

Dakota County Technical College

MATS 1300: College Algebra

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:

This course requires either of these prerequisite categories

1. MATS 0600 - Intermediate Algebra

Or

2. Both of these

A score of 50 on test Accuplacer College Level Math

A score of 76 on test Accuplacer Elementary Algebra

Corequisites: MATS 1320

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

This course develops a student's ability to analyze and work with functions and graphs, as part of the preparation for a rigorous calculus sequence (taking this course together with MATS1320 is equivalent to precalculus). Topics include tests for symmetry, finding intercepts and asymptotes, constructing piece wise-defined functions, transformations, polynomial and rational functions, composite and inverse functions, and exponential and logarithmic functions. Techniques for solving linear, quadratic, rational, radical, exponential and logarithmic equations (with applications) are emphasized throughout the course. Systems of linear equations and matrix algebra are introduced, after which sequences and series are also briefly introduced.

Meets MnTC Goal 4

B. COURSE EFFECTIVE DATES: 06/01/2000 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. review factoring of polynomials
2. review polynomial division
3. review rational expressions
4. review nth roots and rational exponents
5. solve linear equations
6. solve quadratic equations
7. solve quadratic equations in the complex number system
8. solve radical equations
9. solve factorable equations
10. solve equations in quadratic form
11. solve inequalities
12. solve equations and inequalities involving absolute value
13. solve word problems involving interest
14. solve word problems involving mixtures and percent mixtures
15. solve word problems involving uniform motion
16. solve word problems involving constant-rate jobs
17. apply methods of analytic geometry to prove that a triangle is right, isosceles, or equilateral
18. work with equations of circles in both standard and general form
19. find equations of lines under various geometric constraints
20. solve variation problems
21. define function
22. memorize the properties of a basic library of functions
23. construct piecewise-defined functions
24. apply shifting, reflection, and compressing/stretching transformations to functions
25. analyze quadratic functions and models
26. analyze graphs of polynomial functions
27. analyze graphs of rational functions
28. solve polynomial and rational inequalities
29. find the real and complex zeros of a polynomial function
30. state the Fundamental Theorem of Algebra
31. construct composite functions
32. construct inverse functions
33. analyze the graphs of exponential functions
34. analyze the graphs of logarithmic functions
35. work with fundamental properties of logarithms
36. solve exponential and logarithmic equations
37. solve problems involving exponential growth and decay
38. solve systems of linear equations by substitution and elimination
39. perform matrix algebra
40. find formulas for arithmetic and geometric sequences
41. find sums of arithmetic and geometric sequences
42. use mathematical induction to construct basic proofs

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 04 - Mathematical/Logical Reasoning

1. Clearly express mathematical/logical ideas in writing.
2. Explain what constitutes a valid mathematical/logical argument(proof).
3. Apply higher-order problem-solving and/or modeling strategies.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted