Math 3319–004: Differential Equations & Linear Algebra  
Fall 2020, Tue/Thu 12:30–1:50 PM, NH100

Instructor: Dr. Christopher Kribs  
Office: 483 Pickard Hall (closed during pandemic)  
Phone: (817)272-5513, fax 272-5802  
email: kribs@uta.edu  
Profile: https://mentis.uta.edu/explore/profile/christopher-kribs  
WWW: http://mathed.uta.cloud/kribs/  
Office Hours: after class or by appointment, all via Teams

Scheduled Meetings: Tue/Thu 12:30–1:50 PM (in NH100 or via Canvas Conferences)  
   In an effort to reduce the spread of COVID-19, and to preserve the safety and well-being of  
all students and employees, UT Arlington has developed an alternative class structure and special  
protocols for on-campus time. The procedures are consistent with recommendations from the  
Centers for Disease Control and Prevention, and Orders issued by the Governor of Texas.  
   This course has been classified Hybrid3, which means that class meetings will occur on campus  
(in NH100), but classroom seat time will be rotated among students and you will watch lectures via  
Canvas Conferences on the day(s) you are not on campus. Testing on specified dates and times will be  
held on campus. After Thanksgiving break, instruction will be completely online via Canvas  
Conferences, with no on-campus elements.

Pre/corequisite: MATH 2326  
Course home page: http://mathed.uta.cloud/kribs/3319.html or see Canvas  
Last day for withdrawal: November 6

Final exam: The official final exam period for our course is Tuesday, December 15, 11:00-1:30pm  
   (note times). But it’s a little more complicated than that, thanks to COVID—see Exams.  
Other exam dates (tentative): Thu Oct 1, Thu Nov 5, Tue Nov 24, in class, but see Exams  
Course content (from the Undergraduate Catalog): Introductory course with emphasis on solution  
techniques. Ordinary differential equations, vector spaces, linear transformations, matrix/vector  
algebra, eigenvectors, Laplace Transform, and systems of equations.

LEARNING OUTCOMES: The successful student will be able to:

   • solve ordinary differential equations that fall into one of the following two categories: (1) 1st-  
      order (separable; linear; homogeneous) and (2) 2nd-order linear with constant coefficient (ho-  
      mogeneous; non-homogeneous with exponential, polynomial & sine/cosine right-hand sides)
   • solve systems of linear algebraic equations & systems of 1st-order linear differential equations
   • use and identify vector space concepts: subspaces, linear dependence/independence, bases and  
      dimension
   • analyze linear transformations: properties, kernel and range, determinants

GRADES: Course grades will be determined by six components: two midterms (25% each), two  
tests (15% each), and weekly homework and quizzes (10% each). Details on each component are pro-  
vided later in this syllabus. Homework and quiz totals are graded on a standard 90A/80B/70C/60D  
grade scale; any deviations for exams will be announced after each exam is graded. Students are expected  
to keep track of their performance throughout the semester and seek guidance from available sources  
(including the instructor) if their performance drops below satisfactory levels.
Policies & Resources

How to study: (1) Before class, read the textbook sections assigned to be discussed in class. Write down points of confusion and questions to ask. (2) During class, participate—bring up questions from your reading and the lecture. Write notes actively—this promotes retention. (3) After class: If necessary, watch a supplemental video (see Canvas) for more explanation and examples (such videos are not a replacement for attending lecture, and coverage will differ). Work assigned homework problems. If you get stuck, flag the problem and move on. Seek out the instructor, peers, or the Math Clinic for help before the next class. Bring homework problems (completed or not) to class to discuss. For any problem(s) you struggled with, work more problems of that type until you can complete them without difficulty. Review true-false questions at the end of each section.

Expectations for class time: This class meets every Tuesday and Thursday (except Thanksgiving) from Aug. 27 to Dec. 8. Students are expected: to be on time, prepared and ready to work at 12:30; to have read the assigned section(s) from the text; to have tried the homework problems assigned over previous sections (bringing their work to class); to actively participate in class discussions; to get help on homework problems before they are due. Class time will be available to address common misconceptions and confusions, but it is often not possible to devote time to every problem on which anyone had difficulty. Out of respect for your peers and our common work, please keep all electronic devices off during on-campus classes except to take notes. In emergencies cell phones may be set to vibrate only, and brief calls taken in the hallway outside.

