

MAT 1073.7 - Algebra for Scientists and Engineers

Fall 2016

I. General

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Office Hours: MWF 11:00 – 11:50 am or by appointment

Lecture: MWF 12:00 - 12:50 pm (**Classroom:** MH 2.01.44)

Course Prerequisite: Satisfactory performance on a placement exam.

II. Text, Course Description, and Objectives

College Algebra (10th Edition), Sullivan with ***MyMathLab (REQUIRED) and must be accessed through BLACKBOARD***

Course Description:

This course will cover algebraic expressions, equations, inequalities over the real numbers, relations, functions and graphs, polynomial and rational functions, logarithmic and exponential functions, systems of linear equations and inequalities, matrices and determinants, complex numbers and polynomial, sequences, series, binomial expansion, mathematical induction, permutations, and combinations.

Course Objectives:

To provide students the opportunity to develop algebra skills which are useful in everyday life as well as necessary to pursue further study in the sciences, computer science, engineering, and mathematics. This course is designed to prepare students for MAT 1093 Precalculus and MAT 1214 Calculus I or MAT 1193 Calculus for the Biosciences.

Core Curriculum Component Area Requirements:

(Texas Higher Education Coordinating Board)

Inquiry (knowing what are the appropriate questions that one needs to ask and answer),
Analysis (determining what you know, what is relevant, available mathematical techniques, *et al.*),

Synthesis (organizing information and seeing how it all fits together),

Formulation (creating an appropriate mathematical model),

Evaluation (interpreting the results and reflecting on these results)

Communication (communicating one's understanding of the model and evaluation of results to others in a variety of ways – orally, visually, in written form).

This course may be used to fulfill the Core Curriculum Requirement in Mathematics. Please see the current [Undergraduate Catalog](#) for additional information concerning Core Curriculum Component Area Requirements.

III. Homework

I will assign homework at the publisher's web site, and you must access and complete it via the Internet **through BLACKBOARD**. In general, after this assignment is made, the homework must be completed by midnight on the day specified.

IV. Examinations and Grading Policies

(A) There are three midterm exams and one Final Exam:

Test I (Mon 9/19)

Test II (Mon 10/10)

Test III (Mon 11/7)

Final Fri 12/16 12:30 - 3:00 pm

(B) Your **3 midterm exams count 60%** of your grade;

the **final counts 25%**;

your **homework average counts 10%** (the lowest two homework grades will not be used in the determination of the overall semester grade,

and **project counts 5%**

(C) There is *no* makeup for missed exams or homework. However, if a test is missed for medical or other reasons beyond a student's control (verifiable), then the final exam score may be used to replace the missing test grade.

90 - 100%	A
80 - 89%	B
70 - 79%	C
60 - 69%	D
< 60%	F

V. Attendance

Regular attendance is required and roll is taken. Excessive absences for any reason will not be tolerated.

VI. Miscellaneous

- A. **Examinations:** all examinations are closed book, closed notes. You do not need to bring scratch paper; I will provide space below each question on the test for you to do your work. You should bring a Scantron Form No. 882-E, and pencils to each examination. The use of formula sheets, cell phones, PDA's, and computers is not allowed.
- B. **Calculators:** I encourage you to use a scientific NOT graphing calculator when doing homework. However, any calculator that utilizes a CAS (computer algebra system) and graphing capabilities is not allowed on examinations.
- C. **Class Conduct:** Please turn off all cell phones in class. Try not to talk or whisper to your fellow students when I am talking (since it is distracting to them and me) even if you are excited about a math concept. Try to arrive in class on time and stay the whole class. Do not eat or drink in class (University Policy), listen to music, or the radio. ***Laptops and Tablets may be used in class for note taking only, but not for other purposes.***

D. **Study Hints:** Attend every class. Take notes. Do the homework. Get help early if you are having problems—from me, the math lab, or someone who can help you. Use the tutorial material at the publisher's web site. I will do everything possible to help you learn.

E. **Important Dates:** Recall that a student who drops an individual course after Census Date and on or before the Drop Date (Automatic "W" Date) will automatically receive a grade of "W" in the course. Also the Drop Date is the last date that a student is permitted to drop an individual course. For spring Semester 2016, according to a **new university policy**, the Drop Date for undergraduates is Tue 10/25/16.

VII. University Policy on Dishonesty / The Roadrunner Creed:

<http://utsa.edu/syllabus>

VIII. UTSA Campus Carry Policy:

Pursuant to HOP 9.48, Carrying of Concealed Handguns on Campus, my private office (FLN 4.01.56) is a designated exclusion zone. As set out in Section 30.06, Penal Code (trespass by license holder with a concealed handgun), a person licensed to carry a Concealed Handgun under Subchapter H, Chapter 411 Government Code (handgun licensing law), may not enter this property/office with a concealed handgun.

De conformidad con HOP 9.48, Llevar Armas de Fuego Encubiertas en el Campus, mi oficina privada (FLN 4.01.56) es una zona designada de exclusión. Conforme a la sección 30.06 del código penal (trespasar portando armas de fuego) personas con licencia bajo del sub-capítulo H, capítulo 411, código de gobierno (ley de portar armas), no deben entrar a esta propiedad portando un arma de fuego.

MAT 1073 Algebra for Scientists and Engineers

TEXT: College Algebra (10th Edition)

By: Sullivan

Section	Topic
R	Review
1.1	Linear Equations
1.2	Quadratic Equations
1.3	Complex Numbers; Quadratic Equations in the Complex Number System
1.4	Radical Equations; Equations Quadratic in Form; Factorable Equations
1.5	Solving Inequalities
1.6	Equations and Inequalities Involving Absolute Value
1.7	Problem Solving: Interest, Mixture, Uniform Motion & Constant Rate job App.
2.1	The Distance and Midpoint Formulas
2.2	Graphs of Equations in Two Variables; Intercepts; Symmetry
2.3	Lines
2.4	Circles
3.1	Functions
3.2	The Graph of a Function
3.3	Properties of Functions
3.4	Library of Functions; Piecewise-defined Functions

3.5	Graphing Techniques: Transformations
4.1	Properties of Linear Functions and Linear Models
4.3	Quadratic Functions and Their Properties
4.4	Build Quadratic Models from Verbal Descriptions and from data
4.5	Inequalities Involving Quadratic Functions
5.1	Polynomial Functions and Models
5.2	Properties of Rational Functions
5.3	The Graph of a Rational Functions
5.4	Polynomial and Rational Inequalities
5.5	The Real Zeros of a Polynomial Function
5.6	Complex Zeros; Fundamental Theorem of Algebra
6.1	Composite Functions
6.2	One-to-One Functions; Inverse Functions
6.3	Exponential Functions
6.4	Logarithmic Functions
6.5	Properties of Logarithms
6.6	Logarithmic and Exponential Equations
6.8	Exponential Growth and Decay; Newton's Law; Logistic Models
8.1	Systems of Linear Equations: Substitution and Elimination
8.2	Systems of Linear Systems: Matrices
8.3	System of Linear Equations: Determinants
8.4	Matrix Algebra
8.6	Systems of Nonlinear Equations
8.7	Systems of Inequalities

NOTE: Students are presumed to know the contents of Chapter R, Review. If necessary, students should familiarize themselves with the material. All students must complete review exercise homework online as assigned by the instructor. Additional sections in the text and topics may be added at the discretion of the instructor.