

**Course Syllabus**  
**Clarendon College**  
**Science and Health Division**  
**Fall, 2010**  
**M 1314 College Algebra**  
**3 Credit Hours**

**Instructor:** Frances Schmidt  
**Phone:** (806) 447-5803  
**Office Hours:** Available by appointment  
**Email:** aoschmidt@cebridge.net  
**Text:** Algebra for College Students,  
by Lial, Hornsby, and McGinnis  
6th edition, Addison-Wesley

**Course Description:**

Relations, functions, equations and inequalities, exponents and radicals, mathematical induction, progressions, binomial theorem and probability.

**Statement of Purpose:**

Math 1314 is intended to prepare students for further studies in mathematics and science, to meet the math requirement for an associate degree, and to be a transferable credit to another institution.

**Course Objectives:**

The student should:

1. Know set notation and terminology.
2. Know the relation properties of equality, inequality, addition, multiplication, and distribution.
3. Learn to simplify and perform operations of addition/subtraction, multiplication on polynomials
4. Learn to factor polynomials by recognizing common factors, difference of two squares, perfect square trinomial, sums and differences of two cubes, and grouping.
5. Learn to graph linear equations by using and recognizing the forms of slope-intercept, point-slope, two-point, vertical, parallel, and perpendicular.
6. Learn to solve systems of linear equations by graphing, substitution, and elimination.
7. Learn to graph and solve systems of linear inequalities.
8. Learn strategies to solve word problems with systems of linear equations using concepts from geometry, physics (rate-time equations), chemistry (solution and mixtures) and business.
9. Learn to use the properties of radicals and complex numbers for equality, addition, subtraction, multiplication, division.
10. Learn to solve quadratic equations by factoring, completing the square, the quadratic formula.

11. Learn strategies to solve word problems using quadratic equations.
12. Learn to graph quadratic equations and recognize and use the forms of equations for conic sections (parabola, circle, ellipse, hyperbola).
13. Learn to perform operations on algebraic fractions (reduce, multiply, divide, add, subtract, simplify complex fractions).
14. Learn to solve equations with algebraic fractions and use these methods for word problems using ratios, proportion and variation.
15. Learn to recognize whether a relation is a function, and identify the domain and range, and inverse function.
16. Learn function notation to perform operations of addition, subtraction, multiplication, division and composition with functions
17. Learn to apply the laws of rational exponents. Be able to convert radicals to exponential forms.
18. Learn the basic properties of exponential and logarithmic functions and their graphs.
19. Learn to perform operations on matrices (addition, subtraction, multiplication), and to find the matrix inverse.
20. Learn to solve system of linear equations by using augmented matrix and performing row operations.
21. Learn to solve system of linear equations by finding the matrix inverse of the augmented form.
22. Learn to use Cramer's Rule for determinants to solve systems of equations.
23. Learn and use the notation for sequences, series, summations, factorials, permutations and combinations.
24. Identify arithmetic and geometric sequences and series.
25. Learn the binomial formula and its expansion.
26. Understand the method of proof through mathematical induction.
27. Solve simple problems in probability.

**Methods of Instruction:**

- ≡ Each class period will consist mainly of a lecture using the blackboard to illustrate examples and methods of problem solutions. Students will be encouraged to input during problem solving.
- ≡ A computer connected to a projector will be used to expedite the illustration of some graphs.
- ≡ Students will turn in homework at the beginning of each class period and will be given the opportunity to discuss difficulties with homework problems.
- ≡ The date and topics covered for each quiz will be announced at least one class period prior to quiz.
- ≡ The instructor will be available by appointment for extra help
- ≡ The final exam will encompass the entire course.

**Class Policies:**

- ❖ Absences are discouraged and will affect the student's grade. Two or more absences are considered excessive.
- ❖ It is the student's responsibility to turn in all homework assigned.
- ❖ If the student must miss a quiz, he must contact the instructor (by telephone or email) before the scheduled quiz and request permission to take a make-up test, and arrange a time for the make-up test before the next class period.
- ❖ Cheating is not tolerated and will result in automatic zero.
- ❖ Smoking is not allowed on any school property.

**Grading Policies:**

The student's final course grade will be based on the following percentages:

Five quizzes (each worth 15%)	75%
Homework	5%
Final Exam	20%

A report of semester grades will be mailed to you at your designated street address. Grades and grade points are as follows:

<u>Letter Grade</u>	<u>Numeric Grade</u>	<u>Grade Points</u>
A	90-100	4
B	80-99	3
C	70-79	2
D	60-69	1
F	59 and below	0

**Withdrawal Procedure:**

A student is permitted to drop a course if he/she obtains an official drop slip from the office and has the instructor sign the slip before the 12th class week (the date is stated in the college catalog). Remember, a student is only allowed to drop the same class twice before he/she will be charged triple the tuition amount for taking the class a third time or more.

**Daily Course Schedule:**Week 1 - **Lecture:**

Course introduction.  
 Basic concepts of sets, properties, operations.  
 Solve linear equations in one variable and use in applications.

Week 2 - **Lecture:**

Solve and graph linear and compound inequalities  
 Solve and graph absolute value equations and inequalities

**Quiz# 1**Week 3- **Lecture:**

Graph linear equations and inequalities (all methods).  
 Introduce relations and functions

- Week 4 - **Lecture:**  
Solve linear equations in two and three variables by graphing, elimination, and substitution.  
Word problems.
- Week 5 - **Lecture:**  
Operations on matrices.  
Augmented matrix, inverse matrix, determinants  
Solve linear equations using matrices and determinants.  
**Quiz# 2**
- Week 6 - **Lecture:**  
Laws of integer exponents  
Operations on polynomials.  
Operations and graphs of polynomial functions.  
Factor polynomials (all methods)
- Week 7- **Lecture:**  
Operations on rational expressions and algebraic fractions  
Solve equations with algebraic fractions and use in applications.  
**Quiz # 3.**
- Week 8 - **Lecture:**  
Operations and graphs of radical expressions.
- Week 9- **Lecture:**  
Complex numbers  
Solve quadratic equations (all methods) and use in applications.  
Solve and graph quadratic inequalities
- Week 10 - **Lecture:**  
Operations on functions.  
Graph quadratic functions and use in applications.  
**Quiz # 4**
- Week 11 **Lecture:**  
Inverse functions.  
Exponential and logarithmic functions  
Properties logarithms.  
Solve logarithmic equations.
- Week 12 - **Lecture:**  
Remainder theorem. Factor theorem. Rational Zeroes theorem.  
Graphs of polynomial functions. Graph conic sections.
- Week 13 . **Lecture:**  
Linear programming.  
Sequences and series.
- Week 14 - **Lecture:**  
Binomial Theorem  
Mathematical Induction.  
Probability basics.  
**Quiz #5.**
- Week 15 - Review for final exam.  
**Final exam.**