

JEFFERSON COLLEGE
COURSE SYLLABUS

MTH134H
HONORS COLLEGE ALGEBRA

3 Credit Hours

Prepared by:
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MTH134H Honors College Algebra

I. CATALOG DESCRIPTION

- A. Course pre-requisites/co-requisites: Honors Program admission and COMPASS Algebra score of at least 66, College Algebra score of at least 31 within the past two years, ACT math score of 22 or higher within the past two years, or MTH128 with a grade of “C” or better, or MTH110 with a grade of “C” or better, and reading proficiency
- B. 3 semester credit hours
- C. Honors College Algebra consists of several non-sequential algebraic topics. The student will actively explore these topics within the realms of both the real number system and the complex number system through discussion and presentations. This course will meet the requirement for the Associate of Arts Degree. Students may only apply one of MTH134H, MTH134, or MTH141 toward graduation. A graphing calculator is required; calculators with computer algebra systems are prohibited. (D)
- D. Fulfills Mathematical Sciences CORE requirement for AA, AAT, AFA, and select AAS degrees; MOTR MATH 130 Pre-Calculus Algebra equivalent.
Fulfills part of Honors Certificate/Diploma requirement.
Elective course applies toward AA and AAT degree requirement.

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Note: each of the following learning outcomes will be measured on at least one in-class exam, but instructors are encouraged to assess them with additional measures including homework, quizzes, and/or projects

Expected Learning Outcomes	Assessment Measures
Graph with and without a calculator and will recognize and use transformations in graphing. Students will further be able to determine intercepts and relative extreme using the calculator	Class discussion/practice, homework, quizzes/tests, and project
Appropriately apply algebraic techniques to solve linear, rational, quadratic, quadratic type and radical equations and related applications. Students will also be able to solve and verify solutions to equations graphically using the calculator	Class discussion/practice, homework, quizzes/tests, and project

Appropriately apply distance, midpoint, and circle formulas, and will be able to determine the equation of a circle given information about it	Class discussion/practice, homework, and quizzes/tests
Identify, describe, evaluate, and analyze functions, and will use functions to solve application problems	Class discussion/practice, homework, quizzes/tests, and project
Use a calculator to determine the most appropriate regression equation to model given data and will use the model to make predictions	Class discussion/practice, homework quizzes/tests, and project
Analyze exponential and logarithmic functions and will apply them appropriately	Class discussion/practice, homework quizzes/tests, and project
Solve linear systems of equations by applying various algebraic methods and will use systems to solve application problems	Class discussion/practice, homework quizzes/tests, and project
Analyze matrices and their properties and apply them to systems of equations, using the calculator to obtain a reduced row-echelon matrix	Class discussion/practice, homework, and quizzes/tests

III. OUTLINE OF TOPICS

- A. Graphs, functions, and models
 - 1. Introduction to graphing
 - 2. Functions and graphs
 - 3. Linear functions, slope, and applications
 - 4. Equations of lines and modeling
 - 5. Linear equations, functions, zeros, and applications
 - 6. Solving linear inequalities

- B. More on functions
 - 1. Increasing, decreasing, and piecewise, functions; applications
 - 2. The algebra of functions
 - 3. The composition of functions
 - 4. Symmetry and transformations
 - 5. Variation and applications (optional)

- C. Quadratic functions and equations; inequalities
 - 1. The complex numbers
 - 2. Quadratic equations, functions, zeros, and models
 - 3. Analyzing graphs of quadratic functions
 - 4. Solving rational equations and radical equations
 - 5. Solving equations and inequalities with absolute value

- D. Polynomial and rational functions
 - 1. Polynomial functions and modeling
 - 2. Graphing polynomial functions

3. Polynomial division; the remainder and factor theorems
 4. Theorems about zeros of polynomial functions
 5. Rational functions (optional)
 6. Polynomial inequalities
 7. Rational inequalities (optional)
- E. Exponential and logarithmic functions
1. Inverse functions
 2. Exponential functions and graphs
 3. Logarithmic functions and graphs
 4. Properties of logarithmic functions
 5. Solving exponential and logarithmic equations
 6. Applications and models: growth and decay; compound interest
 7. Systems of linear equations in two variables
 8. Systems of linear equations in three variables
 9. Systems of nonlinear equations in two variables
- F. Systems of equations and matrices
1. Systems of linear equations in two variables
 2. Systems of linear equations in three variables
 3. Matrices and systems of equations

IV. METHODS OF INSTRUCTION

- A. Lecture
- B. Discussion
- C. Student presentations
- D. MyMathLab interactive assignments

V. REQUIRED TEXTBOOKS

- A. Bittinger, Beecher, Ellenbogen, & Penna. *College Algebra: Graphs and Models* (Current Edition). Boston: Pearson.
- B. *MyMathLab – Student Access Kit* (current edition). Boston: Pearson.

VI. REQUIRED MATERIALS

Graphics calculator required (TI-83/84 recommended)

Symbolic manipulating calculators prohibited.

VII. SUPPLEMENTAL REFERENCES

- A. Student Solutions Manual (contained within *MyMathLab*)
- B. Graphing Calculator Manual (contained within *MyMathLab*)
- C. Study plan (contained within *MyMathLab*)

VIII. METHODS OF EVALUATION

- A. Homework 10-20%
- B. Projects and presentations 10-20%
- C. Quizzes 0-20%
- D. Tests 30-60%
- E. Comprehensive final examination 15-25%
- F. Grading Scale
 - 90-100% = A
 - 80-89% = B
 - 70-79% = C
 - 60-69% = D
 - Below 60% = F

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Technology Center 101; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website, <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may

have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.