

SYLLABUS

Math 122

Fall 2004

Prerequisite: Math 110 (a grade of “C” or better is recommended), or assignment through the Math Placement Test.

Textbook: College Algebra, Enhanced with Graphing Utilities, by M. Sullivan and M. Sullivan III, 3rd Edition, published by Prentice Hall.

Course

Content: Chapters 1-6 and a few selected sections in Chapters R, 8, and 10.
In this course we investigate the mathematics of function families. We will concentrate on properties and solutions of polynomials (including linear, quadratic and higher degree), exponential and logarithmic functions and their connection, and root and rational functions. This includes graphical analysis and mathematical modeling of real life situations with each function family.

Objectives: Math 122 is part of the Mathematical Sciences General Education Foundation Category. Courses in the **Foundations Categories** introduce students to the major areas of human thought and endeavor. These courses present the academic disciplines as different ways of looking at the world, they introduce students to the varied methods used to create knowledge, and they acquaint students with major questions and principles of the field. The pedagogy of the Foundation Categories helps students develop the essential skills of creative and critical thinking, articulate expression and information literacy.

The General Education Skills Goals are to engage in articulate expression through effective writing and speaking, to think critically and creatively, to locate, evaluate, and use information effectively and to integrate different areas of knowledge and view ideas from multiple perspectives.

Math 122 meets these objectives by investigating properties of relations and functions algebraically and graphically and making connections between them. Applications from diverse fields are used to motivate mathematical concepts. We also develop expertise in using technology as a tool to solving problems. We will develop logical reasoning, problem solving, and communicating skills (both oral and written) while furthering the understanding of mathematics.

Calculator: Students will be required to possess and make use of a graphics calculator during the course. The TI-82, TI-83, TI-84 or TI-86 is recommended. I will regularly use the TI-83. Your calculator should be brought to class every day.

Attendance: Regular class attendance is considered an essential part of the students’ educational experience and a requirement for an adequate evaluation of student academic progress. College students, as mature individuals, will recognize that it is essential to attend class regularly. Students are responsible for all material covered and all announcements made during days on which they are absent.

Homework: Homework will be assigned each class period. It is your responsibility to do your homework, it will not be collected. Homework questions will be answered during class as time permits.

Concept Journal A journal will be kept by each student in a spiral notebook separate from classroom notes and regular homework problems. This journal will focus on the concepts we discovered in our daily sessions and will contain selected problems, vocabulary, concept questions, summary of activities and/or a response to an "In your own words" question. Each class session we will discuss what the journal entries will contain for that day. The journal will be worth 50 points.

Quizzes: Short unannounced quizzes and classroom activities worth 15 points each will be given periodically. There will be **no** make-up quizzes given. The best 7 quiz scores will count toward the final grade.

Tests: Three tests, worth 100 points each will be given. No make-up test will be given because of an absence unless the instructor is notified and approves of the absence **prior** to the time the test is given.

Final Exam: The final exam is cumulative and is worth 150 points. It will be given

No make-ups on final exam.

Special Needs: If there is any student in this class who has special needs because of learning, physical or other disability, please contact me or Disability Support Services at 331-2490.

Math Lab: The Math Lab is available for additional support if needed. The Math Lab is located in 2309 Mackinac Hall. Hours are 9 a.m.-9 p.m. Mon-Thur and 9 a.m-3 p.m. on Friday. The service is free and available on a walk-in basis. We ask that you sign-in and sign-out for a record of lab usage.

Final Grade: The course grade will be based on the average of the following grades:

Quizzes	105
3 Tests (100 points each)	300
Journal	50
Final	<u>150</u>
Total	605 points

Grading Scale:

A Range	90-100%
B Range	80-89%
C Range	70-79%
D Range	60-69%
F	less than 60%

+ 's and - 's assigned where appropriate.

Withdrawal: The last day to withdraw is October 22, 2004 at 5 p.m. Students are responsible for all paperwork.

College Algebra Enhanced with Graphing Utilities by Michael Sullivan and Michael Sullivan, III. 3rd Edition.

R. Review.

Real Numbers. Algebra Review. Geometry Review. Integer Exponents. Polynomials. Factoring Polynomials. Rational Expressions. Square Roots; Radicals. Rational Exponents.

1. Graphs.

Rectangular Coordinates; Graphing Utilities. Introduction to Graphing Equations. Solving Equations Using a Graphing Utility; Linear and Quadratic Equations. Setting up Equations; Applications. Radical Equations; Equations Quadratic in Form; Absolute Value Equations. Solving Inequalities. Lines. Circles. Chapter Projects.

2. Linear and Quadratic Functions.

Functions. Linear Functions and Models. Quadratic Functions. Quadratic Models. Chapter Projects. Cumulative Review.

3. Functions and Their Graphs.

Symmetry; Graphing Key Equations. Properties of Functions. Library of Functions; Piecewise-Defined Functions. Graphing Techniques: Transformations. Operations on Functions; Composite Functions. Mathematical Models: Constructing Functions. Chapter Projects. Cumulative Review.

4. Polynomial and Rational Functions.

Power Functions and Models. Polynomial Functions and Models. Rational Functions I. Rational Functions II: Analyzing Graphs. Polynomial and Rational Inequalities. Chapter Projects. Cumulative Review.

5. The Zeros of a Polynomial Function.

Synthetic Division. The Real Zeros of a Polynomial Function. Complex Numbers; Quadratic Equations with a Negative Discriminant. Complex Zeros; Fundamental Theorem of Algebra. Chapter Projects. Cumulative Review.

6. Exponential and Logarithmic Functions.

One-to-One Functions; Inverse Functions. Exponential Functions. Logarithmic Functions. Properties of Logarithms. Logarithmic and Exponential Equations. Compound Interest. Growth and Decay. Exponential, Logarithmic, and Logistic Curve Fitting. Chapter Projects. Cumulative Review.

8. Sequences; Sequences. Arithmetic Sequences. Geometric Sequences; Geometric Series. Chapter Projects. Cumulative Review.

10. Conics.

Systems of Nonlinear Equations. Chapter Projects. Cumulative Review.