Math 1301 – Contemporary Mathematics Section 009

Course Instructor

Dr. Backs
kbacks@uta.edu
The instructor will respond to email inquiries within 24-48 hours.
Mentis Faculty Profile: https://www.uta.edu/profiles/karl-backs
Office: 448
Office Phone: 817-272-7163
Walk-In Office Hours: MoWeFr 10 – 11 am, 2 – 3 pm
By Appointment Office Hours: MoWeFr 12 – 1 pm. Email your instructor to set up an appointment during these hours.

Textbook and Materials

This course is part of the UTA Mathematics Department Affordability Campaign. Therefore, you have several options for this course (dependent upon how you study) and you can purchase your items through the UTA Bookstore using the site (copy & paste URL): http://bit.ly/2tQ090S

1. **Access Code (Required)**: As part of the campaign, your reduced price purchase includes the MML access code which will give you access to all assignments immediately. You may purchase your access code at any time, but must complete the purchase no later than 14 days after the start of the semester. If you fail to complete the purchase within the allotted timeframe then your account will be deactivated until the purchase is confirmed.
2. **Loose-leaf Textbook (Optional)**: You may upgrade your access code purchase and obtain a loose-leaf textbook at a minimal cost. The textbook will be shipped directly to an address of your choosing or you may pick one up at the UTA bookstore. Full purchase details will be available in Blackboard. *A Survey of Mathematics with Applications*, 10th national edition, Angel, Abbott, and Runde, Pearson Ed. Inc., 2016.
3. **Web-Enabled Device**: Use your smartphone, tablet, laptop or other device to check-in at lectures for required attendance and to take in-class quizzes and earn Stats Coins toward extra credit.
4. **3”x5” Index Cards:** In the event of a UTA Network disconnection during lecture, index cards may be used as a back-up for the web-enabled device.
5. **Scientific Calculator**: You may use a scientific calculator. See the Calculator Policy section for allowable models.

Calculator Policy

Students may choose to use a scientific, non-graphing calculator on all assignments including tests and the final exam. If so, it MUST be one of the following models explicitly:

Texas Instruments 30X series: TI-30Xa, TI-30XIIS, TI-30XIIB, TI-30XS(Multiview)
Casio FX series: FX-82MS, FX-85M-S, FX-260SLR, FX-260SLRPK, FX-260SLRSCH

Sharp EL series: EL-501X, EL-501XBGR, EL-501XBWH, EL-531X, EL-531XBGR, EL-531XBWH
Canon F series: F-604, F-710

No variation of model will be accepted. This includes but is not limited to plus and pro models.

Course Elements

Scheduled Meeting Times and Locations

Days and Times: MoWeFr 11 – 11:50 am
Classroom: PKH 103

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 have adopted the following attendance policy. Attendance will be taken daily and students are expected to attend class, be attentive, and participate in discussions/activities. 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.

Schedule of Lessons and Tests

You must complete all assignments and tests by the due dates. Due dates are listed in **MyLabsPlus (MLP)** and also in the Course Schedule located in Blackboard. **All MLP deadline times are in Central Time**.

Grade Calculation

Homework, Tests, Exam	Percent of Grade
Homework/Quizzes	20%
Chapter Tests (Average of 3 Tests)	50%
Signature Assignment Write-Up	5%
Comprehensive Final Exam	25%
Total:	100%

- Two of the lowest homework grades and one quiz grade will be dropped at the end of the semester.
- In the event you are not satisfied with one of your three chapter exam scores, you may ask your instructor for a retake. Only ONE retake on a chapter exam of your choosing will be granted. Please reference the course schedule for specific retake dates. You MUST solicit and receive approval from your instructor prior to taking your ONE retake exam. All retakes must be completed prior to the final exam.

Grading Scale

Grades will be computed based on the following distribution. Grades are rounded up accordingly.

90 — 100%	**A**
80 — 89%	B
70 — 79%	C
60 — 69%	D
Below 60%	F

Mathematics Learning Resource Centers

Email: mathemporium@uta.edu
Computer Lab Website: http://www.uta.edu/math/emporium/
Clinic Website: http://www.uta.edu/math/clinic/
Facebook: https://www.facebook.com/pages/UTA-Math-Emporium/460329394127443

Homework and Quizzes

All homework and quizzes will be assigned in MyLabsPlus. (www.uta.mylabsplus.com) All electronic homework and quiz assignments are available to you on the first class day. The automated system will provide feedback on assignments immediately upon submission.