Expectations for out-of-class study: The general rule for college courses is that for every hour spent in class, a student should spend 2 hours/week outside of class on the course (thus a 12–15-hour load is considered full-time: 12 × 3 = 36, 15 × 3 = 45). This includes time spent reading, studying, working on homework, consulting the instructor or tutors, etc. If you find that you regularly spend more than 6 hours per week outside class on this course, let me know. If you struggle to find 6 hours per week outside class to work on this course, you are officially overcommitted.

Late homework: Each student is allowed one late HW submission per semester. The PDF must be uploaded before the next class period after it was due. Any work not submitted before deadline is late. Submitting a late paper constitutes the student’s agreement that this is the one allowed late assignment.

Make-up exams: No make-up exams will be given regardless of reason, unless the student presents, before the exam, justification sufficient to convince the instructor to arrange one. Due to grade reporting deadlines, no make-up final exams will be given. No make-up quizzes will be given.

Institutional policies: UTA students are encouraged to review the below institutional policies and informational sections and reach out to the specific office with any questions. To view this institutional information, please visit the Institutional Information page (https://resources.uta.edu/ provost/course-related-info/institutional-policies.php) which includes the following policies among others: Drop Policy, Disability Accommodations, Title IX Policy, Academic Integrity, Student Feedback Survey, Final Exam Schedule.

Attendance: At UT Arlington, taking attendance is not required but attendance is a critical indicator of 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. In this class there is no explicit penalty for absences, but students who miss class remain responsible for the information (including announcements) discussed in class. Absence does not excuse late homework papers or missed quizzes. Students are also expected to minimize disruption if they arrive late. 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 must 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 Canvas. This date is reported to the Department of Education for federal financial aid recipients.

Emergency Exit Procedures: Should we experience an emergency event that requires evacuation of the building, students should exit the room and move toward the nearest exit, which is located at either the front left or the back of NH100. When exiting the building during an emergency, do not take an elevator but use the stairwells instead. 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 Success Programs: 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 by appointment, drop-in tutoring, etutoring, supplemental instruction, mentoring (time management, study skills, etc.), success coaching, TRIO Student Support Services, and student success workshops. For additional information, please email resources@uta.edu, or view the Maverick Resources website.
Hybrid3 modes

The evolving nature of the COVID-19 pandemic means that, for everyone’s safety, at any point during the semester it may become necessary to shift our course’s mode of operation to online-only, either temporarily or permanently.

Our course’s default mode of operation this semester is Hybrid3, which means the following: (1) Students will be assigned seat space on either Tuesdays only or Thursdays only, and should attend class (with face coverings) in person on the assigned day, and via Canvas Conferences on the other day each week (a mechanism will be made available for online students to ask questions in realtime). (2) Exams will take place on campus. Days, times, and locations will be announced in advance. I am working on arranging classroom space to allow everyone to take the exam during our normal class time, on the days given in the syllabus. If this fails, then they may be given from 6 to 8 PM on the nearest Friday evening (Oct 2Nov 6/Nov 20). I will notify the class as early as possible regarding these arrangements.

If at any point conditions require our course to move online, either temporarily or permanently, then as long as this mode lasts, (1) class will meet online using Canvas Conferences, and (2) exams will be given online in some combination of the following ways: (a) via Canvas Quizzes using Respondus and Lockdown, (b) oral exam via Teams videoconference. This includes the period after Thanksgiving, and Test 3b.

Homework and quiz deadlines on Canvas remain the same regardless of on-campus or online mode.

Any student who is required to self-quarantine during the semester should first report it to UTA using the online Self-Reporting Tool and then notify his/her instructors as soon as possible. During this period the student should attend class online (the same way s/he does on the days he does not attend in person). If this period overlaps an exam date, it is the student’s responsibility to make arrangements with the instructor before the exam. Students who miss an exam without having contacted the instructor will not be allowed to make up the exam. Any make-up exams not taken synchronously with the rest of the class will be oral exams via videoconference.

As in any other semester, a student who is ill on or immediately before an exam date should contact the instructor as soon as possible, and provide documentation with diagnosis to justify requests for any alternative arrangements. It is likewise a student’s responsibility to contact the instructor before census date with any information regarding testing accommodations approved by the Office for Students with Disabilities.

