: none"> · Review Chapters 1-6 using previous AP questions · Introduce Statistics Short Project 1: Bad Graphs <p>PART 2: Exploring Relationships Between Variables (total time: 19 days)</p> <ul style="list-style-type: none"> · Chapter 7: Scatterplots, Association, and Correlation o MINITAB output o TI-83 activity · Chapter 8: Linear Regression 	<ul style="list-style-type: none"> Ø Daily Routine Ø Warm Up Ø Lesson Presentation (includes note taking) Ø Board work / Seat work Ø Group work (Classwork) Ø Individual Work (Classwork/homework) Ø Lesson quiz Ø Test Ø Cognitive Tutor Ø Online work (Edmodo) 	<p>Students will be able to Perform algebraic, composition and inverse operations on functions</p> <p>Students will be able to Find probability of various single, compound, dependent and independent events</p> <p>Students will be able to Translate real world applications into equations or inequalities and solve them</p> <p>Students will be able to Understand the properties of functions and demonstrate how relations and functions can be represented numerically, graphically, algebraically, and/or verbally</p> <p>Students will be able to Find the equations of linear functions and use those equations to solve real world applications</p> <p>Students will be able to Solve real world applications which use systems of linear equations in two or three variables using algebraic and matrix methods</p>	<p>>>Classworks >>Homework/Notes >>Group work (participation) >> Lesson quiz >> Test >> End of the Topic/chapter activity</p>	<p>First Quarter</p>

<ul style="list-style-type: none"> · Activity: Tootsie Pops and Hand Span · Activity: Olympic Swimming using TI-83 · Chapter 9: Regression Wisdom · Chapter 10: Re-Expressing Data: Get It Straight! ○ Transforming skewed data ○ TI-83 activity · Review of Part 2: Exploring Relationships Between Variables <p>Assessment: Quiz/Test on Chapters 7-10 (total time: 3 days)</p> <ul style="list-style-type: none"> · Review Chapters 7-10 using previous AP questions <p>Introduce Short Project 2: Linear Regression</p>				
<p>PART 3: Gathering Data (total time: 20 days)</p> <ul style="list-style-type: none"> · Chapter 11: Understanding Randomness ○ Simulations using TI-83 ○ Activity: Random Rectangles · Chapter 12: Sample Surveys ○ Worksheet: Rolling Down the River (Farmer Samples) · Chapter 13: Experiments and Observational Studies · Review of Part 3: Gathering Data <p>Assessment: Quiz/Test on Chapters 11-13 (total time: 3 days)</p> <ul style="list-style-type: none"> · Review Chapters 11-13 using previous AP questions · Introduce Statistics Short Project 3: Survey Research An Introduction <p>PART 4: Randomness and Probability (total time: 19 days)</p> <ul style="list-style-type: none"> · Chapter 14: From Randomness to Probability <ul style="list-style-type: none"> ○ Law of Large Numbers ○ Properties of Probability ○ Independence ○ Addition Rule/Multiplication Rule/Complement ○ Activity: How Long to Get an Ace ○ Use Ti-83 properties for simulations · Chapter 15: Probability Rules! <ul style="list-style-type: none"> ○ More in depth of CH. 14 Rules ○ Conditional Probability ○ Bayes's Rule ○ Tree Diagram · Chapter 16: Random Variables <ul style="list-style-type: none"> ○ Expected Value ○ Center and Spread ○ Expected Values and Standard Deviations for Discrete Random Variables ○ Ti-83 activity 	<ul style="list-style-type: none"> Ø Daily Routine Ø Warm Up Ø Lesson Presentation (includes note taking) Ø Board work / Seat work Ø Group work (Classwork) Ø Individual Work (Classwork/homework) Ø Lesson quiz Ø Test Ø Cognitive Tutor Ø Online work (Edmodo) 	<p>Students will be able to Perform algebraic, composition and inverse operations on functions</p> <p>Students will be able to Find probability of various single, compound, dependent and independent events</p> <p>Students will be able to Translate real world applications into equations or inequalities and solve them</p> <p>Students will be able to Understand the properties of functions and demonstrate how relations and functions can be represented numerically, graphically, algebraically, and/or verbally</p> <p>Students will be able to Find the equations of linear functions and use those equations to solve real world applications</p> <p>Students will be able to Solve real world applications which use systems of linear equations in two or three variables using algebraic and matrix methods</p>	<p>>>Classwork >>Homework/Notes >>Group work (participation) >> Lesson quiz >> Test >>Final Exam >> End of the Topic/chapter activity >>Cognitive Tutor</p>	<p>Second Quarter</p>

