

MATH 5342: Concepts and Techniques in Algebra
Fall 2016

Instructor: Dr. Kathryn Rhoads

Office Number: PKH 408

Office Telephone Number: 817-272-5168

Email Address: kerhoads@uta.edu

Preferred Office Hours: Mondays 2:30 – 5:20, or by appointment

Section Information: MATH 5342-001

Time and Place of Class Meetings: Mondays, 5:30 – 8:20, PKH 311

Description of Course Content: This course will explore various perspectives on school algebra that have been put forth in the literature. This includes algebra as the study of functions and function relationships, algebra as the study of multiple representations with an emphasis on graphs, tables, and formulae, algebra as generalized arithmetic and quantitative reasoning, algebra as a language, and algebra as a formal mathematical system. This course will engage the students in using algebra to represent and analyze mathematical situations and will emphasize students' conceptual understanding of the ideas central to algebra. In addition to providing mathematical content background for middle and secondary school teachers, this course will address strategies for implementing an instructional approach that emphasizes algebraic thinking.

Student Learning Outcomes: Upon successful completion of this course, you will be able to:

1. Apply algebra problem-solving skills to problem situations.
2. Explain and justify algebraic ideas verbally and in writing.
3. Examine your beliefs regarding the goals and content of algebra in secondary school.
4. Describe and critique different approaches to teaching algebra in secondary school.
5. Evaluate instructional activities for algebra according to their mathematical and pedagogical features.
6. Interpret and evaluate mathematics education literature in the domain of algebra.

Required Textbooks and Other Course Materials:

- **Text:** We will use the following text for homework problems and some readings. You may also use this text in other courses in the M.A. program. You do not need to bring the textbook to class.

Usiskin, Z., Peressini, A., Marchisotto, E. A., & Stanley, D. (2003). *Mathematics for high school teachers: An advanced perspective*. Upper Saddle River, NJ: Pearson Education, Inc.

- **Journal Articles:** You will be expected to use the university library databases and obtain copies of the journal articles we will use in this course. (Reading assignments will be given throughout the semester.) The library can offer assistance in finding these articles. Please visit <http://www.uta.edu/library>
- **Other required materials:**
Graphing calculator (e.g., TI-Nspire, TI-83 Plus, TI-84, etc.)
Grid paper
- **Additional materials:** Some materials will be made available on the blackboard site for this course

Course Schedule

Date	Topic(s)	Assignments Due
August 29	Introduction to the course Approaches to Algebra	
September 5	NO CLASS: Labor Day	
September 12	Approaches to Algebra Variables	Reading List 1
September 19	Approaches to algebra Variables	Problem Set 1
September 26	Approaches to algebra	Reading List 2
October 3	Real numbers and complex numbers	Problem Set 2
October 10	Real numbers and complex numbers	Reading List 3 Project topic
October 17	Functions	Problem Set 3
October 24	Functions	Reading List 4
October 31	Functions	Problem Set 4 Project progress update 1
November 7	Functions	Reading List 5
November 14	Equations	Problem Set 5
November 21	Equations	Reading List 6 Project progress update 2
November 28	Equations	Problem Set 6
December 5	Equations	
December 12	Final project presentations	Final Project

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –Kathryn E. Rhoads

Course Grades:

Problem sets (6)	30%
Reading assignments (6)	30%
Attendance and class participation	10%
<u>Project</u>	<u>30%</u>
Total	100%

A	≥ 90%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	70% - 79%

Course Assignments:

1. Problem sets. Throughout the semester, you will be assigned challenging problems. You will discuss these problems in class with a group of your peers, and then you will turn in written solutions to these problems. With advance notice, your group may be asked to give short presentations and lead discussions on your problems and solutions during class.

Guidelines for written solutions:

- a. Solutions may be typed or hand-written. In either case, they should be printed and organized clearly. Please include the problem statement with the solution.
 - b. Electronic submission of solutions through the blackboard site is encouraged but not required. Problems should be submitted by 5:30 pm (the beginning of class).
 - c. Although you will work on problems as a group, your final write-up should be your own work and include your own final thoughts.
 - d. Solutions will be graded on mathematical correctness (50%) and the accuracy and clarity of your explanations and justifications (50%).
2. Reading assignments. Reading assignments will be given throughout the semester, and you will write a reactive summary for each of the articles assigned. After class discussion of the articles, you may be asked to complete a short quiz on the readings. You will be allowed to use your 2-3 page summaries to complete the quiz.

Guidelines for written summaries:

- a. Please write one summary for each article in the list. Each summary should be 2-3 pages long. (This means you will have several summaries for each reading list.)
 - b. Summaries must be typed. For fairness, please make sure they are double-spaced, contain one-inch margins, and use 12-point Times New Roman font.
 - c. Electronic submission of written summaries is *highly* encouraged but not required.
 - d. Please bring a copy (electronic or hard copy) of your summaries to class with you on the day they are due. You may use these in the event of a quiz.
 - e. Summaries will be graded on the thoroughness of your summary (50%) and the depth of your reaction/ response to the article (50%).
3. Course Project. You have two choices for the course project: (1) a teaching experiment or (2) a written concept analysis. (Currently-practicing teachers are highly encouraged to choose the teaching experiment.) Projects may be completed individually or in pairs. You will be required to update me on your project progress throughout the semester. On the final day of class, you will present your project to the class and turn in a written report. Rubrics and further guidelines will be provided in class.

Professionalism: You are expected to actively participate in and stay on task during classroom activities and discussions. You are encouraged to offer suggestions and conjectures even if you aren't sure of the answers. In addition, you are expected to work with others, respect others' ideas, and celebrate others' successes. Final course grades will be lowered for a lack of or inappropriate participation. For reoccurring issues, students will be required to meet with the instructor to develop an action plan.

Attendance: 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 have established the following attendance policy:

Because this course relies heavily on group participation and meets only once per week, attendance is mandatory. You must attend 14 of the 15 classes to receive full credit for attendance. Arriving late or leaving early will count as half a class absence. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent.

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.

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.

The last day to drop a class is November 2.

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://www.uta.edu/aao/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). 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 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.

Counseling and Psychological Services, (CAPS) 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.

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.*

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 or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or 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 down the stairs to the right as you exit the classroom](#). 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.

The English Writing Center (411LIBR): The Writing Center Offers free tutoring in 20-, 40-, or 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Our hours are 9 am to 8 pm Mon.-Thurs., 9 am-3 pm Fri. and Noon-6 pm Sat. and Sun. Register and make appointments online at <http://uta.mywconline.com>. Classroom Visits, workshops, and specialized services for graduate students are also available. Please see www.uta.edu/owl for detailed information on all our programs and services.

Library Home Page library.uta.edu

Emergency Phone Numbers:

In case of an on-campus emergency, call the UT Arlington Police Department at

817-272-3003 (non-campus phone)

2-3003 (campus phone)

You may also dial 911.

Non-emergency number 817-272-3381
