

**UNIVERSITY OF TEXAS AT SAN ANTONIO**  
**SYLLABUS**

**COURSE NUMBER AND TITLE:** MAT 1073 - Algebra for Scientists and Engineers

**INSTRUCTOR:**

**REQUIRED TEXT:** College Algebra, by Sullivan, Prentice Hall, 8th ed., 2008  
(Internet MyMathLab package ISBN: 0131349562)

**CALCULATORS:** A graphing calculator is highly recommended.

**CATALOG DESCRIPTION:**

(3-0) 3 hours credit This course is designed to prepare the student for MAT 1093 Precalculus and MAT 1214 Calculus I. Topics include algebraic expressions; equations; inequalities over the real numbers; relations; functions; polynomial and rational functions; logarithmic and exponential functions; systems of linear equations and inequalities; matrices and determinants; complex numbers; sequences; series; binomial expansion; mathematical induction; permutations and combinations (Formerly MTC 1073). (Credit can be earned for only one of the following: MAT 1073, MTC 1073, MAT 1063, MTC 1023 or MAT 1023 ) [TCCN 1314.]

**COURSE PREREQUISITE:**

Satisfactory performance on placement examination.

**COURSE OBJECTIVE:**

This course will provide students an opportunity to master the following concepts and competencies:

1. Algebraically manipulate algebraic expressions.
2. Find slope of a line and write the equation of a line.
3. Write the equations of parallel and perpendicular lines.
4. Solve linear, quadratic, and radical equations and inequalities.
5. Define a function, find the domain and range of a function, and use functional notation.
6. Use graphing techniques to sketch the graph of functions and relations (circles).
7. Be able to use operations involving functions, especially that of the composition of two functions.

8. Be able to find an inverse function when it exists.
9. Find the vertex, intercepts, and axis of symmetry of a parabola.
10. Find the vertical, horizontal, and slant asymptotes of rational functions and sketch the graph of rational functions
11. Solve polynomial, rational, exponential, and logarithmic equations and inequalities.
12. Perform algebraic operations involving matrices to include finding the inverse matrix when it exists.
13. Solve systems of linear equations by using elimination, matrix methods, and Cramer's Rule with determinants
14. Solve systems of linear inequalities.
15. Be able to work with sequences, especially those which are arithmetic or geometric.
16. Be able to understand a proof by Mathematical Induction.
17. Be able to use the Binomial Theorem to expand binomials.
18. Be able to evaluate combinations and permutations.
19. Use the above competencies to solve application problems.

**ASSESSMENT:**

Course grade determination will include at least two major tests and a comprehensive final exam. Homework, projects, quizzes, and class participation may also be considered. Course related work to be accomplished on computers and the internet may be assigned by the instructor and used in determining the final course grade. You will be provided with specific methods of assessment and evaluation by your instructor, plus a tentative schedule of topics which will include test dates.

**EVALUATION:**

**DETERMINATION OF FINAL GRADE:**

**GRADING SCALE:**

EXAM AVG.	45%	100-90 : A
HOMEWORK	30%	89-80 : B
FINAL EXAM	25%	79-70 : C
		69-60 : D
		59-0 : F

**SUPPORT SERVICES:**

Support services, including registration assistance and equipment, are available to students with documented disabilities through Disability Services, M.S. 2.03.18. Students are encouraged to contact that office at 458-4157 to make arrangements for these services.

**UNIVERSITY POLICY ON SCHOLASTIC DISHONESTY:**

Students are expected to be above reproach in scholastic activities. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the University. "Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." Regents' "Rules and Regulations", Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22. Since scholastic dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced.