

MATH 1314 -COURSE SYLLABUS
DEPARTMENT OF MATHEMATICS

Course Number and Title: Math 1314 – College Algebra

Instructor: Dr. Tony Lerma
Office Location: SET.B 2.318
Office Phone: (956)882-6669
E-mail: tony.lerma@utb.edu
Office Hours: MW 3:30 – 5:30 p.m.

Office Fax: (956)882-6637
TTh 12:30 – 1:30 p.m.
Others by appointment

Instructor Home Page: <http://blue.utb.edu/alerma>
Dept. Home Page <http://blue.utb.edu/math/>
Dept. Phone: (956)882-6636

Course Description: This is a college level course in algebra. The topics covered in this course include zeros and graphs of polynomial functions; rational functions; inverse functions; exponential functions; logarithmic functions; linear systems of equations in two and three variables; nonlinear systems of equations; second degree inequalities and systems; linear programming; matrices; determinants; solution of linear systems by matrices and determinants; sequences; series; binomial theorem; mathematical induction; permutations; combinations; probability; and application of these topics. Lec 3, Cr 3

Prerequisite: Math 0322 or Math 422 with a minimum grade of C

Course Rationale: The main purpose of this course is to satisfy the general math core requirement and to provide a sound foundation for additional study of mathematics or science courses.

COURSE REQUIREMENTS AND GRADING SYSTEM: Course content will be presented in a lecture-discussion format. One chapter test will be administered every 2 to 3 weeks during the semester. Students will be notified at least one week in advance of all chapter tests. **Online homework** (<http://www.coursecompass.com>) will be assigned for each chapter section covered in class. In addition, pop quizzes over material covered on previous lectures will be administered in class throughout the semester. For information on how to register for your CourseCompass (MyMathlab) homework go to your instructor's home page (<http://blue.utb.edu/alerma>) and click on the "CourseCompass Info" link.

The average of all in-class chapter tests (dropping the lowest) will comprise 40% of the semester grade. The final exam will be comprehensive and will comprise 20% of the semester grade. The average of the online homework will count 30% of the semester grade. The average of the in-class pop quizzes (dropping the lowest two) will count 10% of the semester grade.

Letter grades for the course will be assigned according to the following scale: **A:** 90% - 100% **B:** 80% - 89% **C:** 70% - 79% **D:** 60% - 69% **F:** below 60%

Disability Statement: Students with disabilities, including learning disabilities, who wish to request academic adjustments in this class, should notify the Disability Services Office early in the semester so that appropriate accommodations may be made. In accordance with federal law, a student requesting academic adjustments must provide documentation of his/her disability to the Disability Services Counselor. For more information, call or visit the Counseling Center at Cardenas North 103, (956)-882-8292 or e-mail steve.wilder@utb.edu.

Statement on Academic Dishonesty: Students are expected to be above reproach in all scholastic activities. Students who engage in 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 for any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." Regents' *Rules and Regulations*, Series 50501, Section 2.2

Since scholastic dishonesty harms the individual, all students, and the integrity of the university, policies on scholastic dishonesty are strictly enforced. (Refer to the Student Reference Manual for more information)

Emergency Policy Statement: In compliance with the Emergency UTB/TSC Academic Continuity Program, academic courses, partially or entirely, will be made available on the MyUTBTSC Blackboard course management system. This allows faculty members and students to continue their teaching and learning via MyUTBTSC Blackboard (<http://myutbtsc.blackboard.com>), in case the university shuts down as a result of a hurricane or any other natural disaster. The university will use MyUTBTSC Blackboard to post announcements notifying faculty members and students of their responsibilities as a hurricane approaches our region. If the university is forced to shut down, faculty will notify their students using Blackboard on how to proceed with their course(s). To receive credit for a course, it is the student's responsibility to complete all the requirements for the course. Failure to access course materials once reasonably possible can result in a reduction of your overall grade in the class. To facilitate the completion of classes, most or all the communications between students and the institution, the instructor and fellow classmates will take place using the features in your MyUTBTSC Blackboard and UTB email system. Therefore, all students must use Scorpion Online to provide a current email address. Students may update their email address by following the link titled "Validate your e-Mail Account" in MyUTBTSC Blackboard Portal. In the event of a disaster that disrupts normal operations, all students and faculty must make every effort to access an internet-enabled computer as often as possible to continue the learning process.

TEXTBOOK: *College Algebra*: Lial, Hornsby, & Schneider (9th Edition)

CALCULATOR: A graphics calculator is recommended for this course. A TI-83/84 calculator is recommended.

MAKEUP POLICY: No late assignments will be accepted without the approval of the instructor. No make-up exam will be given to any student who is absent on the day of an exam, unless the absence is the result of a school function or if a documented medical excuse is presented. Students should contact the instructor as soon as possible after missing an exam or if they have any question concerning the course.