- **NO late homework or quizzes will be accepted,** so watch the due dates on the MyLabsPlus calendar. You will receive a zero for any assignments not submitted.
- Homework assignments are set for unlimited access up until the due date and you have 3 attempts per question, however you only have two attempts at each quiz which have a 45 minute time limit and must be completed once opened. Quizzes cannot be saved and resumed later.
- You may also have in-class paper assessments. Please be prepared for class as these may or may not be announced in advance.
- All homework assignments contain learning aids to help you through the material. Be careful not to become overly dependent on these aids or you may not perform well on the exams. You have three chances at a question per attempt. To gain access to the next attempt once a question is marked wrong; simply select the "similar exercise" button at the bottom of the homework screen. Quizzes are designed to check your knowledge retention and therefore do not contain the learning aids except in review mode once the quiz has been submitted.
- A Lockdown program for your browser is required for all electronic quizzes. Be sure that you either complete your electronic quizzes in the Math Computer Lab, or that you have administrative rights to the computer you are using in order to install this program. The program is a free download and easily installed through the Browser Check.
- If you have trouble completing the assignments, please seek some form of tutoring and/or see your instructor for assistance.

Tests

There will be three online proctored chapter tests throughout the course of the semester. (Please reference the course schedule for exact dates.)

- All chapter tests are found within MLP and are comprised of questions that must be completed within 45 consecutive minutes. Tests cannot be opened, saved, and returned to at a later time.
- You may use an approved scientific calculator (see list of approved calculators in Materials section), approved formula sheets, and blank scratch paper which will be provided. No additional materials are allowed.
- The approved formula sheets will be supplied by your instructor and lab tutors for all tests. These sheets are identical to the ones posted in Blackboard.
- All exams are taken in the Math Computer Lab (PKH 308) on the UTA campus during your regularly scheduled class time or announced alternative time frame. You must have your MavID with you on exam day and will be required to sign in upon entering and exiting the lab.
- You may not leave the room during an exam.
- Use of any unauthorized electronic devices or notes during an exam will result in a grade of ZERO.

Final Exam

The final exam is a comprehensive, proctored exam containing material from all sections covered over the course of the semester. (Please reference the course schedule for exact dates.)

- The final is found within MLP and is comprised of questions that must be completed within 135 consecutive minutes. The final cannot be opened, saved, and returned to at a later time.
- You may use an approved scientific calculator (see list of approved calculators in Materials section), approved formula sheets, and blank scratch paper which will be provided. No additional materials are allowed.
- The approved formula sheets will be supplied by your instructor and lab tutors for all tests. These sheets are identical to the ones posted in Blackboard.
- The final exam will be taken in the Math Computer Lab (PKH 308) on the UTA campus. Final exam dates will be announced at least one week prior to final exam week. You must have your MavID with you on exam day and will be required to sign in upon entering and exiting the lab.
- You may not leave the room during an exam.
- Use of any unauthorized electronic devices or notes during an exam will result in a grade of ZERO.

Signature Assignments and Write-Up

This course contains three related concept homework assignments, each containing 3 advanced multi-part questions. These assignments will cover the seven learning objectives and outcomes listed in the course objective section of your syllabus. These assignments will count as bonus points on a chapter exam based on the percentage score earned on each assignment. No more than 5 points can be earned on any given test. Extra credit will be applied at the end of the semester and cannot apply to the final exam. Completion of the homework assignments is optional, but will aid in the Write-Up process. These assignments will assess the following skills:

- 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.

Before the end of the semester, you will be required to choose one of the nine advanced questions from within the signature homework assignments and complete a Write-Up assignment. This Signature Write-Up assignment will consist of a one-page essay describing the necessary skills and the process for accurately completing the chosen question. Specific emphasis will be placed on your ability to draw conclusions and effectively communicate your method. Additional details will be provided within Blackboard.

