



## **SYLLABUS**

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### **CATALOG DESCRIPTION**

Algebra from the viewpoint for the elementary curriculum with emphasis on proportional and linear relationships. Additional topics include: Number theory, ratio, percent, probability and statistics. Student activities, investigations and problem solving are emphasized throughout.

Prerequisites: Grade of “C” or better in MATH 121

Semester Offered: Fall

#### ***Common Student Learning Outcomes***

*Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...*

##### **BROAD AND SPECIALIZED LEARNING**

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

##### **CRITICAL THINKING**

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

##### **CULTURAL AND CIVIC ENGAGEMENT**

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

##### **EFFECTIVE COMMUNICATION**

Students will exchange ideas and information with clarity in multiple contexts.

##### **INFORMATION LITERACY**

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

##### **INTEGRATING TECHNOLOGIES**

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

*Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.*

### **Course Learning Outcomes**

Upon successful completion of the course, the student will be able to...

1. Number Theory
2. Ratio, Proportion, and Percent
3. Introductory Algebra
4. Statistics and Probability
5. Problem Solving

## Specific Learning Outcomes

Upon successful completion of the course, the student will be able to...

- 1.1) Interpret a composite number as the product of prime factors.
  - 1.2) Use factors and multiples to solve problems.
  - 1.3) Use tests for divisibility
  - 1.4) Differentiate between prime or composite numbers using various techniques including factoring and the Sieve of Eratosthenes
  - 1.5) Discuss the Fundamental Theorem of Arithmetic
  - 1.6) Compare and contrast the sets of rational, irrational and real numbers
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- 2.1) Express percent of a quantity as a rate per 100
  - 2.2) Use proportional reasoning in common applications
  - 2.3) Represent a quantity as a fraction, percent, and decimal
  - 2.4) Use proportional relationships to solve percent problems
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- 3.1) Represent, analyze, and interpret a variety of patterns with tables, graphs, words and equations
  - 3.2) Explain how formulas represent relationships between quantities
  - 3.3) Solve and graph linear equations
  - 3.4) Define and identify functions
  - 3.5) Represent functions with words, tables, equations and graphs
  - 3.6) Interpret the slope of a line as a ratio between quantities or a unit rate in contextual situations
  - 3.7) Analyze linear relationships and identify the slope and y-intercept in a graph, equation, and applied situation
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- 4.1) Select, create, and use appropriate graphical representations of data including frequency tables, pictographs, line plots, bar graphs, line graphs, histograms, box plots, and scatterplots
  - 4.2) Identify graphic misrepresentations and distortions of data sets such as unequal interval size, axis range, and scaling
  - 4.3) Summarize and interpret data using mean, median and quartiles and explain the appropriateness and limitations of each measure
  - 4.4) Compute theoretical probabilities using organized lists, tree diagrams, area models, and formulas for simple and compound events
  - 4.5) Compare probabilities estimated using empirical data to those computed theoretically.
  - 4.6) Discuss the importance of randomness
  - 4.7) Compare and contrast population and sample
  - 4.8) Use the vocabulary of probability to generate convincing arguments, draw conclusions, and make informed decisions.
  - 4.9) Use measures of center and measures of variability to draw informal comparative inferences about two populations
  - 4.10) Explain and compute standard deviation and inter-quartile range
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- 5.1) Make sense of problems and persevere in solving them.
  - 5.2) Reason abstractly and quantitatively.
  - 5.3) Construct viable arguments and critique the reasoning of others.
  - 5.4) Model with mathematics
  - 5.5) Use appropriate tools strategically
  - 5.6) Attend to precision.
  - 5.7) Look for and make sense of structure
  - 5.8) Use mathematical notation properly