MAT 171 – PreCalculus Algebra
McDowell Technical Community
College Summer Semester 2018

Course: MAT-171: PreCalculus Algebra
Instructor: Kory Illenye
Semester Hours: 4 credit hours
ARC: As Requested
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Text: Biltzer, Robert; *Algebra and Trigonometry*, 6th edition, Pearson.

Calculator: Scientific Calculator (2-line display preferred) – **GRAPHING CALCULATOR IS NOT ALLOWED.** Suggestions: TI 30 II, Casio fx-300MS, fx-115MS, fx-300ES, or fx-115MS, Sharp EL-520W

Special Needs: Any students in this course who have a documented disability which may prevent them from fully demonstrating their abilities should contact the Special Needs Counselor, Kim Ledbetter in Student Services immediately (652-0602). The Special Needs Counselor will collaborate with the student and instructor to discuss what, if any, reasonable accommodations may be necessary to complete the course requirements.

Course Description: This course is designed to develop topics which are fundamental to the study of Calculus. Emphasis is placed on solving equations and inequalities, solving systems of equations and inequalities, and analysis of functions
(absolute value, radical, polynomial, rational, exponential, and logarithmic) in multiple representations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to algebra-related problems with and without technology.

Course Objectives: PreCalculus Algebra, followed by Trigonometry, is designed to prepare students in the College Transfer or General Education curriculums for higher level math courses (Calculus) or to fulfill their general education requirements for transfer to a four year college.

Learning Outcomes: Upon completion of this course, the student will be able to demonstrate the technological skills needed to advance academic and personal pursuits and to apply a set of analytical and problem-solving skills to real world situations.

Competencies/Student Learning Outcomes

1. Use analytical, graphical, and numerical representations to solve absolute value, radical, polynomial, rational, exponential, and logarithmic equations with both real and complex solutions.
2. Use analytical, graphical, and numerical representations to solve absolute value, polynomial and rational inequalities with real solutions.
3. Use analytical, graphical, and numerical representations to analyze absolute values, radical, polynomial, rational, exponential, and logarithmic functions with both real and complex zeros.
4. Use multiple methods to solve problems involving systems of equations and apply to decomposing partial fractions.
5. Construct the composition and inverse of functions.

6. Use polynomial, exponential, and logarithmic functions to model various real world situations in order to analyze, draw conclusions, and make predictions.

Method of Instruction: Instruction will be presented in lecture form with a portion of the class period devoted to student problem solving. MyMathLab will be used for a portion of the homework. Projects and Labs will be disseminated in class.

Method of Evaluation: There will be five tests and a cumulative final exam. A percentage of your grade will also come from completing homework assignments. There will be homework assignments from the book, which means that you must be in attendance to have it in on the date due, and there will be homework assignments in MyMathLab. The lab portion of the class will involve individual lab assignments and group projects, and each will also make up a percentage of the final grade. The final grade will be determined according to a 10 point scale, 90 – 100 A, 80 – 89 B, 70 – 79 C, 60 – 69 D, and 59 and below F.

Grading Procedures:
The final numerical grade will be determined as follows:

Individual Lab Assignments:	15%
Written Homework/Quizzes:	5%
MyMathLab Homework:	25%
Tests:	40%
Final Exam:	15%

LAB:

Group Projects: Group projects will be assigned in class. The requirements and rubric will be given explicitly with the Project. Student(s) will complete the project, write a summary, and turn in one project for the entire group by the due date.

Individual Lab Assignment: Approximately each week, students will be given a one or two question lab assignment. There may be some class time spent on the assignment, if possible. The assignment will be turned in the next week, as stated by the instructor. These grades will be averaged and will count as 15% of the final grade.

CLASS:

Tests/Final Exam:

1. There will be five tests during the semester. There will be a comprehensive final exam that will cover all the course material. The tests will be are all weighted equally and make up 40% of the overall grade.
2. If a student makes a higher grade on the final exam than on a previous test. The lowest test score will be averaged with the final exam score and replaced by the new score. (If you score a 60, 80, 94, 82, and 73 on the tests and a 92 on the final exam, the test score of 60 will be replaced with a 76.)
3. If you know that you will not be here, then inform the instructor and an alternative test date will be created.
4. A student may not make up more than one test.

Homework:

1. Written homework will be accessed at the beginning of each class as either complete, incomplete or did not attempt (DNA). Complete means you gave an honest attempt to complete all assigned written homework. Incomplete means you attempted some problems but not all. DNA means you did not attempt any problems. All work must be shown for credit.

Grade Scale:

   a. Complete – 5 points
   b. Incomplete – 1 to 3 points
   c. DNA – 0 points

2. Mymathlab assignments have assigned due dates in course. You will be able to see the due date on the calendar provided as well. These are graded exercises and will return the appropriate grade for each assignment.

Attendance:

Students are expected to attend and be on time for all classes. A student who is absent for five consecutive classes or two consecutive weeks of classes will be administratively withdrawn for class and will receive a grade of W if the withdrawal date is prior to the 30% point of the course. If the withdrawal date is after the 30% point, a grade of either WP or WF will be given depending on whether the student was passing or failing the class at the time of withdrawal.

A student whose absences exceed 20% (6 classes) of the total scheduled classes will receive a grade according to the procedure above.

Tardiness will not be tolerated. Two instances of tardiness will constitute one absence.

Disruption of Class:

Students whose behavior is disruptive to the learning process will be warned by the instructor. If a student persists with problematic behavior, the student will be asked to leave the class and will be removed from the class roll. Students must keep all devices such as cellular phones, beepers, two-way radios, etc. turned off during class time. If a student has special circumstances, they are responsible for getting an exception to this policy.

Course Outline

I. Basic Algebraic Operations
   A. Algebra and Real Numbers
   B. Polynomials: Basic Operations
   C. Polynomials: Factoring
   D. Rational Expressions: Basic Operations
   E. Integer Exponents
   F. Rational Exponents
   G. Radicals

II. Equations and Inequalities
    A. Linear Equations and Applications
    B. Systems of Linear Equations and Applications
    C. Linear Inequalities
    D. Absolute Values in Equations and Inequalities
    E. Complex Numbers
    F. Quadratic Equations and Applications
    G. Equations Reducible to Quadratic Form

III. Graphs and Functions
    A. Functions
    B. Linear Functions
    C. Graphing Functions
    D. Combining Functions
    E. Inverse Functions

IV. Polynomial and Rational Functions
    A. Polynomial Functions and Graphs
    B. Finding Rational Zeros of Polynomials
    C. Approximating Real Zeros of Polynomials
    D. Rational Functions
    E. Direct and Indirect Variation

V. Exponential and Logarithmic Functions
    A. Exponential Functions
    B. The Exponential Function with Base e
    C. Logarithmic Functions
    D. Common and Natural Logarithms
    E. Exponential and Logarithmic Equations

VI. Systems of Equations and Inequalities
    A. Systems of Equations in 3 Variables
    B. Partial Fractions
    C. Circles; Systems of Inequalities
    D. Linear Programming