JEFFERSON COLLEGE

COURSE SYLLABUS

MTH134

COLLEGE ALGEBRA

3 Credit Hours

Prepared by:
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Revised by:
Constance Kuchar
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Ms. Shirley Davenport, Dean, Arts & Science Education
MTH134 College Algebra

I. CATALOG DESCRIPTION

A. Course pre-requisites/co-requisites: COMPASS Algebra score of at least 66, or COMPASS College Algebra score of at least 31 within the past two years, or Math ACT 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. 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 and MTH141 toward graduation. A graphing calculator is required; calculators with computer algebra systems are prohibited. (F, S, Su, O)

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.

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<tr>
<th>Expected Learning Outcomes</th>
<th>Assessment Measures</th>
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<tr>
<td>Graph with and without a calculator and recognize and use transformations in graphing, and determine intercepts and relative extrema using a calculator</td>
<td>Class discussion/practice, Homework, Quizzes/Tests, Final Exam</td>
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<tr>
<td>Appropriately apply algebraic techniques to solve linear, rational, quadratic, quadratic type and radical equations and related applications, and solve and verify solutions to equations graphically using a calculator</td>
<td>Class discussion/practice, Homework, Quizzes/Tests, Final Exam</td>
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<td>Appropriately apply distance, midpoint, and circle formulas, and determine the equation of a circle given information about it</td>
<td>Class discussion/practice, Homework, Quizzes/Tests, Final Exam</td>
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<tr>
<td>Identify, describe, evaluate, and analyze functions, and use functions to solve application problems</td>
<td>Class discussion/practice, Homework, Quizzes/Tests, Final Exam</td>
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<tr>
<td>Use a calculator to determine the most appropriate regression equation to model given data and use the model to make predictions</td>
<td>Class discussion/practice, Homework, Quizzes/Tests, Final Exam</td>
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Analyze exponential and logarithmic functions and apply them appropriately  
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 using a calculator to obtain a reduced row-echelon matrix  
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 (optional)
   6. Polynomial inequalities (required) and rational inequalities (optional)

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)


VI. REQUIRED MATERIALS (STUDENT)

Graphics calculator required (TI-83/84 recommended)

Symbolic manipulating calculators prohibited
VII. SUPPLEMENTAL REFERENCES (contained within MyMathLab)
   A. Student Solutions Manual
   B. Graphing Calculator Manual
   C. Study Plan

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 (Located in the Library, or by phone at 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

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.