Montgomery County Community College
MAT 100A
Intermediate Algebra
3-4-1

COURSE DESCRIPTION:
This intermediate algebra course reviews and extends the material taught in MAT 085. It is appropriate for students who have taken MAT 085 or who have had an elementary algebra course in high school. It will prepare students for MAT 125, MAT130, 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+. MAT 100A covers the same topics as MAT 100 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 244-300 or a Next-Generation Accuplacer Advanced Algebra and Functions Test score of 0-236.

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. Solve linear and literal equations and apply techniques to 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

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
3. 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
4. Evaluate and simplify functions using function notation.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
5. Understand and use the Cartesian coordinate system for graphing lines with emphasis on: vertical and horizontal lines, x and y – intercepts, and slope.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
6. Compute the addition, subtract, and multiplication of polynomial functions.	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 through various methods including the quadratic formula.	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 or approximate square roots with a calculator 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. Graph quadratic functions that model real-world applications.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
10. Apply properties of exponents.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator Homework Quizzes Projects	Exams Quizzes Homework Projects
11. 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
12. 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

13. 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
14. 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 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. 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. (2017). *Intermediate Algebra.* Hayden MCN

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: Mark Roche Date: 3/10/2019
VPAA/Provost or designee Compliance Verification: 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.