

**MATH 1426 Calculus I**  
Fall 2016

**Instructor:** Dr. Backs

**Office Number:** PKH 448

**Office Telephone Number:** 817-272-7163; messages can also be left at 817-272-3261

**Email Address:** [kbacks@uta.edu](mailto:kbacks@uta.edu)

**Faculty Profile:** <https://www.uta.edu/profiles/karl-backs>

**Office Hours:** MWF 12-1 pm; or by appointment

**Section Information:** MATH 1426-700; Labs 701, 702, and 703

**Time and Place of Class Meetings:** Lecture TuTh 12:30-1:50 pm in PKH 110; Labs either TuTh 11-11:50 am, 2-2:50 pm, or 3-3:50 pm in PKH 305.

**Description of Course Content:** Concepts of limit, continuity, differentiation and integration; applications of these concepts.

**Student Learning Outcomes:** Upon completion of Math 1426, the students will be able to perform various tasks including (but not limited to) those outlined below with algebraic, trigonometric and transcendental functions.

1. Students will be able to compute the limit of various functions without the aid of a calculator.
2. Students will be able to compute the derivatives and differentials of various functions without the aid of a calculator, and interpret certain limits as derivatives. In particular, they will be able to compute derivatives and differentials using differentiation techniques such as chain rule, implicit differentiation and logarithmic differentiation.
3. Students will be able to find the equation of the tangent line to the graph of a function at a point by using the derivative of the function. They will be able to estimate the value of a function at a point using a tangent line near that point.
4. Students will be able to sketch the graphs of functions by finding and using first-order and second-order critical points, extrema, and inflection points.
5. Students will be able to solve word problems involving the rate of change of a quantity or of related quantities. Students will be able to solve optimization problems in the context of real-life situations by using differentiation and critical points of functions. The problem topics include (but are not limited to) population dynamics, finance, physics, biology, chemistry and sociology.
6. Students will compute the area below the graph of a function by using a limit of a Riemann sum and/or by using a definite integral.
7. Students will be able to compute certain antiderivatives using various antidifferentiation techniques such as integration by substitution. They will be able to apply the Fundamental Theorems of Calculus to compute derivatives, antiderivatives, definite integrals and area.
8. Students will be able to justify and explain their steps in problem solving. In particular, students will be able to construct correct and detailed mathematical arguments to justify their claimed solutions to problems.

**Textbook and Other Course Materials:**

*CALCULUS, EARLY TRANSCENDENTALS, (CUSTOM EDITION FOR UT-ARLINGTON)*, BY BRIGGS, COCHRAN, AND GILLET **OR**  
*CALCULUS, EARLY TRANSCENDENTALS (VOLUME ONE, CUSTOM EDITION FOR UT-ARLINGTON)*, BY BRIGGS, COCHRAN, AND GILLET\*

Register\*\* for MyLabsPlus at: [www.uta.mylabsplus.com](http://www.uta.mylabsplus.com) **Questions about MyLabsPlus? 1-855-875-1797**

\*The "Volume One" textbook is a cheaper option for those who only take one semester of Calculus.

\*\* If you purchased your book new, you receive an access code for MyLabsPlus. Otherwise, you will need to purchase this. There is a 14-day trial period before action is needed regarding purchasing access.

**Grade Components:**

Midterm 1	20%
	Friday, September 23 <sup>rd</sup> , 2016 from 6:00 - 8:00 pm
Midterm 2	25%
	Friday, October 28 <sup>th</sup> , 2016 from 6:00 - 8:00 pm
Final Exam	35%
	Saturday, December 10 <sup>th</sup> , 2016 from 12:30 - 3:00 pm
Lab	20% (10% lab activities, 10% on-line HW)

**Grading Scale:**

90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

**Midterms and Finals:** These exams are departmental, i.e., all sections of Math 1426 (except for section 271) will take the same exam and the grades will have the same weight in each section. All of these exams are comprehensive. Each exam will be a mix of multiple choice problems and show-your-work problems.

**Any student who scores below 50 on the final exam cannot receive a grade higher than D in the course.**

You may access recent previous midterms and some of the finals online. Go to

[https://mavspace.uta.edu/xythoswfs/webview/xy-697804\\_1](https://mavspace.uta.edu/xythoswfs/webview/xy-697804_1).

Solutions to the multiple choice questions are available at

[https://mavspace.uta.edu/xythoswfs/webui/xy-1083634\\_1-t\\_jbpAg0IM](https://mavspace.uta.edu/xythoswfs/webui/xy-1083634_1-t_jbpAg0IM).

