



## MAT 114 -70 -- College Algebra

**Course number:** MAT-114-70, 2007 F - Begins on October 15, 2007

**Place/Time:** Wednesday, 6:00-10:00, D224

**INSTRUCTOR:** Larry Sweatman

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### **I. Course Description**

Topics to be covered include real numbers, algebraic expressions, equations and inequalities, functions and their graphs, polynomials, exponential and logarithmic functions, systems of equations. Prerequisite: one and one-half years of high school algebra or MAT 099 and one year of plane geometry. *Credit hours: 3.*

### **II. Textbook and Materials**

Required text: *College Algebra Concepts and Models* by Larson/Hostetler/Hodgkins, Houghton Mifflin, 5<sup>th</sup> edition

Required materials: calculator (a graphing calculator is highly recommended); graph paper

### **III. Mission statement**

The mission of Springfield College in Illinois is to provide students the best liberal arts education in the Ursuline tradition of a nurturing faith-based environment. We prepare students for a life of learning, leadership and service in a diverse world.

### **IV. Goals / Objectives / Outcomes**

A. Goals: For the student to develop the skills and competencies necessary for the understanding of the concepts of mathematics and for the application of these concepts to problems in the world around them.

B. Objectives: Springfield College is committed to preparing students for a life of learning, leadership, and service in a diverse world. The following Common Student Learning Objectives (CSLOs) that were adopted by the College will be addressed:

Content Knowledge (Lifelong Learning)

CK-1. Know and apply the central concepts of the subject matter.

CK-3. Use the technology to enhance learning.

Communication Skills (Lifelong Learning and Leadership)

CS-1. Communicate effectively in oral and written forms.

Problem Solving Skills (Lifelong Learning and Leadership)

PS-1. Use inquiry and collaboration to solve problems.

Social Responsibility (Service and Leadership)

SR-3. Develop good citizenship.

Self-Direction and Personal Growth (Lifelong Learning)

SD-1. Develop a sense of intellectual curiosity.

C. Course Based Student Learning Outcomes: Upon successful completion of this course, students will be able to demonstrate their mastery of the following learning outcomes, addressing the following CSLOs (in parentheses):

CBSLO-1 The student will be able to identify and explain mathematical terminology, notation and symbols used in algebra. (CK-1, CS-1)

CBSLO-2 The student will be able to examine different problem solving strategies. (CK-1, PS-1, SD-1)

CBSLO-3 The student will develop techniques in applying critical thinking and analytic skills in the problem solving process. (CK-1, CK-3, PS-1, SD-1)

CBSLO-4 The student will be able to work with real and complex numbers. (CK-1)

CBSLO-5 The student will be able to solve radical equations, polynomial equations with degree greater than or equal to 2, and exponential and logarithmic equations. (CK-1, PS-1)

CBSLO-6	The student will be able to identify a graph of a function from its corresponding algebraic form. (CK-1, SD-1)
CBSLO-7	The student will be able to work with functions producing graphs, combining functions, and finding inverses. (CK-1, CK-3)
CBSLO-8	The student will be able to solve systems of equations. (CK-1, PS-1)

## V. Teaching Methods

Teaching methods used will vary depending on the material presented. Each class period will start off with solving problems that have caused problems for the students. This will require your participation. After this is complete, new material will be presented in a brief introduction and problem solving exercise. Then the students will be asked to attempt a portion of their homework assignment in order to make sure that understanding is successful. Lecture, discussion, demonstration, individual and group work.

## VI. Course Requirements

**Attendance policy:** An attendance sheet will be provided for you to sign in when attending class. This is a method for me to know who is there and who needs that day's work. I have found that there is a direct correlation between class attendance and success in all courses I will expect you to attend class.

**Homework:** The student will need to turn in the homework for each testing section on the test day. Assignments will be discussed in class so that questions can be answered. In this type of course, much of the homework will be completed in class so that the student can experience the problem solving.

**Chapter Tests:** Chapter tests will be given as seen on the first class schedule. A review sheet will be provided to the test in order for the student to know what topics will be included on the test. For each chapter, there will be one take-home test (50 points) and one in-class test (50 points).

**Final Exam:** The final exam may be comprehensive and will be discussed with the class. The exam will be given during finals week and date and time will set at a later date.

### **Academic Honesty Policy:**

**Plagiarism.** Plagiarism is defined as follows: "The deliberate and knowing presentation of another person's original ideas or creative expressions as one's own. Generally plagiarism is immoral but not illegal. If the expression's creator gives unrestricted permission for its use and the user claims the expression as original, the user commits plagiarism but does not violate copyright laws. If the original expression is copied without permission, the plagiarist may violate copyright laws, even if credit goes to the creator. And if the plagiarism results in material gain, it may be deemed a passing-off activity that violates the Lantham Act." Black's Law Dictionary, 8<sup>th</sup> ed. (2004), p. 1187. [The Lantham Act, 15 U.S.C., is the federal law regulating, and protecting trademarks.] Also useful to establish guidelines for delineating plagiarism is Diana Hacker's definition: "Three different acts are considered plagiarism: (1) failing to cite quotations and borrowed ideas, (2) failing to enclose borrowed language in quotation marks, and (3) failing to put summaries and paraphrases in your own words." (A Writer's Reference, by Diana Hacker, Bedford St. Martin's Press, 2003, page 331.) Some instances of plagiarism may, in fact, be violations of copyright laws and subject to prosecution. The SCI Student Handbook lists plagiarism as a serious breach of conduct standards and will result in disciplinary action.

