Probability, Statistics and Discrete Math

Instructor Information:

Teacher	Room number	Email	Availability
Widick	220/133	rwidick@washoeschools.net	Before school or by appointment
Ferrao	E271	Karen.Ferrao@washoeschools.net	Before school or by appointment

Course Description:

This course is designed to provide students with opportunities to explore concrete concepts, probability statistics and discrete mathematics. The first semester and the beginning of the second semester of the class is spent studying probability and statistics topics including probability distributions, hypothesis testing, and experimental design. Students will be provided with opportunities to collect and analyze data relevant to students and draw conclusions based on this analysis. Most of second semester will involve a study of discrete mathematics used in the study of calculators and computers. It will include such topics as financial math, linear programming, base systems, set theory, and graph theory.

Required texts, course materials:

Textbook:
Website: www.washoeschools.net/DRHSmath
Students will need to have an organization system, like a binder, and paper to do their homework assignments on as they will be assigned from the textbook.

Class expectations/procedures/structures:

- Be on time, seated, and read to work when the bell rings to start class.
- Bring all materials to class daily.
- Respect others and their property.
- Stay on task and participate fully.
- Students who complete all assignments for the semester will receive a 2% bonus for their semester grade after finals are taken and graded.
- Students with no late HW who have turned every assignment and paid their $3 lab fee will receive a free pizza lunch each semester.
- All assignments should be completed in pencil; all corrections should be done in pen.
- Students are required to show work on all problems on their assessments, tests, quizzes, and all corrections must also have work shown.
- Students who complete all assignments for a unit are eligible to take one test redo per unit, as needed.
- Late assignments will be worth 50% of the earned score and must be turned in before the test in order to be graded.
- Phones are not to be out or used during class time unless the teacher has given specific permission.
- Absent students should visit the class website (www.washoeschools.net/DRHSmath) in order to write down the class notes before returning to class.
- Students who lose a worksheet/handout/notes packet should visit the class website in order to print off a new copy.
- Please pay the bookkeeper $3 for the lab fee and bring the receipt to your teacher.

Student Learning Outcomes:

Standards to be learned:

- Basic Set Concepts
- Subsets
- Venn Diagrams and Set Operations (2 and 3 sets)
- Survey Problems
- The Fundamental Counting Principal
- Permutations and Combinations
- Fundamentals of Probability
- Probability with Counting
- Events involving NOT and OR
- Events involving AND
- Conditional Probability
- Overview of Statistics
- Data Classification
- Experimental Design
- Frequency Distributions and Their Graphs
- More Graphs and Displays
- Measures of Central Tendency, Spread, and Position
- Probability Distributions
- Binomial Distributions
- Expected Value
- Normal Distributions (Finding Probability, finding Values)
- Sampling Distributions and the Central Limit Theorem
- Normal Approximation to Binomial Distributions
- Confidence Intervals (means with large and small samples, and proportions)
- Hypothesis Testing (means with large and small samples, and proportions)
- Correlation
- Linear Regression
- Measure of Regression
- Percent, Sales Tax, and Income Tax
- Simple Interest
- Compound Interest
- Annuities, Stocks and Bonds
- Installment Buying
- Amortization and the cost of Home Ownership
- Applications of Linear Equations
- Ratio, Proportion and Variation
- Applications of Linear Inequalities
- Graphing and Functions
- Linear Functions and Graphs
- Systems of Linear equations in two Variables
- Linear Inequalities in two Variables
- Linear Programming
- Number Bases in Positional Systems
- Computation in Positional Systems

Course Requirements:

Type	%	Policy
Assignments Note: Assignments must be done in pencil unless otherwise specified!	15%	**Class work** assignments will be assigned on a regular basis, and will usually be worth between 5 and 20 points. **Homework** assignments will be graded on accuracy. Students may correct missed items on homework to get back half of a point for each item corrected. Late assignments will earn up to half credit, depending on the quality, and must be turned in by the test on that unit. **Objectives** will be due on the day of the test and will be graded by completion. Students will have reading assignments as a regular part of their homework assignments. Students will fill out a Reading Response Form (**RRF**), which will be turned in at the end of the unit. Students can earn up to 10 points per RRF, depending on the quality and timeliness of the assignment when it is turned in.
Quizzes	15%	**Quizzes** may or may not be announced. Expect quizzes on a daily basis. Quizzes could be worth anywhere from 3 to 20 points.
Assessments Note: Assessments must be done in pencil unless otherwise specified!	55%	Each **project** will have a rubric that will be given to the class on the day it is assigned. Projects will usually be worth between 50 and 100 points. **Tests** will always be announced in advance and will be worth approximately 100 points each. There will be 5 unit tests this semester.
Final Exam	15%	A final **exam** will be given at the end of the semester. Students will receive a course blueprint prior to the exam. The final exam will replace a student's lowest score, unless the final exam is the lowest score.

Attendance
- THE ONLY STUDENTS TEMPORARY DISTANCE LEARNING WILL BE STUDENTS EXCLUDED FROM IN PERSON INSTRUCTION DUE TO COVID.
- **TEACHER** WILL POST DAILY ASSIGNMENTS AND INSTRUCTIONAL MATERIALS ON TEAMS.
- **STUDENT** WILL ACCESS ASSIGNMENTS AND INSTRUCTIONAL MATERIALS THROUGH TEAMS.
- **STUDENT** PARTICIPATES IN TDL BY MESSAGING HIS OR HER TEACHER THROUGH TEAMS DURING THE CLASS PERIOD.
- IF A STUDENT DOES NOT MESSAGE HIS OR HER TEACHER DURING THE CLASS PERIOD, HE OR SHE WILL BE **CONSIDERED ABSENT** AND THE TEACHER WILL MARK **HDE** IN THE COMMENTS SECTION OF THE ATTENDANCE LIST TO MARK THE STUDENT ABSENT.