Any student who wishes to request assignment to a specific seat-space cohort (Tuesday or Thursday) may email the instructor before seat assignments are made, preferably before the semester begins. It may not be possible to accommodate all requests. After seat assignments are made, changes may be made only with instructor approval, and only by pairs of students (one from each cohort) asking to swap dates with each other. These rules are necessary to ensure compliance with safety regulations to prevent disease transmission.

Students attending class on campus should also come prepared to sanitize the space they use (their seat, desktop, and the space around them) both before and after class, for their own safety and that of students in the next class.

Mandatory Face Covering Policy

UTA policy during this pandemic period and throughout this semester is to require all individuals to wear face coverings (or masks) on campus at all times indoors and at all times when others may come within six feet of you. State Executive Order EO-29 (https://guides.sll.texas.gov/covid-19/mask-laws) requires that masks/coverings cover both nose and mouth. UTA policy requires that a face covering fit simultaneously over the nose and under the chin.

Students are expected to arrive in the classroom with face coverings already in place. They must remain in place throughout the class period. (Note that in general this will prevent any eating or drinking in class.) Our class is a learning community, and one of the most important aspects of a community is respect for others and their safety. Wearing a face covering protects the community against any pathogens that you may bring accidentally into the classroom, and shows respect for the others in your learning community.

All students and instructional staff are required to wear facial coverings while they are on campus, inside buildings and classrooms. If students need masks, they may obtain them at the Central Library, the E.H. Hereford University Centers front desk or in their department. Students who refuse to wear a facial covering in class will be asked to leave the session by the instructor. Students who refuse to leave may be reported to UTAs Office of Student Conduct. In this case the instructor may dismiss class for everyone’s safety. Students should then watch the Echo360 lecture video corresponding to that day’s topic, and follow up individually with the instructor if they have questions about the material. In this way we can keep on schedule.
COVID-19 Procedures

All students, faculty, staff, and visitors on campus are expected to adhere strictly to the following safety procedures:

- Everyone must measure their temperature daily and complete the COVID-19 Self-Screening Checklist prior to coming to campus every time. Prior to coming to campus or while on campus if you are experiencing any of the following symptoms that are new, worsening or occurring in a way that is not normal for any chronic conditions you may have, please remain or return home.
  - Cough
  - Shortness of breath or difficulty breathing
  - Chills
  - Repeated shaking with chills
  - Muscle pain
  - Headache
  - Sore throat
  - Loss of taste or smell
  - Diarrhea
  - Feeling feverish or a measured temperature greater than or equal to 100.4 degrees Fahrenheit

Your presence on campus indicates that you have completed your daily self-screening, including a daily temperature check to ensure no fever and that you are not exhibiting any signs or symptoms of possible COVID-19 and that, to your knowledge, you have not come into close contact with a person confirmed positive for COVID-19.

- Masks or coverings must be worn (covering mouth and nostrils) while in campus buildings and elsewhere on campus when it's not possible to stay 6 feet away from other people. Reusable, washable fabric face masks for individuals are available at Central Library and the information desk at the University Center.

- Maintain social distancing by keeping at least 6 feet between yourself and others.

- Classrooms, labs, and seating areas will be set up with reduced capacity to maintain the correct distance. Please do not move chairs or furniture around.

- Cleaning supplies will be available in classrooms. Please clean your work area when you arrive.

- Wash hands often with soap and water for at least 20 seconds after being in a public place, before & after eating, after touching frequently touched surfaces, after blowing your nose, sneezing, etc. If soap and water are not readily available, use hand sanitizer (at least 60% alcohol) for 20 seconds. Cover coughs and sneezes with a tissue or use the inside of your elbow.

- Avoid crowded areas or those with close-quarters, such as elevators. Take the stairs if at all possible. If taking the elevator is necessary, avoid touching the buttons with exposed fingers.

If you have been in close contact with a person who is lab-confirmed to have COVID-19, you may not return to work or class until the end of the 14-day self-quarantine period from the last date of exposure. You are required to complete the Close Contact or Personal Diagnosis Form.

In cases of close contact or symptoms, your absence from campus/classroom activities may be excused. You must communicate immediately with your instructor, especially if graded work is missed.

