



**I. COURSE DESCRIPTION:**

This course presents topics in functions, combinatorics, probability, statistics, and algebraic systems.

**II. PREREQUISITES:**

MTH 3 or the equivalent by placement test.

**III. INTRODUCTION:**

This course provides an overview of mathematics for students to provide them with a feel for the many wants they may encounter mathematics in their personal and academic lives. Understanding and interpretation are emphasized, rather than computation alone.

**IV. INSTRUCTIONAL MATERIALS:**

Textbook: Thinking Mathematically 5<sup>th</sup> edition by Robert Blitzer, Prentice Hall, 2011. Includes MyMathLab ISBN **0-321-645855**, or a

**Loose-leaf version bundled with MyMathLab ISBN 0-321-706056** **REQUIRED**

**Student Access Kit for MyMathLab if student is using the online version of the textbook**

**ISBN 0-321-19991-X** **REQUIRED**

Scientific (with Mean and Standard Deviation function keys), or graphing calculator **REQUIRED**

See Section IX for additional resources.

**V. MATERIAL TO BE COVERED:**

Unit I	Chapters 1, 6, and 7	4 weeks
Unit II	Chapters 7 and 8	4 weeks
Unit III	Chapters 11 and 12	5 weeks
Unit IV	Chapter 12	2 weeks

**VI. COURSE OBJECTIVES:**

After completion of this course, the student will be able to:

1. Identify the steps in a general problem-solving strategy
2. Explain the pitfalls of inductive reasoning in decision making
3. Explain the differences between a linear and an exponential function
4. Use linear and exponential functions in problem solving
5. Differentiate between basic counting problems, permutations, and combinations
6. With the aid of a calculation utility, compute factorials, permutations, and combinations

7. Use the appropriate method to calculate theoretical, empirical, and subjective probabilities
8. With data in a two-way contingency table, calculate probabilities for simple and compound events, including “and,” “or,” and “given” (conditional) situations
9. Identify types of statistical studies and their uses graphs, histograms, and line graphs
10. Interpret data presented in frequency tables, bar and pie graphs, histograms, and line graphs
11. Define statistical inference
12. Explain how the margin of error affects statistical inference
13. Identify types of consumer credit
14. Compute and compare simple and compound interest

**VII. BASIC CONCEPTS:** The student must master the following concepts:

**Chapter 1 Problem Solving and Critical thinking**

- 1.1 Inductive and Deductive Reasoning
- 1.2 Estimation, Graphs, and Mathematical Models
- 1.3 Problem Solving

**Chapter 6 Algebra: Equations and Inequalities**

- 6.1 Algebraic Expressions and Formulas
- 6.2 Linear Equations in One Variable and Proportions
- 6.3 Applications of Linear Equations
- 6.4 Linear Inequalities in One Variable
- 6.5 Quadratic Equations

**Chapter 7 Algebra: Graphs, Functions, and Linear Systems**

- 7.1 Graphing and Functions
- 7.2 Linear Functions and Their Graphs
- 7.3 Systems of Linear Equations in Two Variables
- 7.4 Linear Inequalities in Two Variables
- 7.5 Linear Programming
- 7.6 Modeling Data: Exponential, Logarithmic, and Quadratic Functions

**Chapter 8 Consumer Mathematics and Financial Management**

- 8.1 Percent, Sales Tax, and Income Tax
- 8.2 Simple Interest
- 8.3 compound Interest
- 8.4 Annuities, Stocks, and Bonds
- 8.5 Installment Loans, Amortization, and Credit Cards

**Chapter 11 Counting Methods and Probability Theory**

- 11.1 The Fundamental Counting Principle
- 11.2 Permutations
- 11.3 Combinations
- 11.4 Fundamentals of Probability
- 11.5 Probability with the Fundamental Counting Principle, Permutations, and Combinations
- 11.6 Events Involving Not and Or: Odds
- 11.7 Events Involving And: Conditional Probability
- 11.8 Expected Value

**Chapter 12 Statistics**

- 12.1 Sampling, Frequency Distributions, and Graphs
- 12.2 Measures of Central Tendency
- 12.3 Measures of Dispersion

- 12.4 The Normal Distribution
- 12.5 Problem Solving with the Normal Distribution
- 12.6 Scatter Plots, Correlation, and Regression Lines

**VIII. SUGGESTED WEEKLY SCHEDULE – 15 WEEK SEMESTER:**

- Week 1: 1.1, 1.2
- Week 2: 1.3, 6.1, 6.2
- Week 3: 6.3, 6.4
- Week 4: 6.5, Test 1, 7.1
- Week 5: 7.2, 7.3, 7.4
- Week 6: 7.5, 7.6
- Week 7: 8.1, 8.2
- Week 8: 8.3, 8.4, 8.5
- Week 9: Test 2, 11.1, 11.2, 11.3
- Week 10: 11.4, 11.5
- Week 11: 11.6, 11.7
- Week 12: 11.8, 12.1
- Week 13: 12.2, 12.3
- Week 14: 12.4, 12.5
- Week 15: 12.6, Test 3

**Give Final Exam during the scheduled exam period**

**IX. SUGGESTED WEEKLY SCHEDULE – 10 WEEK SEMESTER:**

- Week 1: 1.1, 1.2, 1.3, 6.1
- Week 2: 6.2, 6.3, 6.4
- Week 3: 6.5, Test 1, 7.1, 7.2, 7.3
- Week 4: 7.4, 7.5, 7.6
- Week 5: 8.1, 8.2, 8.3
- Week 6: 8.4, 8.5, Test 2, 11.1
- Week 7: 11.2, 11.3, 11.4
- Week 8: 11.5, 11.6, 11.7, 11.8
- Week 9: 12.1, 12.2, 12.3, 12.4
- Week 10: 12.5, 12.6, Test 3, FINAL EXAM

**X. NOTES TO THE INSTRUCTOR**

1. Online homework should be required as part of a student's final grade. Minimum assignments are available in a Course Compass Master Course Shell. The ID for this shell course will be provided to each instructor prior to the beginning of the semester.
2. At least three tests should be given, with the option of having a test for each chapter. Instructors may include quizzes or projects as a method of assessment, along with the online homework, tests, and a final exam.
3. Chapter 13 (Mathematical systems) or other topics from the text may be covered at the instructor's discretion, but chapters 1, 6, 7, 8, 11, and 12 must be completed.