

NOUVEL CATHOLIC CENTRAL HIGH SCHOOL

STATISTICS

COURSE SYLLABUS

COURSE DESCRIPTION:	<p>This objective of Statistics is to provide the student with the tools to successfully deal with uncertainty and variation in life events, through the understanding of probability and statistics. This course will prepare a learner to collect and analyze data and communicate conclusions to an audience and understand the probability theory that underpins the statistical conclusions.</p> <p>Grades offered: 12</p> <p>Prerequisites: Algebra, Geometry and Algebra 2</p>
MAJOR COURSE GOALS:	<ol style="list-style-type: none">1. The student will construct sample space, define an event, and calculate the probability of the event for a simple situation.2. The student will describe, explain, know when to use and apply counting techniques such as using a tree diagram, the fundamental counting principle, permutations, and combinations and will relate combinations to Pascal's triangle.3. The student will compute probabilities of events (e.g. mutually exclusive, independent, dependent, complementary) using tree diagrams, combinations, permutations, Venn diagrams, or other counting techniques.4. The student will apply probability concepts to practical situations in such settings as finance, health, ecology, or epidemiology to make informed decisions.5. The student will calculate and interpret measures of center (including mean, median, and mode) and measures of variation (including percentiles, quartiles, interquartile range, variance, and standard deviation); explain uses, advantages and disadvantages of each measure given a particular set of data and its context.6. The student will construct and interpret dot plots, histograms, relative frequency histograms, bar graphs, basic control charts, and box plots with appropriate labels and scales; determine which kinds of plots are appropriate for different types of data; compare data sets and interpret differences based on graphs and summary statistics.

	<ol style="list-style-type: none"> 7. Given a distribution of a variable in a data set, the student will describe its shape, including symmetry or skewness, state how the shape is related to measures of center (mean and median) and measures of variation (range and standard deviation) with particular attention to the effects of outliers on these measures and estimate the position of the mean, median, and mode in both symmetrical and skewed distributions. 8. The student will describe the characteristics of the normal distribution, including its shape and the relationships among its mean, median, and mode and will use the fact that about 68%, 95%, and 99.7% of the data lie within one, two, and three standard deviations of the mean, respectively in a normal distribution. 9. The student will calculate z-scores, use z-scores to recognize outliers, and use z-scores to make informed decisions. 10. The student will know the meanings of a sample from a population and a census of a population, distinguish between sample statistics and population parameters, distinguish between an observational study and an experimental study, and identify, in context, the conclusions that can be drawn from each. 11. The student will identify possible sources of bias in data collection, sampling methods and simple experiments; describe how such bias can be reduced; explain the impact of bias on conclusions made in data analysis; and know the effect of replication on the precision of estimates. 12. The student will know the meaning of and interpret statistical significance, margin of error, and confidence level.
<p>COURSE ASSESSMENT PLAN:</p>	<p>In-class informal assessment of understanding will occur every day within the context of the instructional time. The purpose of these assessments is to determine whether a student needs more practice to master the concepts that have been taught.</p> <p>Each unit will include one or two written tests and may include one or two quizzes. Tests and quizzes will assess the major topics included in the unit and will include authentic applications of the concepts, where appropriate.</p> <p>A student will do the following projects:</p> <ul style="list-style-type: none"> ○ In-class data collection project, which will allow students to learn how to create an unbiased survey and data collection plan, collect, analyze and interpret the data, draw conclusions and create an appropriate data display.

	<ul style="list-style-type: none"> ○ Independent data collection project with a partner that will demonstrate a student's understanding of data collection, analysis and display <p>Marking period grades will be determined in the following way: 35% from tests and quizzes, 25% from projects/partner work, 20% from homework and 20% from in-class participation.</p>
<p>SUPPLIES AND MATERIALS NEEDED:</p> <p>Done</p>	<p>The student is expected to have the following supplies in class every day:</p> <ul style="list-style-type: none"> ○ Paper ○ Pencil or pen (Pencils are preferred but not required.) ○ Textbook ○ Calculator that can calculate average and standard deviation from a list of numbers. (Graphing calculators are not necessary for this course, but offer students much more capabilities for data analysis.) ○ 3 ring binder or pocket folder to store all handouts that are 3 hole punched (This binder or folder does not have to be dedicated solely for Statistics class.)
<p>EXTRA HELP:</p>	<p>The student who needs help outside of class time should talk to the teacher as soon as possible to schedule an after school meeting. Because of the teacher's other job obligations, after school meetings must be scheduled in advance.</p> <p>The student is encouraged to get extra help at the free NHS sponsored tutoring on Tuesdays, Wednesdays and Thursdays from 3 to 4pm, no appointment necessary. In accordance with NCC Math Department policy, any student whose overall course grade drops below a 70% is required to attend tutoring weekly until the grade improves.</p>
<p>INSTRUCTIONAL PHILOSOPHY:</p>	<p>This class will include a combination of individual, group and partner work, with the intent to challenge each student at the appropriate level. Class time will include whole class and small group lecture, individual and partner practice time and some class discussion. Some students may test out of certain sections of the course content, allowing independent work in the extra time. Any independent work will be designed and agreed upon by the student and the teacher.</p>
<p>MAJOR COURSE PROJECTS AND INSTRUCTIONAL ACTIVITIES:</p>	<p>Instructional activities:</p> <p>During class time, a student will solve problems and work on activities, both individually and with a partner. Outside of class, a student will do homework assignments and complete project work that is not done during class time.</p> <p>Major projects will include:</p> <ul style="list-style-type: none"> ○ In-class data collection project, which will allow students to learn how

	<p>to create an unbiased survey and data collection plan, collect, analyze and interpret the data, draw conclusions and create an appropriate data display.</p> <ul style="list-style-type: none"> ○ Independent data collection project with a partner that will demonstrate a student's understanding of data collection, analysis and display
CLASSROOM EXPECTATIONS:	<p>The student is expected to:</p> <ul style="list-style-type: none"> ○ Be prepared with all supplies and a focused attitude <u>when the bell rings.</u> ○ Contribute positively to the learning environment in the classroom. ○ Ask questions and seek out help when confused. ○ Show respect for yourself, fellow students, teachers, administrators and others by your words and actions. ○ Respect all personal and school property. ○ Set high expectations for your own performance and help others to achieve their high expectations. ○ Be in compliance with the dress code at all times.
HOMEWORK POLICY AND GRADING SCALE: CHECK PERCENTAGES!	<p>Homework will be assigned multiple days a week and will be checked for completion at the beginning of class that it is due. After the class goes over the assignment, it will be collected for credit. No points are earned if the homework is never turned in for credit. Homework assignments are worth up to 5 points, depending on level of completion of the assignment. Late homework will be accepted, unless otherwise specified when the assignment is given, and as long as it is done outside of class time. Some homework may be project based.</p> <p>Course grades will include marking period grades and the semester exam, using the percentages listed in the Student Handbook.</p>
CONTACT INFORMATION:	
Teacher:	Teresa Colucci
Email Address:	tcolucci@sacschools.org
Phone Number	989-399-2435