MATH 130 – CONCEPTUAL MATH | 3 CREDITS

SYLLABUS

CATALOG DESCRIPTION

This course covers a variety of practical mathematical concepts for non-science majors. Topics include set theory, geometry, counting methods, probability, statistics, and finance. Critical thinking and problem solving skills are stressed.

Prerequisites: ACCUPLACER score of 61 – 103 or Grade of "C" or better in Math 096

Semester Offered: Fall, Spring and Summer

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.

General Learning Outcomes

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

1. Problem solving methods
2. Basic investment and loan models
3. Geometry
4. Counting methods
5. Probability
6. Statistics

Specific Learning Outcomes

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

1.1 Use and identify inductive and deductive reasoning
1.2 Apply a variety of problem solving strategies
1.3 Analyze problems using critical thinking skills
1.4 Complete open ended projects, group work, and or lab problems

2.1 Solve problems involving percent, sales tax, and income tax
2.2 Calculate present and future value of accounts with simple and compound interest
2.3 Calculate the future value of an annuity
2.4 Compare and contrast investments involving stocks, bonds, and mutual funds
2.5 Calculate interest and payments for open-end credit accounts
2.6 Calculate the monthly payment for an amortized loan

3.1 Calculate area, perimeter, and volume for basic geometric shapes
3.2 Apply the Pythagorean Theorem
3.3 Solve problems involving similar triangles

4.1 Apply the Fundamental Counting Principle and compute factorials
4.2 Decide whether to apply permutations or combinations and perform the appropriate computations.

5.1 Compute basic probabilities
5.2 Apply the complements and general addition rules
5.3 Calculate conditional probabilities and apply the product rule
5.5 Calculate the expected value of a probability distribution

6.1 Construct frequency distributions and histograms
6.2 Calculate the mean, median, mode, and standard deviation of raw data
6.3 Calculate a weighted average
6.4 Calculate and analyze relative z-scores
6.5 Solve problems using properties of the normal distribution

<u>**OTHER OUTCOMES:**</u>
Statewide articulation efforts indicate that a portion of the content of this course can be chosen based on instructor preference. Therefore, the student may also be required to:
  Organize survey results using Venn Diagrams
  Compare and contrast various historic numeration systems
  Convert numbers from one base to another
  Perform computations in bases other than base ten
  Convert length, area, volume, weight, and temperature measurements between metric and English units
  Solve right triangles using trigonometric functions
  Draw scatterplots
  Calculate regression lines
  Calculate and interpret correlation coefficients
  Understand voting and apportionment models
  Display an understanding of the development or history of mathematics.

OTHER REQUIREMENTS:

The TI-83+, or TI-84+ graphing calculator is required for the course. Graphing calculators capable of symbolic manipulation (such as TI-89 or TI-92 and other such calculators) will not be allowed on examinations and where the instructor finds fit.