<ul style="list-style-type: none"> o Continuous Random Variables · Chapter 17: Probability Models <ul style="list-style-type: none"> o Geometric Model (distribution) o Binomial Model (distribution) o Ti-83 activity o Normal Model o Continuous Random Variables o Activity: Holiday Activity · Review of Part 4: Randomness and Probability <p>Assessment: Quiz/Test on Chapters 14-17 (total time: 3 days)</p> <ul style="list-style-type: none"> · Review Chapters 14-13 using previous AP questions 				
<p>PART 5: From the Data at Hand to the World at Large (total time: 20 days)</p> <ul style="list-style-type: none"> · Chapter 18: Sampling Distribution Models <ul style="list-style-type: none"> o Proportion o Mean o Fundamental Theorem of Statistics o Central Limit Theorem o Activity: Where's the middle o Standard Error · Chapter 19: Confidence Intervals for Proportions <ul style="list-style-type: none"> o Margin of Error o Critical Value o Ti-83 Activity o One-proportion z-interval · Chapter 20: Testing Hypotheses About Proportions <ul style="list-style-type: none"> o P-value o Null hypothesis o Alternative Hypothesis o One-proportion z-test o Ti-83 activity o Confidence Interval · Chapter 21: More About Tests <ul style="list-style-type: none"> o One-proportion z-test o P-values o Alpha levels o Significance level o Critical Values o Confidence Interval o Type 1/Type 2 Errors o Power o MINITAB activity · Chapter 22: Comparing Two Proportions <ul style="list-style-type: none"> o Standard Deviation of the Difference Between Two Proportion o Sampling Distribution o TI-83 activity o Two-Proportion z-test · Review of Part 5: From the Data at Hand to the World at Large <p>Assessment: Quiz/Test on Chapters 18-22 (total time: 3 days)</p>	<ul style="list-style-type: none"> Ø Daily Routine Ø Warm Up Ø Lesson Presentation (includes note taking) Ø Board work / Seat work Ø Group work (Classwork) Ø Individual Work (Classwork/homework) Ø Lesson quiz Ø Test Ø Cognitive Tutor Ø Online work (Edmodo) 	<p>Students will be able to Perform algebraic, composition and inverse operations on functions</p> <p>Students will be able to Find probability of various single, compound, dependent and independent events</p> <p>Students will be able to Translate real world applications into equations or inequalities and solve them</p> <p>Students will be able to Understand the properties of functions and demonstrate how relations and functions can be represented numerically, graphically, algebraically, and/or verbally</p> <p>Students will be able to Find the equations of linear functions and use those equations to solve real world applications</p> <p>Students will be able to Solve real world applications which use systems of linear equations in two or three variables using algebraic and matrix methods</p>	<ul style="list-style-type: none"> >> Classwork >> Homework/Notes >> Group work (participation) >> Lesson quiz >> Test >> Journal >> End of the Topic/chapter activity 	<p>Third Quarter</p>

