

## Preparation for Calculus

Math 1421—110

Fall 2016

**Time:** Monday, Wednesday 5:30 — 6:50 PM

**Instructor:** Prof. Barbara Shipman

**Phone:** (817) 272-2606

**Office Hours:** Monday, Wednesday 2:30 — 3:30 PM

**Course Website:** [www.uta.edu/faculty/shipman](http://www.uta.edu/faculty/shipman) at Student Center, Math 1421

**Faculty Profile:** <https://www.uta.edu/profiles/barbara-shipman>

**MathLabsPlus:** [www.uta.mylabsplus.com](http://www.uta.mylabsplus.com)

Enter Net Id and password, then the access code that you purchased to enter Math 1421.

**Classroom:** Pickard Hall 110

**Office:** Pickard Hall 437

**E-mail:** [bshipman@uta.edu](mailto:bshipman@uta.edu)

**Lab Sections:** 111-LAB at 4:30 PM in PKH 302 and 112-LAB at 7:00 PM in PKH 321

**Graduate Teaching Assistant (GTA)** for the LAB sections: Junwei Sun

**GTA's Office Hours:** Wednesday, Thursday 10—11 AM in Pickard Hall 425

**Undergraduate PAL Assistants:** for LAB 111: Hannah Asberry; for LAB 112: Nathan Pena-Alfaro

**Prerequisite:** C or better in MATH 1301 or MATH 1302 or MATH 1315, or a qualifying score on the Math Placement Test.

**Textbook (required):** Precalculus eText with MyMathLabPlus and Explorations and Notes -- Access Card Package by Eric Schulz, William L. Briggs, & Lyle L. Cochran.

**Calculator (required):** TI-30XA or TI-30XIIS. These are scientific calculators without graphing. They are relatively inexpensive, good value for the price, and will be useful in the course.

**Active Learning Course:** This class is designed to be fun and enjoyable, creative, interactive, and challenging. It will help you to think and learn at a new level that will become a cornerstone for all your future studies. You will be talking with each other about questions in class, working on problems together, contributing to debates and discussions on true/false questions, and presenting your work and reasoning in teams together at the board. Come ready to make every class and every lab a highlight of your day every time ☺

**Course Description:** This course integrates and builds upon concepts and skills from college algebra and trigonometry that are essential to success in calculus. Problem solving activities form the basis for the establishment of these mathematical connections.

**Learning Outcomes:** Upon completion of Math 1421,

- Students will be able to justify and explain their steps in solving problems. In particular, students will be able to construct correct and detailed mathematical arguments to justify their solutions to problems.
- Students will be able communicate their reasoning and solutions to their peers in a clear and engaging way. Students will also be able listen to their peers' reasoning and respond to it in a constructive way.
- Students will demonstrate facility with expressing, applying, and combining functions in tabular, graphical, and symbolic forms.
- Students will be able to identify and analyze the unifying characteristics of functions and their graphs including invariant properties under function transformations, domain and range, asymptotes, zeroes, and end behavior.
- Students will be able to interpret and define the six trigonometric functions, in terms of both right triangles and the unit circle. They will be able to graph trigonometric and inverse trigonometric functions, without the aid of a graphing calculator, by applying the concepts of amplitude, periods and phase shifts. Students will also be able to verify and use trigonometric identities and formulas and to apply them to solve trigonometric equations and word problems, including problems that require solving a triangle.

**Daily Activities:**

- **Monday's Class:** Team presentations of study problems due for the day, followed by interactive lessons and discussions on new problems, concepts, and skills.
- **Monday's Lab:** Work in groups of 2—4 on the problems for presentation and discussion for the next Wednesday's class. The Teaching Assistant will be there to provide hints and suggestions as you work on these problems together. The papers will not be collected. Finish your work outside of lab and bring it to Wednesday's class for presentations.
- **Wednesday's Class:** Team presentations of study problems due for the day, followed by interactive lessons and discussions on new problems, concepts, and skills.
- **Wednesday's Lab:** Skills Review Problems and Problems from the Text – work session with the Graduate Teaching Assistant and PAL. This will be followed by a Quiz. Continue your work outside of lab on the study problems due for presentation and discussion on Monday.

**Grading Scheme:**

Weekly Quizzes:	45%
Final Exam:	35%
Lab Participation and Attendance:	10%
Class Participation, Attendance, and Presentations on Homework and Skills:	10%
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Course average	100%

**All students in Math 1421 must pass the *Calculus Gateway Exam* on or before Friday, December 9 in order to receive a grade above D in the course. See details under *Calculus Gateway Exam* below.**

Your course average determines your final grade, provided that you pass the Calculus Gateway Exam, as described below. A: 90—100%. B: 80—89%. C: 70—79%. D: 60—69%. F: 0—59%. Students are expected to keep track of their performance throughout the semester and seek guidance from available sources and the instructor if their performance drops below a C.

