

SYLLABUS

COURSE # & TITLE: MATH 130, Conceptual Mathematics

OF CREDITS: 3

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.

Semester Offered: Fall, Spring and Summer

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

Common Student Learning Outcomes

Upon successful completion of San Juan College programs and degrees, the student will....

<i>Learn</i>	<i>Students will actively and independently acquire, apply and adapt skills and knowledge to develop expertise and a broader understanding of the world as lifelong learners.</i>
<i>Think</i>	<i>Students will think analytically and creatively to explore ideas, make connections, draw conclusions, and solve problems.</i>
<i>Communicate</i>	<i>Students will exchange ideas and information with clarity and originality in multiple contexts.</i>
<i>Integrate</i>	<i>Students will demonstrate proficiency in the use of technologies in the broadest sense related to their field of study.</i>
<i>Act</i>	<i>Students will act purposefully, reflectively, and respectfully in diverse and complex environments.</i>

GENERAL LEARNING OUTCOMES:

Upon completion of the course, the student should understand the following content areas:

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

SPECIFIC LEARNING OUTCOMES:

Upon completion of this course, the student should 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


OTHER OUTCOMES:

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.

DIVISION DEAN: 

DATE: 1-4-07

A current syllabus must be on file in the dean's office for every course being taught during a given semester.