

# Inver Hills Community College

## MATH 1118: College Algebra I

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: 0

OJT Hours/Week: \*.\*

Prerequisites:

This course requires any of these 10 prerequisite categories

1. MATH 0880 - Intensive Introductory and Intermediate Algebra (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

Or

2. MATH 0940 - Intermediate Algebra (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

Or

3. A score of 22 on test ACT Math

Or

4. A score of 50 on test Accuplacer College Level Math

Or

5. A score of 8 on test ACCP local Math History

Or

6. A score of 530 on test SAT Math Composite

Or

7. A score of 1158 on test MN Comprehensive Assessment Math

Or

8. A score of 250 on test Accuplacer NG Advanced Algebra Functions

Or

9. A score of 250 on test Accuplacer NG COMP Advanced Algebra Func

Or

10. A score of 2.8 on test Mathematics GPA

Corequisites: MATH 0118

MnTC Goals: Goal 02 - Critical Thinking, Goal 04 - Mathematical/Logical Reasoning

Prepares students for Calculus I (MATH 1133) when taken in sequence with MATH 1119 or for Survey of Calculus (MATH 1120). Topics include the study of algebraic, exponential, and logarithmic functions; graphing functions using transformations; inverse functions; polynomial, exponential, logarithmic equations; systems of linear and non-linear equations; applied problems; building models from data. Use of technology will be embedded throughout the course. Recommendation based on the results of the Inver Hills Assessment Test or grade of C or higher in MATH 0940 or MATH 0880 within the last 2 years.

**B. COURSE EFFECTIVE DATES:** 01/01/1998 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Graphing functions using transformations 20%
2. Characteristics of functions and the algebra of functions 20%
3. Polynomial & rational functions, eq'ns, inequalities, graphs, & applied problems 20%
4. Exponential and logarithmic functions, equations, graphs, and applied problems 20%
5. Systems of linear and non-linear equations 10%
6. Analyze data and use technology to find functions which best describe the data 10%
7. Use of technology will be embedded throughout the course.

## **D. LEARNING OUTCOMES (General)**

1. Demonstrate an understanding of functions and characteristics of functions such as domain, range, intervals of increase and decrease, asymptotes, intercepts, average rate of change over a given interval, and symmetry. Students will investigate these characteristics from both analytical and graphical perspectives.
2. Graph absolute value, reciprocal, square root, greatest integer, rational, exponential, and logarithmic functions using transformations; graph piecewise defined functions; graph polynomials by finding and using the zeros and their multiplicities.
3. Perform the algebra of functions: sum, difference, product, quotient, and composition.
4. Find the inverse of a one to one function.
5. Solve polynomial, exponential, and logarithmic equations.
6. Solve applied problems involving compound interest, exponential growth and decay, logistic growth, and extrema of quadratic functions.
7. Solve polynomial and rational inequalities.
8. Solve systems of linear and non-linear equations.
9. Use technology to analyze graphs, solve applied problems, solve systems of linear equations, and analyze data to find functions which best describe the data.

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

### Goal 02 - Critical Thinking

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
4. Recognize and articulate the value assumptions which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

### Goal 04 - Mathematical/Logical Reasoning

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

## **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

## **G. SPECIAL INFORMATION**

None noted