This course satisfies the University of Texas at Arlington core curriculum requirement in mathematics.

Course Meeting Times:
Instructor:
Office:
Phone:
Office Hours:
Email:

From the undergraduate catalog: E-mail is a prime means for communication. Therefore, the University has the right to send communications to students via e-mail and the right to expect that those communications will be received and read in a timely fashion. The Office of Information Technology (OIT) will assign all students an official University e-mail address. It is to this official address that the University will send e-mail communications. Students are expected to check their official e-mail account on a frequent and consistent basis to stay current with University communications. The University recommends checking e-mail daily in recognition that certain communications may be time-critical.

Textbook: Precalculus Custom Edition for the University of Texas at Arlington by Aufmann, Barker and Nation

Course Prerequisite: A sufficient score on the Math Aptitude Test or sufficient SAT/ACT math scores.

Core objectives/signature assignment This course will address three core objectives:

- Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication.
- Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

In order to assess these objectives, each student will complete a signature homework assignment (described at the end of the syllabus) which will count the same and be weighted as a quiz.

Course Objectives and Learning Outcomes: Upon completion of Math 1322:
1. Students will be able to solve problems by applying elementary algebra: properties of the real number system and complex number system, using rules for exponents and radicals, simplifying algebraic expressions, solving equations and inequalities. Students will learn to use correct mathematical notation and emphasis will be placed on clear, coherent written solutions.
2. Students will be able to graph polynomial equations of first and second degree and to explain features of the graphs, such as intercepts, vertex, slope, and line of symmetry. Students will learn proper mathematical graphing conventions.
3. Students will be able to produce the important features of graphs of parabolas by beginning with the simplest form, then using translations and scalings to produce other forms. This will require the tools of algebra, such as factoring and completing the square, to be employed.
4. Students will be able to define a function and determine if an equation represents a function. They will be able to perform operations on functions, such as addition, multiplication, division, and composition. Students will be able to define and find the domain and range of a function.
5. Students will be able to determine the inverse of a function if it exists. In the case that an inverse does not exist, they will be able to explain why. They will be required to use compositions to verify the inverses they find. They will be expected to understand inverse functions graphically, i.e., to produce the graph of an inverse when given the graph of the original function. They will also understand inverse functions numerically, i.e., given a table of ordered pairs belonging to an invertible function, they will be able to produce a corresponding ordered table for the inverse.
6. Students will be able to identify and solve problems involving exponential and logarithmic functions and equations. The importance of exponential and logarithmic functions and equations in science and finance will be emphasized.
7. Students will be able to solve problems involving systems of two equations in two unknowns, using the method of substitution or elimination. Graphical implications of solutions will be emphasized. Students will be asked to apply their knowledge of graphs of lines, circles and parabolas to determine a priori how many solutions are possible for a given system.

Grading Scale: 

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

Grade Components: 

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm 1</td>
<td>20%</td>
</tr>
<tr>
<td>(Friday, February 8, 2013 from 6-8 pm)</td>
<td></td>
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<tr>
<td>Midterm 2</td>
<td>25%</td>
</tr>
<tr>
<td>(Friday, March 22, 2013 from 6-8 pm)</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
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<tr>
<td>(Saturday, May 4, 2013 from 12:30 - 3 pm)</td>
<td></td>
</tr>
<tr>
<td>Homework/Quizzes</td>
<td>20%</td>
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</tbody>
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Midterms and Finals: These exams are departmental, i.e., all sections of Math 1322 will take the same exams and the grades will have the same weight in each section. All of these exams are comprehensive. Each exam will be a mix of multiple choice problems and show-your-work problems.

Any student who scores below 50 on the final exam cannot receive a grade higher than D in the course.
Make-up Policy: If you have a conflict with either midterm or final, you must contact the course coordinator no later than Census Date (January 30), by using a form attached to the coordinator's office door (PKH 448) & submitting it together with necessary documentation as indicated on the form. If a conflict arises after January 30, contact the coordinator immediately. Delays in submitting a make-up request may mean that your request cannot be approved.

Drop Policy: Any student who drops the course on or before Friday, March 29 at 5 PM will receive a W. **Students must consult with their major advisor to drop a course.**

Calculators: The only calculators allowed for the midterms and final are TI-30XA and TI-30XIIS.

If you wish to use a different calculator, then you must get permission to do so **BEFORE an exam.** Only nonprogrammable calculators with basic computational features, such as arithmetic and transcendental functions will be allowed. Calculators with the following features are **NOT** allowed: graphing, equation solving, differentiation and integration. Any device that has internet or e-mail capabilities – this means NO cell phones - and any device with a QWERTY keyboard are also not permitted.

Student Support Services Available: The University of Texas at Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit [www.uta.edu/resources](http://www.uta.edu/resources) for more information.

