Department of Mathematics

Last Day to Drop or Withdraw from Classes: Check Academic Calendar or contact Records Office

MATH 1710 Precalculus Algebra

Credit Hours

3 credit hours

Course Description

Topics include circles, functions and graphs with applications,, polynomial and rational functions, exponential and logarithmic functions and applications, sequences and series, systems of equations, matrices, determinants, Binomial Theorem.

Prerequisite Course(s)

Two years of high school algebra and acceptable placement score, ACT 21 or above, or MATH 1030

Required Text Bundle

Precalculus: Enhanced with Graphing Utilities: Jackson State Second Custom Edition, based on Sullivan, 6e, packaged w/ MyMathLab. This bundle is available only in the JSCC Bookstore or at one of the JSCC centers.
MML homework requires an internet connection. (NOTE: Some tablets will not effectively run the MML software.)

Other materials required

TI graphing calculator required. TI-83/84 preferred. No CAS calculators allowed.

Grading Scale

The following is the required grading scale for this course:

90 – 100%	A
80 – 89.9%	B
70 – 79.9%	C
60 – 69.9%	D
Below 60%	F

Grading Components

The following are the minimum required grade components for this course:

Common MyMathLab Homework	15%
Tests/Quizzes	70% (Final must count a minimum of 25%)
Misc (Can be included in above grade items)	15%
Total	**100%**

Academic Honesty

Acts of academic dishonesty are serious offences at JSCC. Suspension from the college could be the consequence for any act of dishonesty. No form of cheating will be tolerated. See the JSCC catalog for additional information.

Prerequisite Competencies

It is expected that students have mastery of these prerequisite competencies. These topics will not be covered during class time. If assistance is needed regarding these topics, please use the services and materials provided by the Academic Assistance Center and Math Learning Center.

Competencies include but are not limited to:

- Perform the basic operations (addition, subtraction, multiplication, and division) on algebraic expressions and real numbers.
- Evaluate algebraic expressions including positive and negative exponents, fractional exponents, and absolute value.
- Solve linear equations, literal equations, quadratic equations (by The Method of Factoring and by The Quadratic Formula Method), fractional equations, and equations involving radicals.
- Solve linear and nonlinear inequalities in one variable.
- Solve systems of linear equations in two variables by The Addition Method of Elimination and/or The Substitution Method of Elimination.
- Graph a line given its equation.
- Find the axis of symmetry and vertex of a parabola and sketch its graph.
- Write a set of real numbers in interval notation, and vice versa.
- Simplify rational expressions and complex fractions.
- Identify the key elements in an application problem, and set up an appropriate equation or system of equations to represent the situation.

Exit Competencies:

Upon successful completion of this course, a student will demonstrate comprehension and application of the following competencies.

- Graph equations by plotting points/tables; Find intercepts graphically and algebraically
- Write the standard form of the equation of a circle, graph and identify its intercepts, radius and center and change from general form to standard form using completing the square process
- Determine domain and range from a graph, express in interval notation, and determine if the graph is the graph of a function
- Determine domain from the equation of a function.
- Interpret functional notation (including the difference quotient, operation of functions and composition of functions)
- Graph given relations including piece-defined functions
- Evaluate piece-defined functions for given values
- Determine if a function is one-to-one and find the inverse of a one-to-one function
- Solve application problems involving functions to include finding average rates of change
- From a graph, determine local maximums/minimums, increasing/decreasing intervals and zeros
- Build linear and quadratic models from sets of data.
- Graph exponential and logarithmic functions; Solve exponential and logarithmic equations
- Find the value of a logarithm using the change of base theorem
- Solve application problems involving exponential/logarithmic functions
- Use synthetic division to find the quotient and remainder if a given polynomial is divided by $(x-c)$, where c is a rational number
- Use synthetic division and the Remainder Theorem to find P(c), for a given polynomial, P(x) and a given rational number, c
- Use the Rational Zeroes Theorem to find the zeroes of a given polynomial and the Factor Theorem to factor a polynomial over the rational numbers
- Find the solutions to a given polynomial equation over the complex numbers (3rd and 4th degree)
- Relate zeroes of even and odd multiplicity to corresponding graphs and to equations in factored form
- Find vertical and horizontal asymptotes and use them to help graph rational functions
- Find x and y intercepts of rational functions
- Utilize sequence notation and summation notation
- Determine if a sequence is geometric and then find its formula and sum; Determine if a geometric sequence/series converges or diverges
- Find the sum of infinite convergent geometric series

- Solve a system of linear equations in two and three variables using the substitution/elimination method and Cramer's Rule
- Solve systems of linear equations using augmented matrices and Row Reduced Echelon Form
- Identify inconsistent systems and give complete solutions of dependent linear system
- Perform the basic operations of matrix addition, subtraction, scalar multiplication, and matrix multiplication of given matrices
- Use expansion of minors/cofactors to evaluate determinants of order two and three
- Find the solution to a non-linear system of equations
- Compute binomial coefficient, calculate terms of a binomial expansion using the Binomial Theorem
- Solve application problems involving the above topics utilizing the graphing calculator when applicable.

Writing Competency – None

Support Facilities

Most JSCC math courses are supported with tutoring during the Fall and Spring semesters. See your instructor for specific tutoring opportunities available at JSCC. We also offer a 24/7 tutoring service through SMARTHINKING.com. Tutoring is also available from MML through the publisher, Pearson (see the insert in book). These facilities are not a substitute for attending class. Math tutors are not allowed to introduce new material to a student. If a class must be missed, the student must obtain class notes BEFORE seeking tutoring for the missed material.

ADA

Jackson State will make reasonable accommodations for students with documented disabilities. Students should notify their instructor and Linda Nickell, Dean of Students, in the Counseling Office, Room 139 of the Student Union Building. The contact number is 425-2616 and the email is lnickell@jscc.edu. Instructors should be notified the first week of class. All discussions remain confidential.