Grading Criteria, Scale, and Standards:

<u>DRHS/WCSD grading scale:</u>
A: 90% - 100%
B: 80% - 89.9%
C: 70% - 79.9%
D: 60% - 69.9%
F: <59.9%

<u>Make-Up Work</u>
• Make-up work is defined as scheduled tests, scheduled quizzes, homework assigned on the day the student was absent, and/or a description of the topic(s) covered in class while the student was absent and possible resources where the student can obtain information on the topic(s).
• It is the responsibility of the student to request make-up work after returning from an absence and return the completed work within the designated deadline.
• Students are provided the length of the absence plus one day to complete any make-up work assigned. For example, if the student was absent for four days he/she will have five days to complete and submit the make-up work.
• Students who do not request or return completed make-up not earn credit on missed assignments.
• Make-up work need not be identical or equivalent to that missed due to the absence but will ensure that the student has the opportunity to meet the academic standards.
• Previously assigned work that was due on the day the student was absent is NOT considered makeup work and is due the day the student returns to school.
• The teacher must provide make-up work to the student within 2 days of the student's request.

<u>Late Work</u>
Late work is due by the unit test at the end of each unit and will be half credit.

Course Calendar or Topics Outline:
Semester 1   Semester 2

Unit	Topics
Unit 1 – 3 weeks	Basic Set Concepts Subsets Venn Diagrams and Set operations Set operations and Venn Diagrams with three sets Survey problems
Unit 2 – 3.5 weeks	The fundamental counting principal Permutations and Combinations Fundamentals of probability Probability with the counting Events involving NOT and OR Events involving AND Conditional probability
Unit 3 – 2 week	Overview of statistics Data classification (no Levels of Measurement, students need Types of Data only) Experimental design
Unit 4 – 2.5 weeks	Frequency distributions and their graphs More graphs and displays Measures of central tendency, spread and position
Unit 5 – 1 week	Probability distributions Binomial distributions Expected value
Unit 6 – 4 weeks	Normal distributions Normal distributions: finding probabilities Normal distributions: finding Values Sampling distributions and the Central Limit Theorem Normal approximation to Binomial distributions

Unit	Topics
Review – 2 week	Finish Unit 6 Mini unit review of normal distributions and sampling distributions.
Unit 7 – 3 weeks	Confidence Intervals for the mean (large samples) Confidence Intervals for the mean (small samples) Confidence Intervals for population proportions
Unit 8 – 3 weeks	Introduction to Hypothesis Testing Hypothesis Testing for the mean (large samples) Hypothesis Testing for the mean (small samples) Hypothesis Testing for proportions
Unit 9 – 2.5 weeks	Correlation Linear Regression Measure of Regression
Unit 10 – 3 weeks	Percent, sales tax, and income tax Simple interest Compound interest Annuities, stocks and bonds (Introduce Stocks and Bonds but leave out the mathematics of them) Installment buying Amortization and the cost of home ownership
Unit 11 – 3 weeks	Begin with an application of Linear programming Applications of linear Equations Ratio, proportion and variation Applications of linear Inequalities Graphing and functions Linear functions and graphs Systems of linear equations in two variables Linear inequalities in two variables
Unit 12 – 2 weeks	Number bases in positional systems Computation in positional systems

Damonte Ranch High School/WCSD Policies

Academic Integrity:

Cheating means gaining unfair advantage by using unauthorized information.

Cheating is further defined by but not limited to:

- COPYING someone else's homework, classwork, or test answers
- ALLOWING someone else to copy your work or test answers
- USING any kind of unauthorized device, study aid, or cheat sheet
- POSSESSING or VIEWING a copy of an exam beforehand
- SHARING test information with students who have not yet taken the test or course
  - o This includes taking answers/questions from a test out of the classroom without the permission of the teacher.
- CHANGING your answers or someone else's when correcting in class
- MISREPRESENTING work done by others as your own work.

Plagiarism is presenting the words or ideas of another person as one's own without citing sources.

- YOU ARE PLAGIARIZING when you copy a phrase, a paragraph, a page or an entire paper.
- YOU ARE PLAGIARIZING when you copy from a published source, i.e. Internet or print.
- YOU ARE PLAGIARIZING when you copy from someone else's work.

Minimum consequences for cheating are as follows:

- REFERRAL to Student Services
- PARENT CONTACT by the teacher
- LUNCH DETENTION with Student Services
- NOTATION made in school discipline record

Additional consequences may include, but are not limited to, the following:

- Student will receive a ZERO on the test or homework assignment
- Student will receive an "F" in citizenship for the quarter and depending on the severity of the infraction may receive an "F" in citizenship for the semester
- Alternative assignment, to be determined by the teacher

Be Responsible. Make Wise Choices. If you are unsure, ask your teacher for guidance.

Please cut along the line below. Return the signed lower portion to your class the next time it meets.

"I have read the Damonte Ranch High School Academic Integrity Policy."

"I have read the Prob/Stats Course Syllabus."

"I, the parent or guardian of _____, (circle one: **do or do not**) grant
                          Student's name (printed)

permission for my student to use Remind as a communication tool in the classroom."

_____   _____

Student Signature   Date

_____   _____   _____

Guardian Name (printed)   Guardian Signature   Date