Quizzes will be graded on correctness, completeness, and clarity.

Class and lab participation and attendance and presentations on homework and skills review are graded on your active participation during lab and class meetings (see the simple scoring scheme below). Homework papers will not be collected nor will on-line scores be recorded for a grade. What counts is to be present, be actively engaged, and put in good effort and thought in explaining your reasoning and strategies in solving the problems in teams at the board or during class discussions – here, points are not deducted for mistakes or uncertainty – just be ready to show where you have a question and discuss with your classmates how to resolve it!

**Calculus Gateway Exam:** All students in Math 1421 must pass the Calculus Gateway Exam on or before the last class day in order to receive a grade above D in the course. The Calculus Gateway Exam (CGE) will become available under the “lab” link in MyLabsPlus on November 7. The CGE can be taken anytime during the eligible time period between November 7 and December 9. Students are allowed up to 3 attempts on the CGE, however these attempts can only be used during the eligible time period. The CGE is to be taken outside of class and is subject to University rules on academic dishonesty. You are allowed to use a non-graphing calculator on the CGE, but you may not receive help from any source. Receiving or providing assistance on the CGE will be subject to discipline for academic dishonesty. It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. Discipline may include suspension or expulsion from the University.

**Weekly Quizzes:** A quiz will be given each week in Wednesday's lab. These will take the place of longer midterm exams and will provide you with frequent feedback on your progress. Quizzes are cumulative and may cover any study problems, skills review, material, or readings assigned or discussed up to that point. A missed quiz cannot be made up, and two lowest quiz scores will be dropped.

**Final Exam:** There will be a cumulative final exam on Monday, December 12 from 5:30 – 8 PM in the same room as the class. This is a written exam in which you will show your best creative work in solving problems and explaining your reasoning. We will begin preparing for this on the first day of class!

**Participation, Attendance, and Presentations:**

At every class and every lab, roll will be called. You will receive one score for participation and attendance; this score includes your homework and skills presentation when called upon to present. Scores are awarded according to the following scheme. Every meeting counts; no attendance/participation score is dropped. You are responsible for keeping informed of all discussions and announcements made in class.

- 2, for being present during the entire period with good participation. This includes good team effort on presentations of study problems (homework and skills review) when called upon to present.
- 0—1, if you are not present during the entire period, are using electronics, do not fully participate in class, or are not prepared to present when called upon. If you arrive after roll call, your score will be recorded as 0; if you would like consideration for raising this to 1, please inform the instructor *after the period is over on the same day*.
- 0, for being absent for any reason. This records that the active learning experience for that session was missed (even if there was a good reason for missing it).

**Meet Your Instructor:**

There are 29 class days in the course, for 29 class attendance scores. We will add one to this by asking you to come by my office (Pickard Hall 437) sometime before November 1 for a short chat to get to know each other better and talk a little about your goals and plans and how mathematics fits into your curriculum. So, come by sometime during office hours, or we can set up a different time as well! You get 2 attendance points for this meeting when you come (or 0 otherwise), and this makes 30 attendance scores for the class.

**Study Problems:** Study problems (homework and skills review) will be due at each class meeting as posted on the calendar at the course website. The problems and readings listed in each box of the calendar are due in class on that day. At every class, be prepared to explain (at the board, in teams of 2—4) your reasoning and solutions to any of the study problems assigned for that day and to discuss any topic in the reading. Prepare your study problems as follows. They will not be collected, but this will help you keep organized for your presentations:

- For each problem, write out the complete question directly before the solution.
- Justify and explain all steps in your solution, and explain your reasoning.
- Interpret your final answer and explain how it makes sense as a correct answer to the problem

**Reading the Text:** Along with the study problem assignments, on the course calendar, you will have reading assignments from the eText that will complement the class lessons, problems, and lab work. Work through the interactive figures and the readings as you study for the course and work on the problems.

**Additional Practice Problems:** In MathLabsPlus and in the eText, there are plenty of additional problems available for extra practice! Work on these as much as you wish, after finishing your work on the assigned study problems. Give special attention to the Skills Reviews in preparation for the Calculus Gateway Exam. We will also work on these skills reviews in class and in the labs.

**Expectations of the Student:**

- **Attendance:** Every class and every lab requires your active participation and learning. For your full benefit and enjoyment, attend every class and every lab, arrive on time, and remain in class and actively engaged for the whole period.
- **Participation:** Bring the assigned study problems well prepared to every class and participate fully in presentations and class activities.
- **Study time:** Set aside about 9 hours per week outside of class to study and work on problems for this course.
- **Course notebook.** Keep a neat, up-to-date, and organized folder with correct solutions to all problems assigned or discussed in class.
- **MavMail and Announcements:** Keep an activated MavMail account and check it regularly. You are responsible for all information that I send to your MavMail account and all announcements made in class or on the course website.
- **Asking for help when needed.** Ask for help on material that you may not be grasping fully. You may work with your classmates, come to office hours, or send me an e-mail with specific questions.
- **Personal responsibility.** This class is set up to be engaging and enjoyable and to help you to put in your best hard work for great learning. Make your success in this class a priority, and we are here to help you for a great mathematics experience!

