

Montgomery County Community College
 MAT 106A
 Math Applications
 3-4-1

COURSE DESCRIPTION:

This course is designed for non-STEM, non-Business and non-Education majors. It stresses mathematical applications from linear programming, probability and statistics, and mathematics of finance. In addition, the course covers at least one of the following topics: matrix algebra, game theory, graph theory, or the computer with applications. A calculator is required for this course. This course *does not* satisfy the MAT 100 prerequisite requirement for MAT 125, MAT 140 or MAT 161, but *does* satisfy the prerequisite for MAT 130 and MAT 131. MAT 106A covers the same topics as MAT 106 by meeting 4 hours a week for 3 credits. It is important to note that the students will pay for four hours, but only receive three credits.

REQUISITE(S):*Previous Course Requirements*

- * MAT 011 Beginning Algebra, or MAT 085 Fundamentals of Mathematics with a minimum grade of "C"

Concurrent Course Requirements

- * None

Non-course Requirements

- * Accepted math placement test scores include a Next-Generation Accuplacer Quantitative Reasoning, Algebra and Statistics Test score of 238-300.

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
Upon successful completion of this course, the student will be able to:		
1. Solve linear and literal equations with applications, graphs and system of equations.	Lecture Small Group Activities Problem Solving Activities	Homework Quizzes Tests
2. Graph linear inequalities.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
3. Solve linear programming problems.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects
4. Solve problems involving permutations and combinations.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects
5. Solve probability problems dealing with probability experiments, sample spaces and expected values.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects
6. Create and use frequency distributions and their graphs.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects
7. Find and use measures of central tendency and measures of dispersion.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects
8. Solve problems using the normal probability distribution.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework/ Quizzes Projects	Exams Quizzes Homework Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
9. Use the calculator appropriately to solve finance problems with exponents.	Lecture Small Group Activities Problem Solving Activities	Homework Quizzes Tests
10. Solve consumer math problems involving ratios, proportions, interest both simple and compound, installment buying and mortgages.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria.*

SEQUENCE OF TOPICS:

1. Algebra Review
2. Word Problems, Graphing Straight Lines (Plotting Points and Using Intercepts – Not Slope) Graphing Linear Inequalities
3. Solving Systems of Equations, Systems of Inequalities, Linear Programming
4. Percent, Promissory Notes and Simple Interest, Compound Interest
5. Installment Buying, Mortgages
6. Empirical and Theoretical Probability, Odds
7. Expectation, Tree Diagrams, “Or” and “And” Problems
8. The Counting Principle and Permutations, Combinations
9. Sampling Techniques, Misuses of Statistics, Frequency Distributions
10. Statistical Graphs, Measures of Central Tendency, Measures of Dispersions, the Normal Curve

LEARNING MATERIALS:

Textbook: *Math In Society*, David Lippman, Create Space Publishing, 2012

Microsoft Excel is required for this course and can be used in campus computer labs.

A **calculator** is required for this course. Please see instructor for calculator type.

Other learning materials may be required and made available directly to the student and/or via the College’s Libraries and/or course management system.

COURSE APPROVAL:

Prepared by: James Muscatell

VPAA/Provost or designee Compliance Verification:

Date: 3/10/2019

Date: 3/14/2019



This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.