

*Montgomery College - Department of Mathematics
Rockville Campus*

**MA115A – Mathematical Ideas
3 Semester Hours**

Description

Intended primarily for students who need only one mathematics foundation course with an emphasis on quantitative reasoning. This course includes support content from intermediate algebra as needed to study major topics selected from (but not limited to) graph theory, voting and apportionment, geometry, growth and symmetry, number theory, and descriptive statistics. Emphasis is on contemporary applications to real-life problems. Credit may not be earned in both MA 115A and MA 110 or MA 115. Not intended for students with a C or better in MA 100 or 100D.

MA115A meets 5 hours each week.

Prerequisites

Appropriate score on the mathematics assessment test, grade of A in MA 091/091A, or consent of department.

Assessment levels: EN 101/101A, RD 120.

Topics

- I. Problem Solving
- II. Algebraic Models
 1. First degree equations and inequalities
 2. Percent
- III. Linear Models
 1. Rectangular Coordinates and Functions
 2. Properties of Linear Functions
 3. Finding Linear Models
 4. Linear regression
- IV. Nonlinear models
 1. Quadratic Functions
 2. Exponential functions
 3. Logarithmic Functions
- V. The Mathematics of Finance
 1. Compound interest
 2. Annuities

- VI. Probability and Statistics
 - 1. Counting methods
 - 2. Introduction to Probability
 - 3. Measures of central tendency
 - 4. Measures of dispersion
 - 5. Normal distributions
 - 6. Inferential Statistics
- VII. Mathematics of Social Choice
 - 1. Voting systems
 - 2. Apportionment
- VIII. Graph Theory
 - 1. Euler paths and circuits
 - 2. Hamilton Circuits and the Traveling Salesman Problem
 - 3. Map coloring and graphs

Text

Mathematical Thinking and Quantitative Reasoning, 1st edition,
Aufman, Houghton Mifflin, 2007.