<ul style="list-style-type: none"> · Review Chapters 18-22 using previous AP questions · Introduce Project 4: How to Ask Questions—Designing a Survey <p>PART 6: Learning About the World (total time: 11 days)</p> <ul style="list-style-type: none"> · Chapter 23: Inferences About Means <ul style="list-style-type: none"> ○ Central Limit Theorem ○ T-values ○ TI-83 activity ○ One-sample t-interval ○ Confidence Intervals ○ Degrees of Freedom ○ MINITAB activity · Chapter 24: Comparing Means <ul style="list-style-type: none"> ○ Sampling Distribution for the Difference Between Two Means ○ TI-83 activity ○ Two-sample t-test ○ MINITAB activity · Chapter 25: Paired Samples and Blocks <ul style="list-style-type: none"> ○ Paired t-test ○ TI-83 activity · Review of Part 6: Learning About the World <p>PART 7: Inference when Variables are Related (total time: 11 days)</p> <ul style="list-style-type: none"> · Chapter 26: Comparing Counts <ul style="list-style-type: none"> ○ Goodness-of-Fit ○ Chi-Square Test ○ Assumptions and Conditions ○ TI-83 Activity ○ Residuals ○ Contingency Tables ○ Independence ○ Causation ○ MINITAB activity · Chapter 27: Inferences for Regression <ul style="list-style-type: none"> ○ Population and Sample ○ Assumptions and Conditions ○ Regression Inference ○ Standard Error for Slope ○ Sampling Distribution for Regression Slopes ○ Intercept ○ Regression Slope T-test ○ TI-83 activity ○ Predicted Values ○ Confidence/Prediction interval · Review of Part 7: Inference when Variables are Related <p>Assessment: Quiz/Test on Chapters 23 – 27 (total time: 3 days)</p> <ul style="list-style-type: none"> · Review Chapters 23 – 27 using previous AP questions 				
<p>Review for AP EXAM!!! Review for AP Exam and Final Exam (total time: 10 days)</p> <ul style="list-style-type: none"> · Practice with 2002-2016 released AP exam · Final Exam · AP Exam—May ____, 2017 <p>Post AP Exam (total time: 10 days)</p> <ul style="list-style-type: none"> · Final AP Stats Project 	<ul style="list-style-type: none"> Ø Daily Routine Ø Warm Up Ø Lesson Presentation (includes note taking) Ø Board work / Seat work Ø Group work (Classwork) 	<p>Students will be able to Demonstrate the ability to identify and evaluate data values to make inferences about something they are interested in.</p>	<ul style="list-style-type: none"> >>Classwork >>Homework/Notes >>Group work (participation) >> Lesson quiz >> Test >>Final Exam >> End of the Topic/chapter activity 	<p>Fourth Quarter</p>

	<ul style="list-style-type: none">Ø Individual Work (Classwork/homework)Ø Lesson quizØ TestØ Cognitive TutorØ Online work (Edmodo)			
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Special Accommodations

Please see me or email me if you require special accommodations due to learning disabilities, religious practices, physical requirements, medical needs, or any other reasons.

-----CUT HERE-----

PARENT-STUDENT AGREEMENT

Student Name: _____ Period: _____ Date: _____

I have received, read, and understand the **(Course Name)** course syllabus and outline. _____ (initial)
I understand my responsibilities in this class. I understand that this is an academic classroom and I agree to conduct myself accordingly. _____ (initial)

I understand the grading system and policies to be used in this class. _____ (initial)

I accept that the grades I receive while enrolled in this class will be a direct reflection of the level of effort and commitment that I put toward my assigned work. I accept responsibility for all work that will be assigned in this class. _____ (initial)

I accept responsibility for the consequences I will experience should I choose not to comply with all that is required of me for the successful completion of this course. _____ (initial)

I accept that if, at any time, I do not successfully complete all of the assigned work in this class, I will be placed on academic remediation, I will receive a disciplinary referral, and I will be required to explain my academic behavior in a conference attended by me, my parent/guardian, my teacher, and the vice-principal for student personnel. _____ (initial)

I will treat all of the school's property and (Teacher) property with the utmost respect and care. I understand that if **(Ms. Taisacan)** decides that I have not been respectful of his property or school property, she has the right to not let me use it. If this happens, I must bring my own device, borrow a friends, or use the school's computers to complete all classroom activities and tasks. _____ (initial)

Student Signature

Print Name

By signing below, I acknowledge I have read this Parent-Student Agreement and that all of the contact information below is correct.

Parent/Guardian Signature

Print Name

Parent Email: _____

Contact Number: _____

Parent Facebook: _____