Course Outline

2026-2027 Catalog

MATH 26s - College Algebra with Support

Catalog Description

Transfer Status: CSU/UC

Prerequisite: Intermediate Algebra or equivalent

Unit(s): 4.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)
Activity: 68.00 Contact hours/34.00 Out of class hours/102.00 Total hours/2.00 Unit(s)
Total: 102.00 Contact hours/102.00 Out of class hours/204.00 Total hours/4.00 Unit(s)

Course Description: This course covers advanced algebra concepts beyond the scope of Intermediate Algebra. The topics include algebraic simplifying, conics, theory and solution of equations and inequalities, systems of equations, linear functions, exponential and logarithmic functions, polynomial and rational functions, binomial expansion and partial fractions. The course is specifically designed for preparation for first semester Calculus (MATH C2210). This course will contain the same curriculum as MATH 26 but will also have embedded support to review key intermediate algebra concepts. This course emphasizes in-class activities and applications.

Objectives

Upon successful completion of this course, the student should be able to:

1. Solve polynomial, rational, radical, logarithmic, and exponential equations, and polynomial inequalities.
2. Perform the four basic operations on real and complex numbers, polynomials, functions, rational expressions, and radical expressions.
3. Graph linear, quadratic, polynomial, and rational equations, and the conics, showing all asymptotes when appropriate and applying polynomial theory when necessary.
4. Expand binomials using the Binomial Expansion Formula and perform partial fraction decomposition.
5. Solve a variety of linear and non-linear systems of equations
6. Solve applications using linear and quadratic equations, conic sections, and logarithms.
7. Factor polynomials into irreducible form.
8. Evaluate, graph, and find the domain, range and inverse of a wide variety of functions including, but not limited to, exponential, logarithmic, and piece-wise functions.
9. Factor trinomials by using the greatest common factor.
10. Use the four basic operations on rational and irrational numbers.

Course Content

Topic Titles / Suggested Time Topic

Lecture/Activity

Topics	Lec Hrs	Act Hrs
Expressions including binomial expansion and partial fractions	6.00	12.00
Graphing equations including lines and conics	6.00	12.00
Functions	5.00	10.00
Solving equations	5.00	10.00
Logarithms and exponents	5.00	10.00
Systems of equations	2.00	5.00
Polynomials including finding zeros and graphing	5.00	9.00
Total Hours:	**34.00**	**68.00**

Methods of Instruction

A. Class Activities
B. Collaborative Group Work
C. Homework: Students are required to complete one hour of outside-of-class homework for every two hours of activity
D. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
E. Lecture

Methods of Evaluation

A. Exams/Tests
B. Quizzes
C. Portfolios

D. Projects
E. Homework
F. Class participation
G. Class Assignments and Class Response, Daily Homework Assignments, where the student will demonstrate problem-solving skills

Examples of Assignments

Reading Assignments

1. Read the section in the textbook on Partial Fraction Decomposition and be able to break down a rational expression into a sum of simpler rational expressions that have either constant numerators, or numerators that are linear expressions of the form Ax + B.
2. Read the section in the textbook on Transformations and be able to graph functions whose equations can be derived by transforming one of the six basic functions: y = x, y =|x|, y = x^2, y = x^3, y = sqrt(x), and y = 1/x.

Writing Assignments

1. Explain the procedure to follow for identifying holes and asymptotes of the graph of a rational function. Be sure to discuss how to tell if a zero of the denominator of a rational function - call it C - is the x-coordinate of a hole, or if the equation x = C is the equation of a vertical asymptote. Assume you are explaining this to a group of students hearing this for the first time and write a detailed explanation.
2. Given a polynomial function of degree n, explain the procedure to follow for finding its zeros. Be sure to discuss the relationship between the zeros and the x-intercepts of the function, as well as how to tell if the graph of the function crosses the x-axis or simply touches it. Further, explain how the Leading Coefficient Test can be used to describe the behavior of the function as x approaches infinity from both the left and the right.

Out-of-Class Assignments

1. Review the section on Transformations and do the problems assigned by the instructor, showing your work.
2. Review the section on Parabolas and do the problems assigned by the instructor, show all your work.

Recommended Materials of Instruction

Naraswimhan, R. (2018). College Algebra: Building Concepts and Connections. *XYZ Textbooks, 2nd.* 9781630981679.

Minimum Qualifications

Mathematics (Masters Required)

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Date: 05/02/2022