MISSOURI WESTERN STATE UNIVERSITY

COLLEGE OF LIBERAL ARTS AND SCIENCES

DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS, AND PHYSICS

COURSE NUMBER: MAT 263

COURSE NAME: History of Mathematics

COURSE DESCRIPTION:

A study of the most important proofs from the history of mathematics and the lives of the mathematicians who produced them.

PREREQUISITE:

Credit or concurrent enrollment in MAT 177.

TEXTS:

Journey through Genius, by William Dunham; John Wiley & Sons, 1990.

Additional Resource:

The Mathematical Universe, by William Dunham; John Wiley & Sons, 1994.

COURSE OBJECTIVES:

The main objective of this course is to acquaint students with the most creative mathematical proofs in the history of mathematics. Successful students will:

1. Explore each proof in the context of the historical state of the world, as well as the state of mathematics at that time in history.

2. Learn about the lives of the diverse individuals whose work produced these proofs.

3. Appreciate the mathematical genius involved in the development of each proof by carefully examining each step in the proof.

COURSE OUTLINE:

I. Hippocrates' Quadrature of the Lune

II. Euclid's Proof of the Pythagorean Theorem

III. Euclid and the Infinitude of Primes

IV. Archimedes' Determination of Circular Area

V. Heron's Formula for Triangular Area

VI. Cardano and the Solution of the Cubic

VII. A Gem from Isaac Newton

VIII. The Bernoullis and the Harmonic Series

IX. The Extraordinary Sums of Leonhard Euler

X. A Sampler of Euler's Number Theory

XI. The Non-Denumerability of the Continuum

XII. Cantor and the Transfinite Realm