### Calculators

All calculators used on exams/quizzes are subject to be reviewed by the instructor. Any programs stored in memory may be edited and/or deleted if they contain subject material pertaining to the exam/quiz. Calculators in wireless communication devices will not be used in class on quizzes or exams.

## VII. Means of Evaluation

Here is the grading scale and basis of overall course grade:

Grading Scale:	100% to 90%	A
	89% to 80%	B
	79% to 70%	C
	69% to 60%	D
	Below 60%	E

Homework 10% of total grade.

Chapter tests 70% of total grade.

Final exam 20% of total grade.

**VIII. Topical Course Outline**

Specific sections of Chapters 1, 2, 3, 4, 6 will be covered in this course. See the detailed list attached to this syllabus explaining the sections and the topics/concepts that are in each section.

**IX. Americans with Disabilities Act (ADA)**

Springfield College – Benedictine University provides individuals with disabilities reasonable accommodations to participate in educational programs, activities and services. Students with disabilities requiring accommodations to participate in college-sponsored programs, activities and services or to meet course requirements should contact the Director of the Resource Center as early as possible.

If documentation of the disability (either learning or physical) is not already on file, it may be requested. Once on file, an individual student's disability documentation is shared only at that individual's request and solely with the parties whom the student wishes it shared. Requests are kept confidential and may be made by emailing [jtweedy@sci.edu](mailto:jtweedy@sci.edu) or calling 217.525.1420, extension 291.

**X. Assessment: Classroom Assessment Techniques**

Goals, objectives, and learning outcomes that will be assessed in this class are stated in this syllabus. The instructor will use pre/post tests, minute papers, three question surveys, assignment assessments and/or other Classroom Assessment Techniques as deemed necessary in order to provide continuous improvement of instruction. Students are required to take part in all assessment measures.

**XI. Miscellaneous**

**Academic Honesty**

Academic honesty is expected in this class. Appropriate action will be taken for any acts of dishonesty. Cheating undermines everything that is best in the College, in the class and in you. (SR-3)

**Classroom Behavior**

Students should arrive to the classroom before class begins and leave the classroom only upon the completion of class. If an emergency causes you to enter the classroom after class has begun, please be respectful of the instructor and your classmates. During class, inappropriate talking, note-passing, or other distracting or disrupting behavior will not be tolerated. Cellular phones/electronic devices will be turned off during class. (SR-3, SD-1)

**Recommended Study Methods**

This is a challenging class. You should plan to devote a lot of time to it beginning on the first day. The lectures and the text will complement each other. In class, the essential points will be stressed, the common difficulties exposed, and examples presented. You should not only attend class, but read the relevant sections in the text on the same day that they are covered in class. As you study the text, make a habit of working out the examples. Do the assigned problems. Many of the problems are straightforward, but even the best students should expect to find that attempting some of the problems will be a frustrating experience. If you are having trouble with a problem, put it aside for a while (several hours or a day), and then attempt it again. Most real understanding comes from struggling with the problems. It is part of "doing math." If you are still stuck, ask a classmate or schedule a tutor in the Resource Center or come to office hours and ask me!

**College Algebra (MAT 114 – 70)**  
**Fall 2007**  
**Detailed List of Sections Covered**

**Chapter R1** Fundamental Concepts of Algebra

Section R1.1: Real Numbers: Order and Absolute Value

Section R1.4: Radicals and Rational Exponents

**Chapter R2** Equations and Inequalities

Section R2.3: Quadratic Equations

Section R2.4: The Quadratic Formula

**Chapter 1** Functions and Graphs

Section 1.1: Graphs of Equations

Section 1.2: Lines in the Plane

Section 1.3: Linear Modeling and Direct Variation

Section 1.4: Functions

Section 1.5: Graphs of Functions

Section 1.6: Transformations of Functions

Section 1.7: The Algebra of Functions

Section 1.8: Inverse Functions

**Chapter 2** Polynomial and Rational Functions

Chapter 2.1: Quadratic Functions and Models

Chapter 2.2: Polynomial Functions and Higher Degree

Chapter 2.3: Polynomial Division

Chapter 2.4: Real Zeros of Polynomial Functions

Chapter 2.5: Complex Numbers

Chapter 2.6: The Fundamental Theorem of Algebra

Chapter 2.7: Rational Functions

**Chapter 3** Exponential and Logarithmic Functions

Chapter 3.1 Exponential Functions

Chapter 3.2 Logarithmic Functions

Chapter 3.3 Properties of Logarithms

Chapter 3.4 Solving Exponential and Logarithmic Equations

**Chapter 4** Systems of Equations and Inequalities

Chapter 4.1 Solving Systems Using Substitution

Chapter 4.2 Solving Systems Using Elimination

**Chapter 6** Sequences, Series, and Probability (if time permits)

Chapter 6.1: Sequences and Summation Notation

Chapter 6.2: Arithmetic Sequences and Partial Sums

Chapter 6.3: Geometric Sequences and Series

**Preparation for first session:  
Read pages 1-46 and study examples.**

This syllabus is subject to change at the discretion of the instructor to accommodate instructional and/or student needs. Such changes will be announced to the class at the appropriate time.