Montgomery County Community College
MAT 100
Intermediate Algebra
3-3-0

COURSE DESCRIPTION:
This intermediate algebra course reviews and extends the material taught in MAT 080 Fundamentals of Arithmetic and MAT 090 Fundamentals of Algebra. It is appropriate for students who have completed an elementary algebra course and will prepare students for MAT 125, MAT 130, MAT 131, MAT 140 and/or MAT 161. Topics include a brief review of introductory algebra, introduction to functions, factoring, algebraic fractions, radicals, fractional exponents, the Pythagorean theorem, functional notation, graphing, quadratic equations, logarithms, systems of linear equations, and word problems applications. A graphing calculator is required. Instruction will be presented using a TI-84+.

REQUISITE(S):
Previous Course Requirements
* MAT 090 Fundamentals of Algebra, with a minimum grade of “C”

Concurrent Course Requirements
None

COURSE COMMENTS
* MAT 100 should only be taken by Business, Science, Technology, Engineering, and Math (STEM) majors.

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to	LEARNING ACTIVITIES	EVALUATION METHODS
1. Perform basic algebraic operations.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
2. Explain the concepts of function, domain, range, inverse function.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
3. Graph linear functions and vertical lines.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
4. Evaluate function notation.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
5. Factor and apply this technique to simplifying expressions and solving equations.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
6. Simplify rational expressions and solve rational equations.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
7. Solve quadratic equations and graph quadratic functions.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
8. Simplify radicals and interpret i-notation.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
9. Solve systems of linear equations.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
10. Graph exponential and logarithmic functions.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
11. Solve word problems involving distance, rate, time, variation, investment, Pythagorean's Theorem, and regression.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
12. Use the TI-84+ graphing calculator in relevant intermediate algebra concepts.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator 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 Director of Educational Effectiveness. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:

1. Algebra Review
2. Exponents and Scientific Notation
3. Graphs and the Graphing Calculator
4. Functions
5. Linear Equations, Formulas, Applications
6. Linear Functions, Graphs, Curve Fitting
7. Systems of Equations & Applications
8. Business and Economics Applications
9. Polynomials
10. Factoring
11. Expressions Containing Sums or Differences of Cubes
12. Applications of Polynomial Equations
13. Rational Expressions
14. Rational Expressions, Equations, Applications: *Motion Problems*
15. Formulas and Variation
16. Radicals, Fractional Exponents
17. Multiplication and Division of Radicals, Simplifying
18. Radical Equations
19. Applications: *Pythagorean Theorem only*
20. Complex Numbers: *Brief introduction to* "i"
21. Quadratic Equations: *Root extraction only*
22. Quadratic Formula & Applications
23. Graphing Quadratic Functions
24. Applications
25. Inverse Functions
26. Exponential Functions & Log Functions
27. Introduction to “e”, Simple Exponential and Logarithmic Equations

LEARNING MATERIALS:

Kern, R. (2019). *Intermediate Algebra.* Published by Hayden-McNeil

Calculator: TI-84+ graphing calculator. If a student has a TI-83+, they do not need to buy a TI-84+.

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:	Marty Johnson, Professor of Mathematics	Date:	4/1998
Revised by:	Fay Sewell, Professor of Mathematics	Date:	5/2000
Revised by:	Edwina Smith, Professor of Mathematics	Date:	11/2000
Revised by:	Edwina Smith, Professor of Mathematics	Date:	5/2001
Revised by:	Edwina Smith, Professor of Mathematics	Date:	5/2002
Revised by:	Fay Sewell, Professor of Mathematics	Date:	5/2003
Revised by:	Walter Hunter, Professor of Mathematics	Date:	10/2004
Revised by:	Walter Hunter, Professor of Mathematics	Date:	6/2005
Revised by:	Namrata Chauhan, Instructor of Mathematics	Date:	5/2007
Revised by:	Walter Hunter, Professor of Mathematics	Date:	2/2009
VPAA/Provost Compliance Verification:	Dr. John C. Flynn, Jr.	Date:	9/11/2009

Revised by: Mark McFadden Date: 1/1/2013
VPAA/Provost or designee Compliance Verification:
Victoria L. Bastecki-Perez, Ed.D. Date: 5/23/2013

Revised by: Marion Graziano/Debbie Dalrymple Date: 8/1/2017
VPAA/Provost or designee Compliance Verification:
Victoria L. Bastecki-Perez, Ed.D. Date: 8/24/2017

Revised by: Christopher Vaughen, Jim Muscatell Date: 2/21/2024
VPAA or designee Compliance Verification: Date: 11/13/2024

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.