COURSE DESCRIPTION (3 credits)(3 lecture hours per week)
This course begins with a study of the principles of logical reasoning and statistical reasoning. This is followed by problem solving and a study of number uses in the real world. The course concludes with math of finance, probability and statistics, and math and the arts. Prerequisite: Math 0312 or departmental approval.

INTRODUCTION
This course is designed for liberal arts, humanities, and human sciences majors, who are not intending to pursue teacher certification. This course is not intended for mathematics, science, engineering, or business majors. Topics of this course include sets, logic, number theory, measurement, geometric concepts, and an introduction to probability and statistics.

COURSE OBJECTIVES
The student should gain an understanding of the beauty and uses of mathematics. This course will prepare the student to be aware of the uses and abuses of logic, percentages, and statistics, as well as to gain an understanding of interest, probability, and mathematics and the arts. The student must demonstrate an understanding of the topics covered through testing, presentations, and/or papers.

METHODS FOR ACCOMPLISHING OBJECTIVES
1. Lecture
2. Special Problem Sessions
3. Instructional Media
4. Unit Examinations
5. Peer Tutoring
6. Faculty Tutoring

EVALUATION PROCEDURES
1. Unit Exams
2. Class Assignments
3. Quizzes
4. Projects
5. Papers
6. Final Exam

Letter grades will be assigned according to the following scale:
90-100⇒A  80-89⇒B  70-79⇒C  60-69⇒D  0-59⇒F

BIBLIOGRAPHY
Text:  Using and Understanding Mathematics, 4th ed., by Bennett and Briggs

COURSE OUTLINE
A. THINKING CRITICALLY
   1. Recognizing Fallacies
   2. Propositions and Truth Values
   3. Sets and Venn Diagrams
   4. Analyzing Arguments
B. APPROACHES TO PROBLEM SOLVING
1. The Problem-Solving Power of Units
2. Standardized Units: More Problem-Solving Power
3. Problem-Solving Guidelines and Hints

C. NUMBERS IN THE REAL WORLD
1. Uses and Abuses of Percentages
2. Putting Numbers in Perspective
3. Dealing with Uncertainty
4. (Optional) How Numbers Deceive

D. FINANCIAL MANAGEMENT
1. The Power of Compounding
2. Savings Plans and Investments
3. Loan Payments, Credit Cards, and Mortgages
4. Income Taxes
5. (Optional) Understanding the Federal Budget

E. STATISTICAL REASONING
1. Fundamentals of Statistics
2. Should You Believe a Statistical Study?
3. Statistical Tables and Graphs
4. Graphics in the Media
5. Correlation and Causality

F. PROBABILITY: LIVING WITH THE ODDS
1. Fundamentals of Probability
2. Combining Probabilities
3. The Law of Large Numbers
4. Assessing Risk
5. Counting and Probability

G. MODELING WITH GEOMETRY
1. Fundamentals of Geometry
2. Problem Solving with Geometry
3. Fractal Geometry

H. MATHEMATICS AND THE ARTS
1. Mathematics and Music
2. Perspective and Symmetry
3. Proportion and the Golden Ratio