Topics to be Covered – MATH 1010

The following topics are taken from the required course textbook *Mathematical Ideas* by Miller, Heeren, & Hornsby. They constitute the sections from which a departmental final exam will be generated. Sequence, amount of time per topic and the numbers of tests may vary. This schedule (41 class meetings for MWF and 27 class meetings for TR) leaves class meetings to be used at the instructor's discretion for the optional topics and the required collaborative investigations, individual projects and alternative assessments.

	Topics
Chapter 1 Problem Solving and Chapter 2 Set Theory	
	Orientation; Problem Solving
	Solving Problems by Inductive Reasoning – Section 1.1
	An Application of Inductive Reasoning: Number Patterns – Section 1.2
	Strategies for Problem Solving – Section 1.3
	Basic Concepts of Set Theory – Symbols and Terminology – Section 2.1
	Venn Diagrams and Subsets – Section 2.2
	Set Operations and Cartesian Products **–** Section 2.3
	Surveys and Cardinal Numbers – Section 2.4
	Test 1
Chapter 3 Logic and Chapter 10 Counting	
	Statements and Quantifiers – Section 3.1
	Truth Tables and Equivalent Statements – Section 3.2
	The Conditional, Converse, Inverse and Contrapositive – Section 3.3 and 3.4
	Counting by Systematic Listing – Section 10.1
	Using the Fundamental Counting Principle – Section 10.2
	Using Permutations and Combinations – Section 10.3
	Counting Problems Involving "Not" and "Or" – Section 10.5
	Test 2
Chapter 11 Probability and Chapter 12 Statistics	
	Basic Concepts – Section 11.1
	Events Involving "Not" and "Or" – Section 11.2
	Conditional Probability; Events Involving "And" – Section 11.3
	Expected Value – Section 11.5
	Visual Displays of Data – Section 12.1
	Measures of Central Tendency – Section 12.2
	Test 3
Chapter 13 Mathematics of Finance	
	Time Value of Money – Section 13.1
	Consumer Credit – Section 13.2
	Home Ownership – Amortization of Loans – Section 13.4
	Test 4

Exams and quizzes must not be the only forms of assessment for this course, so the instructor is required to select a topic for investigation, a group project, an individual project, etc.

Selections are made at the instructor's discretion from I, II, or III.

    I. Suggestions for Collaborative Investigations or Individual Projects:

        Discovering Patterns in Pascal's Triangle
        Surveying the Members of Your Class
        Logic Puzzles
        Solving a Traveling Salesman Problem
        Finding Empirical Values of Pi
        Other Investigations or projects approved by instructor

    II. Optional Topics or Sections to Cover:

        Pascal's Triangle – Chapter 10
        Binomial Probability – Chapter 11
        Estimating Probabilities by Simulation – Chapter 11
        Regression and Correlation – Chapter 11
        Measures of Dispersion and Measures of Position – Chapter 12
        Truth in Lending- Chapter 13
        Financial Investments – Chapter 13
        Graph Theory – Chapter 15
        Voting and Apportionment – Chapter 16

    III. Time for in-class collaborative student work, in-class student board work, student presentations, chapter summaries/reviews, and/or additional exams.