Extra Credit

Extra Credit may also be earned by correctly answering lecture quizzes given during lecture meetings. Lecture quizzes will be based on a topic over which students are expected to prepare beforehand and on topics addressed in class. Students will answer lecture quizzes via web-enabled device or on the 3x5 index cards. Points accumulated by correct responses could add up to 5 points on the final exam. **You must be present for the entire lecture to be eligible for that day's lecture quiz bonus points.**

Makeup Policy

In addition to the policy that NO late homework or quizzes will be accepted (see Homework and Quizzes), **there are no make-up exams.** If you know ahead of time that you are going to miss class for a legitimate reason, it is your responsibility to inform me and make the necessary arrangements. If you have a conflict with a scheduled exam due to a school sponsored or excused event, you MUST have documentation and you MUST arrange to take the test BEFORE you leave. To request an alternate test date because of an approved conflict, please fill out the Alternate Test Date Request Form which can be found in Blackboard. You must either submit the forms directly to me during class or office hours or email the form along with the necessary documentation at least two weeks prior to the first exam. A request for a rescheduled exam will only be considered in rare, documentable, and verifiable instances. The decision to grant an alternate test date will be at the sole discretion of the instructor and/or course coordinator.

Course Strategies

The primary methods for course content delivery will be lecture.

- You should bring your textbook with you to class. You will be guided through the notes and course material will be explained.
- Students may work through their homework and quiz assignments outside of class time since the MyLabsPlus program is accessible from any source with an internet connection. Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Announcements: Found in *MyLabsPlus* and in *Blackboard*.

- Students are responsible for all information found in these announcements.
- Students should check for new announcements at least twice a week.

Help for Students

- Lab Tutors – open lab times are available in addition to your class times. Visit http://www.uta.edu/math/emporium/ for more information.
- Math Clinic – located in Pickard Hall 325, offers free daily help. http://www.uta.edu/math/clinic/
- Supplemental Instruction – information is found within a tab in your Blackboard course.
- University Tutoring Service http://www.uta.edu/universitycollege/current/academic-support/learning-center/tutoring/index.php Ransom Hall Suite 205.
- Maverick Resource Hotline (817-272-6107). https://www.uta.edu/universitycollege/resources/resource-hotline.php
- Counseling and Psychological Services (CAPS) https://www.uta.edu/caps/
- Additional Online Course Help: https://www.khanacademy.org/

Software and System Requirements

Mozilla Firefox and Google Chrome are the recommended and supported browsers for this course. The course also has the following options for system requirements:

- Windows 7.0 or higher
- Mac OS x 10.8 or higher

If working outside the lab, students are encouraged to use the Browser Check on the initial page within the MLP system in order to check and/or update (free download) the following software requirements:

- Adobe Flash Player version 11.9 or higher
- Adobe Reader version XI or higher
- Pearson LockDown Browser for Windows version 2.00.203 or for a Mac version 2.00.200

Course Objectives

Course Catalog Description

This course covers material in a traditional algebra course together with real-world applications of mathematics. It develops problem-solving and critical thinking skills. Topics include the mathematics of dimensional analysis, mathematical logic, population growth, optimization, voting theory, number theory, graph theory, relations, functions, probability, statistics, and finance. The use of mathematical software and calculators is required.

Learning Objectives and Outcomes

After completing the course, students should be able to demonstrate the following competencies:

1.0 Students will be able to demonstrate problem solving and critical thinking skills using inductive and deductive reasoning.
2.0 Students will be able to demonstrate logical thought using sets, logic statements, truth tables and number theory.
3.0 Students will be able to recognize and apply algebraic relations, functions and graphs.
4.0 Students will be able to evaluate applications containing metric system units and perform unit conversions.

5.0 Students will be able to evaluate applications involving consumer and finance mathematics.
6.0 Students will be able to demonstrate and apply knowledge of probability and statistics.
7.0 Students will be able to demonstrate and apply knowledge in applications involving voting and apportionment methods.

Course Competencies

1.0 To demonstrate competency in problem solving and critical thinking, a student should be able to:
- 1.1 Identify and use inductive and deductive reasoning to reach conclusions.
- 1.2 Use approximation/estimation to determine reasonableness of results.
- 1.3 Organize and use information in word problems to solve them.
- 1.4 Interpret bar and line graphs, pie charts and tables.
- 1.5 Use set notation to describe and list various types of sets.
- 1.6 Recognize equivalent sets and equal sets and the null set.
- 1.7 Determine the cardinal number of a set.
- 1.8 Identify and describe subsets and determine numbers of distinct subsets.
- 1.9 Use Venn Diagrams to illustrate relationships among sets and to demonstrate survey results.
- 1.10 Determine unions and intersections, complements of sets.
- 1.11 Use number theory to determine divisibility rules.

