

Montgomery County Community College
 MAT 106
 Math Applications
 3-3-0

COURSE DESCRIPTION:

This course is designed for liberal arts, social science, humanities, secondary education, and communications majors. It stresses mathematical applications from linear programming, probability and statistics, and at least one of the following topics: matrix algebra, game theory, graph theory, mathematics of finance, and the computer with applications. A calculator is required for this course; see instructor. This course does not satisfy the MAT 100 prerequisite requirement for MAT 125, MAT 140 or MAT 161.

REQUISITE(S):*Previous Course Requirements*

-MAT 080 - Fundamentals of Mathematics, or MAT 011 - Beginning Algebra, or MAT 011B - Beginning Algebra with Review of Arithmetic with a minimum grade of C.

Concurrent Course Requirements

None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to	LEARNING ACTIVITIES	EVALUATION METHODS
1. Graph straight lines and systems of equations.	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
2. Graph linear inequalities.	Lectures Small Group Discussions and/or Projects The Use of Microsoft Excel Homework Quizzes Projects	Exams Quizzes Homework Projects
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

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
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
9. 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. Order of Operations, Solving Equations, Proportions and Formulas
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:

Lippman, David. 2012. Math In Society. Create Space Publishing

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.

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: Marion Graziano, Assistant Professor	Date: 9/1994
Revised by: Edwina Smith, Professor of Mathematics	Date: 4/1998
Revised by: Marion Graziano, Asst. Professor of Mathematics	Date: 2/2005
Revised by: Paul Winterbottom, Asst. Professor of Mathematics	Date: 8/2008
VPAA/Provost Compliance Verification: Dr. John C. Flynn, Jr.	Date: 9/11/2009
Revised by: Mark McFadden	Date: 2/1/2013
VPAA/Provost or designee Compliance Verification: Victoria L. Bastecki-Perez, Ed.D.	Date: 2/15/2013
Revised by: Mark McFadden	Date: 10/9/2014
VPAA/Provost or designee Compliance Verification: Victoria L. Bastecki-Perez, Ed.D.	Date: 10/9/2014
Revised by: Marion Graziano/Debbie Dalrymple	Date: 8/2/2017
VPAA/Provost or designee Compliance Verification: Victoria L. Bastecki-Perez, Ed.D.	Date: 8/24/2017
Revised by: Math Pathways Team	Date: 2/29/2024
VPAA or designee Compliance Verification:	Date: 2/29/2024



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.