

# Course Syllabus

## Math 116 - College Algebra

Spring Semester 2003

Sect 03: 1:00 - 1:50 pm, MTRF, S137

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### Text:

*College Algebra, A Graphing Approach, 3rd ed.* Larson, Hostetler, Edwards.  
Copyright 2001, Houghton Mifflin Company. (Required)

### Prerequisite:

The prerequisite is successful completion of Math 098, Intermediate Algebra or sufficient score on a placement exam.

### Course Description:

Mathematics 116, College Algebra, is a concentrated study of the topics traditionally found in College Algebra. The topics include a quick and intense review of the topics from Intermediate Algebra, including algebraic expressions, polynomials, equations, problem solving, complex numbers, and graphing. Major topics include functions, exponential and logarithmic functions, matrices, polynomial equations, inequalities, introduction to analytic geometry, conic sections, systems of equations, mathematical induction, and the binomial expansion theorem.

- Applicable toward graduation where program structure permits.
- Certificate or degree: All certificates, A.A.S., A.L.S., A.A, A.S.
- Group requirement: Mathematics
- Area of Concentration: Not applicable.

### Illinois Articulation Initiative (IAI)

The mathematics component of general education focuses on quantitative reasoning to provide a base for developing a quantitatively literate college graduate. Every college graduate should be able to apply simple mathematical methods to the solution of real-world problems. A quantitatively literate college graduate should be able to:

- interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them;
- represent mathematical information symbolically, visually, numerically, and verbally;
- use arithmetic, algebraic, geometric, and statistical methods to solve problems;
- estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results; and
- recognize the limitations of mathematical and statistical models.

Courses accepted in fulfilling the general education mathematics requirement emphasize the development of the student's capability to do mathematical reasoning and problem solving in settings the college graduate may encounter in the future.

General education mathematics courses should not lead simply to an appreciation of the place of mathematics in society, nor should they be merely mechanical or computational in character.

To accomplish this purpose, students should have at least one course at the lower-division level that emphasizes the foundations of quantitative literacy and, preferably, a second course that solidifies and deepens this foundation to enable the student to internalize these habits of thought.

*Math 116, College Algebra, does NOT satisfy the Illinois Articulation Initiative Definition of a General Education Mathematics Course.*

**Course Objectives:**

The student is expected to: 1) demonstrate an understanding of the concepts related to functions and their inverses. 2) identify and graph quadratic, polynomial, rational, exponential, and logarithmic functions as well as the conic sections; also, demonstrate knowledge of the properties of these functions and relations and apply this knowledge to real world situations. 3) demonstrate proficiency in solving linear and non-linear systems using various algebraic, matrix, and graphical methods. 4) graphically represent the solutions to inequalities and system of inequalities that involve two variables. 5) use appropriate theorems and techniques to locate the roots of second and higher degree polynomial equations. 6) use the notation and formulae associated with arithmetic and geometric sequences and series. 7) demonstrate knowledge of binomial expansion, Pascal's triangle, and combinatorial formulae. 8) use technology appropriately in problem solving and in exploring and developing mathematical concepts.

**Type of Instruction:**

Lecture, discussion, problem solving, and group work will be used. Students are expected to read the material before coming to class and should come to class with a prepared list of questions.

**Attendance Policy:**

Regular attendance is essential for satisfactory completion of this course. If you have excessive absences, you cannot develop to your fullest potential in the course. Students who, because of excessive absences, cannot complete the course successfully, will be administratively dropped from the class at midterm. If a student stops attending after midterm, it is the student's responsibility to withdraw to avoid an "F".

The student is responsible for all assignments, changes in assignments, or other verbal information given in the class, whether in attendance or not.

If a student must miss class, a call to the instructor (RCC's phone system has an answering system) is to be made, or an email message sent.

When a test is going to be missed, the student should contact the instructor ahead of time if at all possible. Under certain circumstances, arrangements can be made to take the test without penalty before the scheduled time. If circumstances arise where arrangements cannot be made ahead of time, the instructor should be notified and a brief explanation of why given by either voice or email. This notification must occur before the next class period begins. At the instructor's discretion, the student may receive a zero, make up the exam with (or without) penalty, or substitute the final exam score for the missed exam.

**Grading Policy:**

There will be several one hour examinations and a comprehensive final examination. Announced and unannounced quizzes may be given. Laboratory and [homework](#) exercises may be used in grading. Collected assignments and missed exams will lose 10% of the grade for each class period late. A grade may be taken on your notebook. Note: Homework is essential to the study of mathematics. Letter grades will be assigned to final adjusted scores as follows: A=90-100%; B=80-89%; C=70-79%; D=60-69%; F=0-59%.

Homework is optional in this class. If the point total for the homework is higher than the lowest test score, the score from the homework will be used to replace that exam score. Only one exam score may be replaced using the homework, and the final exam score may not be replaced.

Consideration will be given to such qualities as attendance, class participation, attentiveness, attitude in class, and cooperation to produce the maximum learning situation for everyone.

Any student who stops attending without dropping will receive a grade of F.

**Notebooks:**

A notebook should be kept which contains every problem worked in class as well as any comments that are appropriate. In general, it should contain everything written on the chalkboard. Be sure to bring your notebook if you come to the instructor or a tutor for help. I strongly urge you to get a three-ring binder to keep your papers in.

**Topics to be covered:**

Algebraic Equations and Inequalities; Functions and Graphs; Polynomial Functions; Graphs and Zeros; Rational Functions and Conic Sections; Exponential and Logarithmic Functions; Systems of Equations and Inequalities; Matrices and Determinants; Sequences and Counting Principles.

**Calculators:**

A [TI-82](#) or TI-83 graphing calculator is required in this course. Calculators may be used to do homework. Calculators may be used on exams and/or quizzes in class unless otherwise announced. If you are purchasing a calculator, consider getting the TI-83 instead of the TI-82.

**Additional Supplies:**

The student should have a red pen, ruler, graph paper, stapler, and paper punch. The student is expected to bring calculators and supplies as needed to class. There will be a paper punch and stapler available in the classroom.

**Additional Help:**

[Office hours](#) will be announced. Anytime I am in my office, feel free to stop and get help. The student is encouraged to seek additional help when the material is not comprehended. Mathematics is a cumulative subject; therefore, getting behind is a very difficult situation for the student.

There are [video tapes](#) for this course on reserve in the Learning Resources Center. If your class(es) leave you puzzled, the Study Assistance Center is a service that Richland Community College offers you free of charge.