



## Math 4350: Precalculus for Middle School Teachers

Fall 2017

**Instructor:** Dr. Glenda Mitchell

**Office Number:** PKH 484

**Office Telephone Number:** 817-272-0943

**Email Address:** gmitchel@uta.edu

**Office Hours:** MW 11am- 1pm, T/Th 4:30- 5:30 pm. or by appointment

**Section Information:** MATH 4350-001

**Time and Place of Class Meetings:** PKH 107 on T/Th from 5:30 – 6:50 pm

**Description of Course Content:** This course serves to bridge the gap between algebra and calculus for middle level teachers. It will develop a firm understanding of the concept of function, how to graphically represent various functions, analyze their behavior and create new functions from old. Functions will be used to model real-life situations.

The course will focus on the essential elements of precalculus, as given by the TEKS. It will develop the foundations of functions and explore functions as a unifying theme. This includes transformations, inverses, logarithmic, power, polynomial, rational, and trigonometric functions. There will be an emphasis on multiple representations of mathematical ideas: verbal, concrete, pictorial, tabular, symbolic, and graphical. Throughout, the mathematical connections between precalculus and school mathematics will be highlighted.

*Syllabus:* An approximate schedule with topics is given below.

Unit Topic	Approximate Dates
1 Functions(Chapter 1: 1 – 3)	Aug 24 –Sept 7
2 Lines in the Plane (Chapter 2:1-3,5,8)	Sept 12 - Sept 26
<b>Exam #1</b>	<b>Sept 28</b>
3 Quadratic Polynomials(Chapter 3:1-3,6)	Oct 03 - Oct 26
<b>Exam #2</b>	<b>Nov 2</b>
9 Exponentiation (Chapter 9:1-3,7)	Oct 31 – Nov 9
12 Beyond Quadratics (Chapter 12:1,2)	Nov 14 – Dec 5
<b>Paper due</b>	<b>Dec 5</b>
Final review	Dec 5

**Final exam (Exam #3) Tues. Dec 12 5:30 – 8:00pm.**

**Last day for automatic withdrawal:** November 1

**Student Learning Outcomes:** The student will be able to:

- ❖ communicate clear mathematical claims and justifications orally and in writing
- ❖ identify and discuss connections between topics in precalculus and middle school curriculum.

- ❖ describe and use concrete, pictorial, verbal, tabular, graphical, and symbolic representations of linear, quadratic, piecewise, power, polynomial, rational, exponential, and logarithmic functions and their properties.
- ❖ describe and use function notation.
- ❖ use transformations to describe and graph functions.
- ❖ able to model real-life situations using the various functions.

**Requirements:** Completed Math 1302, Math 1308, Math 1330, Math 1331, and Math 1332

**Required Textbooks and Other Course Materials:** Mathematics for Secondary School Teachers, Bremigan, Bremigan, Lorch

Calculator: Ti-83/84/86/89 or similar required

**Descriptions of major assignments and examinations:** Exams will be similar in nature to the problems we work in our homework and problems done in class.

There will be one major paper to write. You will choose a college level (TEKS- Texas Essential Knowledge and Skills for Mathematics) problem and solve it completely, then choose a grade 4-8 (TEKS) problem that you believe is related. Highlight the mathematical connections between the two problems, and explain how the mathematics involved in each problem is related. Details of this paper will be discussed later in the course.

Homework will be assigned after each class period. Homework will usually consist of exercises from the textbook, a small number of which will be collected and graded. You are encouraged to work with others on your homework, but you must submit your own work. You may also be asked to write short reflections or papers on material covered in class.

Much of class time will be spent working in groups on problems or ideas to develop the fundamental ideas of precalculus and to understand their connections to the middle school curriculum. You are expected to take an active role in contributing suggestions to daily discussions, and presenting problems to the class. For this reason, attendance is particularly important. If you are not present, you will not be able to make up the class by merely reading the textbook.

These are *your* blackboards. Own the classroom.

**Attendance and Participation:** At the University of Texas at Arlington, taking attendance is not required. Rather, 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, **ATTENDANCE AND PARTICIPATION** are a significant part of your grade because this course is more an experience than a set of material to be learned. Most of what I hope will happen for you in this course will take place inside the classroom, working in groups and talking with others. Attendance will be taken by means of a daily sign-in sheet. I have established the following attendance policy you may miss up to 2 days (**excused or not**) without penalty; after that it starts affecting your grade (four points off the participation average with the third absence). Arriving late (after we have started class) or leaving early counts as half an absence. It also means missing important announcements, often made at the beginning or end of class. Students with special needs, or other situation which affects their attendance for several consecutive classes, should consult with the instructor as soon as possible. It is also in your interest to participate in the group problem solving sessions since active learning is better than passive learning. Participation includes both small and large group work. Participation in small groups means coming to class prepared (working on a problem outside of class, or bringing requested materials to class), working productively with groupmates, and making sure everyone in your small group follows what you are doing, Large group

participation means making some sort of tangible contribution. If you don't feel comfortable answering questions, ask one of your own, questions spur discussion as much as answers and you'll be doing a favor to classmates wondering the same thing.

**Grading:** Your grade for the course will be determined by three exams (20% each), by attendance and participation (10%), homework (15%), and a paper (15%). Your grades will be posted on Blackboard.

**Resources:** If you're having trouble with a problem or a topic there are several places you can go to talk about it:

- To the other students in the class; often you can figure things out together that you didn't understand on your own. I highly suggest that you form study groups and start doing homework together right from the start of the semester.
- To me, come and see me during office hours or arrange another time. Or email me with your question.
- To the Math Clinic directly across from the elevators on the 3<sup>rd</sup> floor of PKH. The math clinic is a free service funded by your registration fees.

**Professionalism is expected.** You are expected to attend all class meetings, be curious, ask questions, seek opportunities to learn, and be open and responsive to feedback. In addition:

- Display a positive attitude
- Be a team player- mathematics need not be a competitive sport
- Be an active participant- mathematics should not be a spectator sport
- Attend daily, be punctual
- Be committed, take your work seriously
- Work diligently on homework assignments
- Complete assigned readings
- Improve yourself as a mathematician
- Help others – if you know the mathematics being discussed, practice your mentoring skills
- Complete all assignments to the best of your ability
- Celebrate your colleagues' learning
- Be patient with yourself

**Expectations for Out-of-Class Study:** Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 6 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

**Make-up Exams:** Please mark them on your calendar now so as to avoid conflicts. If a conflict arises, *please* see me as soon as possible to resolve it. No make-up exams will be given without prior arrangement.

**Grade Grievances:** Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate catalog. [For undergraduate courses, see [http://wwwb.uta.edu/catalog/content/general/academic\\_regulations.aspx#10](http://wwwb.uta.edu/catalog/content/general/academic_regulations.aspx#10).]

**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://wwwb.uta.edu/ses/fao>).

**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)**. 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.  
**Counseling and Psychological Services, (CAPS)** [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. 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) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** *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). For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX).*

**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 as they see fit in their courses, including (but not limited to) 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. Students would receive zeros for any work submitted under question.

**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 [www.uta.edu/resources](http://www.uta.edu/resources).

**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>.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a 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 enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>

**Final Review Week:** 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 to the right of room 103. 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 handicapped individuals.

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