If diagnosed with COVID-19, you may return to campus when all four of the following criteria are met:

1. At least 3 days (72 hours) have passed since recovery (resolution of fever without the use of fever-reducing medications);
2. Improvement in symptoms (e.g. cough, shortness of breath);
3. At least 10 days have passed since symptoms first appeared; and,
4. You have obtained a note from a medical professional clearing you for return to work or class.
**Homework**

A tentative assignment sheet is given in the calendar at the end of this syllabus. These usually begin with simpler, straightforward exercises and progress to more challenging or complex questions. If you struggle with them, you may need to work further problems in order to master the topic.

Each *Tuesday* at 12:30pm, the problems corresponding to the previous week’s lectures are due on Canvas, to be submitted as a single PDF. (Thus problems from 1.1 and 1.2 should be uploaded as a single PDF for HW1 by Sep. 1; problems from 1.4 and 1.6 should be uploaded as a single PDF for HW2 by Sep. 8; etc.) Papers will be graded primarily for completion (working all the assigned problems and *showing work clearly*, regardless of correctness—this recognizes effort). Homework may be handwritten but is expected to be legible, *with the work and reasoning clearly communicated*. Papers submitted as multiple files or in paper form will *not* be graded.

Since most of the semester’s 15 weeks involve a homework assignment, each student’s final homework grade will be determined by taking the top ten grades. This allows occasional emergencies not to impact the grade. To be fair to all students, late homework will not be accepted for credit, although students may discuss homework problems with the instructor at any time.

**Quizzes**

At the end of class each Thursday (except exam days), a short quiz will be given on Canvas, with one question, based on material from the previous week’s classes. Any student in the classroom without an electronic device capable of accessing Canvas may request a paper copy. As with homework, only the top ten quiz grades will be used to determine this component of the grade.

**Quiz 0**

Quiz 0 requires the student to present and discuss his/her work on a single homework problem, in a one-on-one Teams videoconference with the instructor. It is OK for the student to have questions about the problem, but the student must already have made some progress on the problem. It is the student’s responsibility to schedule the meeting with the instructor via email. The meeting must take place in September, and before the problem under discussion is due to turn in. The problem should be assigned during September (see calendar) and involve at least 5 steps. Quiz 0 grading will simply be a completion grade as long as the criteria above are met.

Of course, students are always welcome to meet with the instructor this way about homework problems. This quiz is simply intended to ensure that everyone knows how to do so.

**Exams**

This course normally involves 3 exams. Exams 1 and 2 count 25% each. This semester, exam 3 is being broken into 2 smaller tests (15% each): 3a on Chapter 8 and 3b on Chapter 9. Exams are not explicitly cumulative in nature, although the nature of the material means that later problems will inevitably draw on mathematical issues covered earlier in the course.

As described under “Hybrid3 modes,” as long as the course continues to meet on campus, exams will be given on campus. In this mode, exams will be closed-book and closed-notes, but students should prepare and use as reference during the exam a single 5”x7” card with notes written on both sides, as insurance against “mental blanks.” No computers or calculators of any kind will be permitted. All electronic devices must be turned off and stored during exams, to avoid distracting others. No leaving the room and returning, once exam papers are out.

Exams given during any part of the semester when the course is operating in online-only mode (e.g., Test 3b) will involve some combination of (a) Canvas Quizes using Respondus and Honorlock, (b) oral exam via Teams videoconference. Students should familiarize themselves with all of these platforms early in the semester. The instructor will provide details well in advance of each exam.
Calendar

A tentative schedule with topics is given below (subject to updating). Asterisks (*) denote online-only sessions. 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.

NOTE: Homework problems come from the 4th edition. Other editions have different problems.

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I tentatively expect to offer an optional review session outside of class (via Canvas Conferences) before each exam. These sessions will consist entirely of Q&A where students bring questions and I respond. Review sessions from prior semesters are available on Echo360. Tentative dates/times:

Wed Sep 30 1:00-2:00, Wed Nov 4 1:00-2:00, Fri Nov 20 1:00-2:00, Thu Dec 10 12:30-1:50.

Resources

instructor • TA • Math Clinic drop-in help (PKH325) • Math Clinic open tutorial sessions • SI sessions • Canvas course materials • Echo360 lecture videos • other videos • peer study groups