

Home	E-mail	Homework
Dr. Quintanilla	Math Department	University of North Texas

Math 4050.002: Spring 2011

Meets: MWF 9:00-9:50 in GAB 317.

Instructor: [Professor John Quintanilla](#)

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Office Hours: M 8-9, W 8-9 and 12:30-1:30, F 10-11, or by appointment. I'm fairly easy to find, and you're welcome to drop by outside of office hours without an appointment. However, there will be occasions when I'll be busy, and I may ask you to wait or come back later.

Required Text: *Mathematics for High School Teachers*, by Z. Usiskin, A. Peressini, E. A. Marchisotto and D. Stanley. Course topics are chosen to ensure all TNT math majors are exposed to the topics listed in the [program standards](#) for initial preparation of secondary mathematics published by the [National Council of Teachers of Mathematics](#). Course topics are also chosen to ensure that your future students are prepared for the mathematics portion of the [Texas College and Career Readiness Standards](#).

The following chapters and sections of the textbook will be covered according to the projected schedule below. Dates may change as events warrant.

- Chapter 2: Real Numbers and Complex Numbers
 - Unit 2.1: The Real Numbers
 - 2.1.1: Rational numbers and irrational numbers
 - 2.1.2: The number line and decimal representations of real numbers
 - 2.1.3: Periods of periodic decimals
 - 2.1.4: The distributions of various types of real numbers
 - Unit 2.2: The Complex Numbers
 - 2.2.1: The complex numbers and the complex plane
 - 2.2.2: The geometry of complex number arithmetic
- Chapter 3: Functions
 - Unit 3.2: Properties of Real Functions
 - 3.2.1: Analyzing real functions

- 3.2.4: Limit behavior of real functions
- Chapter 5: Integers and Polynomials
 - Unit 5.1: Natural Numbers, Induction and Recursion
 - Unit 5.2: Divisibility Properties of the Integers
 - 5.2.1: The Division Algorithm
 - 5.2.2: Divisibility of integers
 - 5.2.4: The Fundamental Theorem of Arithmetic
 - 5.2.5: Base representation of positive integers
 - Unit 5.3: Divisibility Properties of Polynomials
 - 5.3.1: The Division Algorithm for polynomials
 - 5.3.2: The Euclidean Algorithm and prime factorization for polynomials
- Chapter 6: Number System Structures
 - Unit 6.1: The Systems of Modular Arithmetic
 - 6.1.1: Integer congruence

	January 19: 5.1	January 21: Q/A
January 24: 5.2.1	January 26: 5.2.2	January 28: Q/A
January 31: 5.2.4	February 2: 5.2.4	February 4: Q/A
February 7: 5.2.5	February 9: 6.1.1	February 11: Q/A
February 14: Review	February 16: Exam #1	February 18: Q/A
February 21: 6.1.1	February 23: 2.1.2	February 25: Q/A
February 28: 2.1.3	March 2: 2.2.1	March 4: Q/A
March 7: 2.2.2	March 9: 2.2.2	March 11: Q/A
SPRING BREAK		
March 21: Review	March 23: Exam #2	March 25: Q/A
March 28: 5.3.1	March 30: 5.3.1-2	April 1: Q/A
April 4: 5.3.2	April 6: 3.2.1	April 8: Q/A
April 11: 3.2.4	April 13: Irrational numbers	April 15: Q/A
April 18: Review	April 20: Exam #3	April 22: Q/A
April 25: Irrational numbers	April 27: Pi	April 29: Q/A
May 2: Pi	May 4: Review	

	May 11: Final	
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Strongly Recommended: Lecture notes for the semester are available at the UNT Copy Center for approximately \$12.

Prerequisite: Math 3510 or Math 3610 (may be taken concurrently).

For Your Information: Dates and other information about the practice state certification exam may be found at <http://www.coe.unt.edu/texas>.

Student Responsibilities

- You should read over this syllabus carefully, as I will hold you responsible for the information herein.
- Students will be expected to read the chapters carefully, including the examples in the book.
- Students will be responsible for obtaining any and all handouts. If you are not in class when handouts are given, it is **your** responsibility to obtain copies.
- **You should begin working now.** Frequent practice is crucial to the successful completion of a mathematics course. Cramming at the last minute will certainly lead to failure.
- **WARNING:** If you are in academic trouble, or are in danger of losing your financial support, or if your parent or guardian is expecting a certain grade at the end of the semester... start working today. I will refuse to listen to any pleas at the end of the semester. You will receive precisely the grade that you *earn*.

Grading Policies

The following schedule is tentative and is subject to capricious changes in case of extracurricular events deemed sufficiently important to the upper administration.

Final Exam	Wednesday, May 11 8:00-10:00 am	16%
Exam 1	c. Week 5	13%

A	90% and above
B	80% and below 90%
C	70% and below

Exam 2	c. Week 9	13%
Exam 3	c. Week 13	13%
Monday/Wednesday Homework		9%
Certification Exam Preparation		9%
Friday Presentations		9%
Differentiated Instruction Assignment		9%
Planning Assignment		9%

	80%
D	60% and below 70%
F	below 60%

Cooperation is encouraged in doing the homework assignments. However, **cheating will not be tolerated on the exams**. If you are caught cheating, you will be subject to any penalty the instructor deems appropriate, **up to and including an automatic F for the course**.