ATTENDANCE POLICY: Attendance is an essential requirement of this course and is the responsibility of the student. Class begins promptly and you are expected to be present at the beginning and at the end of each class session to receive full credit for attendance. Students are responsible for all class work and assignments. A student may at anytime be dropped from the course for accumulating **3 unexcused absences.**

IMPORTANT DATES AND NOTES:

- January 31, 2007 is the **deadline** to withdraw without recorded grade.
- April 10, 2007 is the **deadline** to withdraw with a **W**.
- April 30, 2007 is the last class day.
- If you are taking this class to satisfy the general core math requirement or to satisfy a math prerequisite, then you need at least a **C** in the course.
- The Learning Assistance Center (N122) provides tutorial services.
- Students are strongly encouraged to form study groups to help each other with homework or to study for exams.
- Be early, not late for class, focused and ready. Read the textbook and stay ahead of your instructor's lecture.
- Please refrain from leaving class early unless it is absolutely necessary and you have notified your instructor in advance.
- Please **turn off** cellular phones and pagers during class.
- This syllabus is subject to change due to extenuating circumstances.
- Final Exam Date: Actual dates are posted on your instructor's home page, MyUTBTSC Blackboard Portal, and your Coursecompass home page.
- For more information concerning your course, check out the links at MyUTBTSC Course Portal or your CourseCompass course home page.

Course Goals/Objectives

After completing this course the student will be able to:

1. Sketch the graph of polynomial, rational, exponential, and logarithmic functions.
2. Find the zeros of polynomial functions
3. Analyze and discuss the behavior of graphs of polynomial and rational functions.
4. Use synthetic division to find quotients, remainders, and to evaluate polynomial functions.
5. Solve variation problems.
6. Determine the inverse of a 1 to 1 function
7. Evaluate logarithmic functions using a calculator and by applying the definition of logarithm.
8. Use the change-of-base theorem to evaluate logarithms.
9. Solve exponential and logarithmic equations.
10. Solve problems involving models of exponential growth and decay.
11. Solve linear systems of equations in two and three variables using elimination, substitution, determinants (Cramer's Rule), matrix methods, and the graphing calculator.
12. Determine the partial fraction decomposition of a given rational expression.
13. Solve nonlinear systems of equations.
14. Perform basic operations with matrices.
15. Compute the inverse of a matrix if it exists.
16. Sketch the graph of parabolas, ellipses, circles, and hyperbolas and be able to identify the graph from the equation.
17. Determine the n th term of a given sequence.
18. Determine the sum of the first n terms of a given sequence.
19. Determine if a geometric series converges.
20. Write the binomial expansion of a given expression.
21. Use permutations, combinations, and the fundamental principle of counting to solve counting problems.
22. Write the indicated term of a binomial expansion.
23. Use mathematical induction to prove statements involving positive integers.
24. Compute basic probabilities and odds in favor of a given event.
25. Solve a variety of applied problems involving the concepts presented.

TENTATIVE COURSE OUTLINE OF TOPICS COVERED

Introduction and Overview of Course Review (Optional) Pretest (Optional)	Week 1
3.1 Quadratic Functions and Models 3.2 Synthetic Division 3.3 Zeros of Polynomial Functions	Week 2
3.4 Polynomial Functions: Graphs, Applications, and Models 3.5 Rational Functions: Graphs, Applications, and Models 3.6 Variation Test #1	Week 3
4.1 Inverse Functions 4.2 Exponential Functions	Week 4
4.3 Logarithmic Functions 4.4 Evaluating Logarithmic Functions and Change-of-base Theorem 4.5 Exponential and Logarithmic Equations	Week 5
4.6 Applications and Models of Exponential Growth and Decay	Week 6

Test #2	
5.1 Systems of Linear Equations 5.2 Matrix Solution of Linear Systems	Week 7
5.3 Determinant Solution of Linear Systems 5.4 Partial Fractions 5.5 Nonlinear Systems of Equations	Week 8
5.6 Systems of Inequalities and Linear Programming 5.7 Properties of Matrices	Week 9
5.8 Matrix Inverses Test #3	Week 10
6.1 Parabolas 6.2 Ellipses	Week 11
6.3 Hyperbolas 6.4 Summary of the Conic Sections Test #4	Week 12
7.1 Sequences and Series 7.2 Arithmetic Sequences and Series 7.3 Geometric Sequences and Series	Week 13
7.4 Binomial Theorem 7.5 Mathematical Induction	Week 14
7.6 Counting Theory 7.7 Basics of Probability	Week 15
Final Exam	Week 16

Note: This schedule may vary at the discretion of your instructor.