**Attendance Policy:** At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. *As the instructor of this section, I count attendance and participation in every class in every lab towards the course grade as described in this syllabus.* However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

**Electronics Policy:** Students may not use electronics during course meetings (classes and labs) without prior consent from the instructor (unless the instructor is using technology to poll the entire class). This includes (but is not limited to): cell phones, tablets, and laptop computers.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aaofao/>).

**Drop Date:** Wednesday, November 2 by 4 PM

**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.

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of **a letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

**The Office for Students with Disabilities, (OSD)** [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364.

Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability).

**Counseling and Psychological Services, (CAPS)** [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

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.

**Non-Discrimination Policy:** The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit [uta.edu/eos](http://uta.edu/eos).

**Title IX Policy:** The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](mailto:jmhood@uta.edu).*

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the 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 submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) 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. Additional information is available at <https://www.uta.edu/conduct/>.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** for semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located outside the doors at the back of the classroom and down the hall to the left. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will

assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

**Student Support Services:** UT 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. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

**START STRONG Freshman Tutoring Program:**

*University Tutorial and Supplemental Instruction (UTSI)/University College*

All first time freshmen can receive five FREE hours of tutoring for this course and other selected subjects for this semester. **Students must sign up and complete their first hour of tutoring by September 23, 2016.** To sign up, visit UTSI in 205 Ransom Hall/University College. Upon completion of your first tutoring appointment, you will receive five hours of additional free tutoring. Flexible tutoring hours are available from 7:00am – 9:00pm, seven days a week at secure locations on campus. All tutors receive extensive training. Find out more at [www.uta.edu/Startstrong](http://www.uta.edu/Startstrong)

The Math Department operates the **Math Clinic**, a free tutoring service staffed by upper level undergraduate students. The Math Clinic is in Room 325 on the 3<sup>rd</sup> floor of Pickard Hall; the phone number is 817-272-5674; and the hours of operation for fall and spring are

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

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

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

**Student Disruption:** The University may impose disciplinary action for an infraction of University policies, including engagement in conduct, alone or with others, that obstructs, disrupts, or interferes with any function of class activities.

<p><b>Emergency Phone Numbers:</b> In case of an on-campus emergency, call the UT Arlington Police Department at <b>817-272-3003</b> (non-campus phone), <b>2-3003</b> (campus phone). You may also dial 911.</p>
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**See next page for important dates and course schedule.**



### Important Dates

August 25 (Thursday)	First Day of Classes
September 12 (Monday)	Census Date
November 2 (Wednesday)	Drop Date – by 4 pm
<b>December 12 (Monday)</b>	<b>Final Exam, 5:30—8 PM</b>

**Course Schedule:** *This day-by-day outline is approximate; as the instructor of this course, I may adjust this schedule in any way that better serves the educational needs of the students enrolled in this course.*

Week 1	Aug 29 Aug 31	Explorations on the meaning of a function Graphs of functions, linear functions,
Week 2	Sep 7	Combining functions to create new ones
Week 3	Sep 12 Sep 14	Transformations of functions to create new functions, Quadratic functions, families of functions
Week 4	Sep 19 Sep 21	Focus on polynomial functions, real roots and factors of polynomial functions, rational functions
Week 5	Sep 26 Sep 28	More on rational functions, working with inequalities Exponential functions
Week 6	Oct 3 Oct 5	Inverse functions Logarithmic functions and identities
Week 7	Oct 10 Oct 12	Review/comparison/contrast of various functions studied Solving exponential and logarithmic equations
Week 8	Oct 17 Oct 19	Angles and their measures via the unit circle, definitions of sine and cosine and tangent, sine and cosine and tangent functions
Week 9	Oct 24 Oct 26	The secant, cosecant, and cotangent functions Trigonometry of a right triangle
Week 10	Oct 31 Nov 2	More on right triangles and the unit circle Inverse trigonometric functions
Week 11	Nov 7 Nov 9	More on inverse trigonometric functions, Laws of sines and cosines
Week 12	Nov 14 Nov 16	Working with the laws of sines and cosines Applications involving geometry of triangles
Week 13	Nov 21 Nov 23	Fundamental identities of trigonometric functions, sum difference, and double-angle identities, power-reducing, half-angle, and other identities, solving trigonometric identities
Week 14	Nov 28 Nov 30	Parametric equations Polar coordinates, polar equations,
Week 15	Dec 5 Dec 7	Graphing in polar coordinates Review
<b>Final</b>	<b>Dec 12</b>	<b>(Monday) Final Exam: 5:30 – 8 PM</b>