Attendance is not required for this class. However, you will be responsible for everything that I cover in class, even if you are absent. It is my experience that students who skip class frequently make poorer grades than students who attend class regularly. You should consider this if you don't think you'll be able to wake up in time for class consistently.

The grade of "I" is designed for students who are unable to complete work in a course but who are currently passing the course. The guidelines are clearly spelled out in the *Student Handbook*. Before you ask, you should read these requirements.

Exam Policies

- Unless announced otherwise, calculators will **not** be permitted for use on exams.
- I expect to give exams during the weeks above. However, these are tentative dates. I will announce the exact date of each exam in class.
- After exams are returned in class, you have 48 hours to appeal your grade. I will not listen to any appeals after this 48-hour period.
- I will not drop the lowest exam score; all will count toward the final grade.
- No make up exams will be given. For those students who miss an exam due to an **Authorized Absence** (see the *Student Handbook*), the final grade will be computed based only on those exams taken, together with homework/quiz scores and the final exam. Such students will be required to provide *official written* verification of such an absence.
- Students missing an exam for unauthorized reasons will receive 0 (zero) points on the exam. The Final Examination will be comprehensive in the sense that problems may come from any of the sections that will be covered during the semester.

- The grade of A signifies *consistent* excellence over the course of the semester. In particular, an A on the final is not equivalent to an A for the course.
- I reserve the right to test and quiz you on problems which are generalizations of material covered in the class and/or in the text. In short, the problems may not look exactly like the ones in the book.
- Everything that I say in class on Mondays and Wednesdays is fair game for exam material. You will be responsible for everything unless I advise you to the contrary.
- You will **not** be held responsible for the certification exam preparations, Friday presentations, or the two class projects on the exams.

Homework Policies

- Homework will be assigned every Friday and will be due the following Friday. All assignments will be [posted online](#).
- Most weeks, you will be expected to work on four different assignments at once: (1) homework based on the Monday/Wednesday lectures, (2) preparation for the [TEXES Mathematics 8-12 certification exam](#), (3) Friday presentations, and (4) two different class projects.
- I expect the assignments that you turn in to be [written up carefully and neatly](#), with the answers clearly marked. You must show all of your work. **Messy homework will not be accepted.**

Homework based on the Monday/Wednesday lectures

- Entire homework assignments will **not** be graded. Instead, only five representative problems will be graded per assignment. As a consequence, it will be possible to not do the entire assignment and still receive a perfect score on that particular assignment. **Deliberately leaving homework uncompleted is highly unrecommended**, however, as the law of averages will surely catch up with you as the semester progresses.
- When computing grades, I will drop the **two** lowest homework grades before computing the homework average. Therefore, in principle, you could get a 100% homework score and also not turn in two assignments during the semester. I have this policy in case you get sick, a family emergency arises, etc., during the semester. You will still be responsible for the material in such assignments during the examinations.
- Because of this policy, I will **not** give extensions on homework assignments, nor will I accept late assignments.

Certification exam preparation

- Every week, you will be given about 12-18 problems on topics pertinent to the Mathematics 8-12 certification exam. These are mostly chosen from problems that appeared on Precalculus and Calculus I exams given by your instructor to TAMS students in past years.

- For each assignment, you will also choose 5 problems from the remaining preparation problems. If you submit more than five such problems, the grader will simply grade the first five problems on the homework assignment.
- When computing grades, I will drop the **two** lowest grades before computing the certification exam preparation average. Because of this policy, I will **not** give extensions on the certification assignments, nor will I accept late assignments.

Friday presentations

- Every week, selected problems from a collection of [hard questions from real high school students](#) will be posted. Every Friday, students will be sent to the board, one at a time in random order, to demonstrate how they would answer these questions if posed by a future high school student.
- With these presentations, you should develop two important skills: solidifying your content knowledge of secondary mathematics and learning how to "sell" difficult ideas to your future students.
- All presentations will be [peer graded](#).
- If you know ahead of time that you will have to miss class on a Friday, please make arrangements with your instructor to make up your turn for the Friday presentations. You will be asked to answer three of these questions and will be assessed by your instructor.
- If you get called to the board on a Friday but have an unexcused absence, you will get a 0 for this presentation.
- When computing grades, I will drop the lowest presentation grade before computing the Friday presentations average.

Class projects

- There will be two different class projects assigned in this class.
- The first class project concerns differentiated instruction. The primary goal of this project is for you to analyze students' work and decide on next steps based on that work.
- The second class project concerns developing ideas to sell course content to high school students that may not like mathematics as much as you do.

Final Notes

- For the sake of completeness, I list some other areas that new teachers struggle with, according to experienced secondary teachers:
 - Being willing to seek advice from seasoned instructors
 - Covered the whole curriculum over the course of a year without getting bogged down on specific topics
 - Classroom management
 - Keeping appropriate documentation (e.g., special-needs students, communication with parents, etc.)
 - Appropriate use of classroom technology

- Being consistent in enforcing discipline
 - Keeping authority (i.e., not just being a pal to one's students)
 - Maintaining professional distance
- In compliance with the Americans with Disabilities Act, I mention the following: It is the responsibility of students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office.