2.0 To demonstrate competency in logical thought, a student should be able to:
- 2.1 Interpret and express statements in symbolic form.
- 2.2 Express negations of statements.
- 2.3 Determine truth values of statements.
- 2.4 Interpret and use connectors to express compound statements.
- 2.5 Construct truth tables.
- 2.6 Determine logical equivalence of statements.

3.0 To demonstrate competency in algebraic relations, functions and graphs, a student should be able to:
- 3.1 Use order of operations.
- 3.2 Evaluate formulas and solve for specified variables.
- 3.3 Identify algebraic relations and functions.
- 3.4 Solve and apply linear equations.
- 3.5 Solve and apply linear inequalities.
- 3.6 Solve and apply quadratic equations.
- 3.7 Graph linear, quadratic and exponential equations.

4.0 To demonstrate competency in the metric system and unit conversions, a student should be able to:
- 4.1 Use metric units and do conversions within the metric system.
- 4.2 Determine length, area, volume, mass and temperature in the metric system.
- 4.3 Use dimensional analysis to convert units to and from the metric system.

5.0 To demonstrate competency in consumer and finance mathematics, a student should be able to:
- 5.1 Use percents, fractions, and decimals.
- 5.2 Calculate percent increases and decreases.
- 5.3 Calculate simple interest.
- 5.4 Calculate compound interest
- 5.5 Determine present value.
- 5.6 Calculate payments, interest on amortized loans.
- 5.7 Calculate future value, payments and interest on annuities.

6.0 To demonstrate competency in probability and statistics, a student should be able to:
- 6.1 Identify and calculate empirical probability.
- 6.2 Identify and calculate theoretical probability.
- 6.3 Determine odds against and in favor of an event.

6.4 Create, interpret, and apply frequency distributions and statistical graphs.
6.5 Calculate and interpret common measures of central tendency such as mean, median, mode and mid-range.

7.0 To demonstrate competency in voting and apportionment methods., a student should be able to:
- 7.1 Construct and use preference tables.
- 7.2 Identify and use:
  - 7.2.1 the Plurality voting method,
  - 7.2.2 the Borda Count voting method,
  - 7.2.3 the Plurality with Elimination voting method,
  - 7.2.4 the Pairwise Comparison voting method.
- 7.3 Identify the flaws in voting methods.
- 7.4 Identify and use:
  - 7.4.1 Hamilton's Apportionment method,
  - 7.4.2 Jefferson's Apportionment method,
  - 7.4.3 Webster's Apportionment method,
  - 7.4.4 Adams's Apportionment method.
- 7.5 Identify the flaws in apportionment methods.

Course Policies

Drop Policy

If you withdraw from the course for any reason, you must follow University procedures. It is your responsibility to execute these procedures correctly and within the deadlines. **Instructors are unable to drop students**. The Math Department Office can help with the withdrawal process. We strongly recommend that you drop the course if you are significantly behind in completing the required assignments. 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/aao/fao).

Disabilities 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.

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 University Catalog. For undergraduate courses including this one, see http://catalog.uta.edu/academicregulations/grades/#undergraduatetext. For student complaints, see http://www.uta.edu/deanofstudents/student-complaints/index.php.

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

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

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. This course includes a zero tolerance policy for academic dishonesty and students 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/.
Students found guilty of cheating will receive a grade of "F" for the course.

> *"Scholastic dishonesty includes but is 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." (Regents' Rules and Regulations, Series 50101, Section 2.2)*

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, or view the information at http://www.uta.edu/universitycollege/resources/index.php.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. http://library.uta.edu/academic-plaza.

The IDEAS Center (2nd Floor of Central Library) offers free tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

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 classes categorized as "lecture," "seminar," or "laboratory" shall be 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 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

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. 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.

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. We further recommend that you enter the UTA Police Department's emergency phone number into your own mobile phone. For non-emergencies, contact the UTA PD at 817-272-3381.

Student Intellectual Property Rights Statement

A student shall retain all rights to work created as part of instruction or using university technology resources.