

JEFFERSON COLLEGE

COURSE SYLLABUS

MTH134

COLLEGE ALGEBRA

3 Credit Hours

Prepared by:
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Revised by:
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November 2016

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MTH134 College Algebra

I. CATALOG DESCRIPTION

- A. Course pre-requisites/co-requisites: ACCUPLACER Elementary Algebra score of 75 or higher, ACCUPLACER College Math score of 20 or higher, COMPASS Algebra score of at least 42, or COMPASS College Algebra score of at least 31 within the past two years, or Math ACT score of 18 or higher within the past two years, or MTH128 Intermediate Algebra with a grade of “C” or better or, MTH110 Introductory Algebra with a grade of “C” or better, or MTH002 Beginning Algebra with a grade of “C” or better, and reading proficiency.

NOTE: Students with ACCUPLACER Elementary Algebra score less than 116, ACCUPLACER College Math score less than 46, COMPASS Algebra score less than 66, COMPASS College Algebra score less than 31, Math ACT score less than 22, or using MTH002 Beginning Algebra as a prerequisite must also enroll in MTH094 Support for College Algebra.

- B. 3 semester credit hours
- C. College Algebra consists of several non-sequential algebraic topics. The student will explore these topics within the realms of both the real number system and the complex number system. This course will meet the requirement for the Associate of Arts Degree. Students may not apply both MTH134 College Algebra and MTH141 Pre-calculus toward graduation. A graphing calculator is required; calculators with computer algebra systems are prohibited. (F, S, Su, O, D)
- D. Fulfills Mathematical Sciences CORE requirement for AA, AAT, AFA, and select AAS degrees; MOTR MATH 130 Pre-Calculus Algebra equivalent. Elective course applies toward AA and AAT degree requirement.

II. EXPECTED LEARNING OUTCOMES/ 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 learning outcomes with additional measures including homework, quizzes, and/or projects.

Expected Learning Outcomes	Assessment Measures
Graph functions; recognize and use transformations in graphing	Class discussion/practice, Homework, Quizzes/Tests, Final Exam
Appropriately apply algebraic techniques to solve linear, rational, quadratic, quadratic type, radical, exponential and logarithmic equations and related applications	Class discussion/practice, Homework, Quizzes/Tests, Final Exam

Appropriately apply distance, midpoint, and circle formulas, and determine the equation of a circle given information about it	Class discussion/practice, Homework, Quizzes/Tests, Final Exam
Identify, describe, evaluate, and analyze functions, and use functions to solve application problems	Class discussion/practice, Homework, Quizzes/Tests, Final Exam
Solve linear systems of equations by applying various algebraic methods and use systems to solve application problems	Class discussion/practice, Homework, Quizzes/Tests, Final Exam
Analyze matrices and their properties and apply them to systems of equations	Class discussion/practice, Homework, Quizzes/Tests, Final Exam

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
 5. Transformations
 6. 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 and radical equations
 5. Solving equations and inequalities with absolute value

- D. Polynomial Functions and Rational Functions
 1. Polynomial functions and modeling
 2. Graphing polynomial functions
 3. Polynomial division; the remainder theorem and the factor theorem
 4. Theorems about zeros of polynomial functions
 5. Rational functions
 6. Polynomial inequalities and rational inequalities

- E. Exponential Functions and Logarithmic Functions
 - 1. Inverse functions
 - 2. Exponential functions and graphs
 - 3. Logarithmic functions and graphs
 - 4. Properties of logarithmic functions
 - 5. Solving exponential equations and logarithmic equations
 - 6. Applications and models: growth and decay; compound interest

- 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
 - 4. Matrix operations (*optional*)
 - 5. Inverses of matrices (*optional*)
 - 6. Determinants and Cramer's rule (*optional*)

- G. Sequences, Series, and Combinatorics
 - 1. Sequences and series (*optional*)
 - 2. Arithmetic sequences and series (*optional*)
 - 3. Geometric sequences and series (*optional*)
 - 4. The binomial theorem (*optional*)

IV. METHOD OF INSTRUCTION

- A. Lecture
- B. Discussion
- C. In-class activities
- D. MyMathLab interactive assignments

V. REQUIRED TEXTBOOK(S)

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

VI. REQUIRED MATERIALS (STUDENT)

MyMathLab Access Code

Calculator – scientific, graphing, or app, at instructor's discretion

VII. SUPPLEMENTAL REFERENCES

- A. Student Solutions Manual (contained within MyMathLab)
- B. Study Plan (contained within MyMathLab)

VIII. METHODS OF EVALUATION (basis for determining grade)

- A. Homework 10-20%
Students will submit homework in MyMathLab but are expected to keep written solutions for all work submitted
Additional problems from the textbook may also be assigned
- B. Class Discussion/Practice: 0-20%
Additional worksheets and projects may be assigned at the discretion of the instructor to reinforce various concepts
- C. Quizzes 0-20%
Both in-class and online quizzes may be used to evaluate mastery of concepts
- D. Tests 30-60%
A minimum of three unit tests will be given, each covering 1-2 chapters of material
Exams may be administered on paper or online
- E. Comprehensive final examination 15-25%
All students will be required to take a comprehensive final exam, the score of which must be included in the final course grade
- 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.

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