The Math Department operates the **Math Clinic**, a tutoring service staffed by upper level undergraduate students. The Math Clinic is on the 3rd floor of Pickard Hall; the phone number is 817-272-5674; and the hours of operation for fall and spring are

- Monday – Thursday 8am to 9pm
- Friday 8am to 1pm
- Saturday 1pm to 6pm
- Sunday 1pm to 9pm

Go to the Math Clinic webpage [http://www.uta.edu/math/clinic/](http://www.uta.edu/math/clinic/) to get more information or to access assignment sheets for the courses for which tutoring is offered.

All previous midterm exams and some previous final exams are available to students in the **Science Education and Career Center (SECC)**, 106 Life Science Building. The fall and spring hours of operation are

- Monday-Thursday 8am - 8pm
- Friday 8am - 5pm
- Saturday 12pm - 5pm
- Sunday Closed

You need a Mav ID Card to check out these exams. A copy machine is available for you to make copies. There are also video tapes of lectures on precalculus topics that can be viewed in the SECC. For more information, go to [https://www.uta.edu/cos/SECC/login.php](https://www.uta.edu/cos/SECC/login.php).
You may access recent previous exams online at http://www.uta.edu/faculty/dsmith/precalculus/.

The Math Department maintains a list of people who have expressed an interest in tutoring. These persons are not necessarily recommended by the Math Department and they set their own fees. You may obtain a copy of the tutor list in the Math Office, 478 PKH.

**Americans with Disabilities Act:** The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 - The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.

If you require an accommodation based on disability, I would like to meet with you in the privacy of my office, during the first week of the semester, to make sure you are appropriately accommodated.

**Academic Integrity:** At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but 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 examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts” (UT System Regents’ Rule 50101, §2.2). Suspected violations of academic integrity standards will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**UT Arlington Honor Code**

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will only submit work that I personally create or contribute to group collaborations, and reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

**Grade Replacement and Grade Exclusion Policies:** These policies are described in detail in the University catalog and can also be founded online at http://www.uta.edu/catalog/content/general/academic_regulations.aspx#10 (scroll about half way down the page).

**Student Disruption:** The University reserves the right to impose disciplinary action for an infraction of University policies. For example, engagement in conduct, alone or with others, intended to obstruct, disrupt, or interfere with, or which in fact obstructs, disrupts, or interferes with, any function or activity sponsored, authorized by or participated in by the University.
Drop for Non-Payment of Tuition: If you are dropped from this class for non-payment of tuition, you may secure an Enrollment Loan through the Bursar's Office.

Important Dates:
January 21 - MLK Holiday
January 30 - Census Date
Friday, February 8 - Deadline for makeup requests for all exams
March 11-15 - Midterm 1, 6 – 8 pm
Friday, March 22 - Spring Break
Friday, March 29 - Midterm 2, 6 - 8 pm
Friday, May 3 - Last day to drop a class
Saturday, May 4 - Final Exam, 12:30 - 3 pm

Math 1322
Signature Assignment

Solutions of Two Equations in Two Unknowns involving nonlinear equations (Section 9.3 in current text: Precalculus 7th Ed Custom Edition for University of Texas at Arlington by Aufmann, Barker & Nation)

Students will be assigned a selection of three of the below problems. Upon completion of the problems, the students will answer the reflective prompt: Explain how the mathematical tools you developed for solving systems of linear equations were helpful for solving these problems. Be sure to justify your reasoning. In what ways were the techniques you previously developed for solving systems of linear equations not adequate when applied to systems of nonlinear equations?

Problems:
1, 2 – intersection of a line and a parabola
9 – intersection of a line and a hyperbola
13 – intersection of a parabola and a cubic
19 – intersection of 2 ellipses
27 – intersection of 2 circles
34 - word problems requiring set-up of the system of equations
39 – a system presented graphically (variable expressions describing the dimensions of a rectangle)
41 – the intersection of a circle centered at the origin and a given line. Student must determine how the radius of the circle affects the number of solutions of the system.

The student will be taught that usually substitution is best when nonlinear equations are involved, but he will be encouraged to make a determination as to when elimination might be a better tool (such as problem 27).
Problem 34 will require him to read and understand the description of a problem requiring a system of solutions to solve. A picture has been provided in the text to encourage him to use such tools to aid in translating word descriptions into mathematical form.

Problem 39 and 41 emphasize the importance of the tools of algebra in understanding the concepts of geometry.

Students will be assigned a selection of three of these problems. Upon completion of the problems, the students will answer the reflective prompt: Explain how the mathematical tools you developed for solving systems of linear equations were helpful for solving these problems. Be sure to justify your reasoning. In what ways were the techniques you previously developed for solving systems of linear equations not adequate when applied to systems of nonlinear equations?