**Make-up Policy:** If you have a conflict with either midterm or final, you must contact your instructor no later than Census Date (Monday, September 12<sup>th</sup>), by using a form provided to you at your request by your instructor & submitting it together with necessary documentation as indicated on the form. If a conflict arises after September 12<sup>th</sup>, contact your instructor immediately. Delays in submitting a make-up request may mean that your request cannot be approved by the course coordinator (Mark Krasij, PKH 450).

**HW:** HW will be assigned and completed by students on-line.

**No make-ups on HW and Labs, except in extreme circumstances (hospitalization, e.g.)**

**Calculators:** The calculators allowed for the midterms and final are TI-30XA and TI-30XIIS.

**For labs the same calculators are allowed.**

**Attendance:** 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, I will not take attendance during lectures, but attendance will be taken at all lab sessions and factored into your Lab grade.

**Lab Attendance Policy:** Attendance is required. A student will receive no credit for a lab session they do not attend.

**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://www.uta.edu/aao/fao/>).

Any student who drops this course on or before Wednesday, November 2<sup>nd</sup> at 4 PM will receive a W.

**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.

**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.

If you require an accommodation based on disability, I would like to meet with you in the privacy of my office, during the first week of the semester, to make sure you are appropriately accommodated.

Counseling and Psychological Services, (CAPS) [www.uta.edu/caps/](http://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](http://uta.edu/eos). For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX).*

**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](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](mailto:jmhood@uta.edu).

**Academic Integrity:** Students enrolled in this course 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/>.

### **START STRONG Freshman Tutoring Program**

#### **University Tutorial and Supplemental Instruction (UTSI)/University College**

All first time freshmen can receive six FREE hours of tutoring for this course and other selected subjects for this semester. **Students must sign up and complete their first hour of tutoring by September 23<sup>rd</sup>.** To sign up, visit UTSI in 205 Ransom Hall/University College. Upon completion of your first tutoring appointment, you will receive five hours of additional free tutoring. Unused hours will not roll-over to the next semester. Flexible tutoring hours are available from 7:00am – 9:00pm, seven days a week at secure locations on campus. All tutors receive extensive training. Find out more at <http://www.uta.edu/universitycollege/current/academic-support/learning-center/tutoring/start-strong.php>

The Math Department operates the **Math Clinic**, a tutoring service staffed by upper level undergraduate students. The Math Clinic is on the 3<sup>rd</sup> floor of Pickard Hall; the phone number is 817-272-5674; and the hours of operation for fall and spring are

Monday – Thursday	8am to 9pm
Friday	8am to 1pm
Saturday	1pm to 6pm
Sunday	1pm to 9pm

Go to the Math Clinic webpage <http://www.uta.edu/math/clinic/> to get more information or to access assignment sheets for the courses for which tutoring is offered.

All previous midterm exams and some previous final exams are available to students in the **Science Education and Career Center (SECC)**, 106 Life Science Building. The fall and spring hours of operation are

Monday-Thursday	8am - 8pm
Friday	8am - 5pm
Saturday	12pm - 5pm
Sunday	Closed

You need a Mav ID Card to check out these exams. A copy machine is available for you to make copies. There are also video tapes of lectures on calculus topics that can be viewed in the SECC. For more information, go to <https://www.uta.edu/cos/SECC/login.php>.

The Math Department maintains a list of people who have expressed an interest in tutoring. These persons are not necessarily recommended by the Math Department and they set their own fees. You may obtain a copy of the tutor list in the Math Office, 478 PKH.

**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:** 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 take an immediate right or left, walk down the hallway toward the corner of the building and descend the stairs. 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. (<https://www.uta.edu/policy/procedure/7-6>).

Students are encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

**Student Support Services:** [Required for all undergraduate courses] 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 <http://www.uta.edu/universitycollege/resources/index.php>.

**The IDEAS Center** (2<sup>nd</sup> 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](mailto:IDEAS@uta.edu) or call (817) 272-6593.

**Student Disruption:** The University reserves the right to impose disciplinary action for an infraction of University policies. For example, engagement in conduct, alone or with others, intended to obstruct, disrupt, or interfere with, or which in fact obstructs, disrupts, or interferes with, any function or activity sponsored, authorized by or participated in by the University.

**Important Dates:**

Thursday, August 25 <sup>th</sup>	First day of class
Monday, September 12 <sup>th</sup>	Census Date ( <b>Deadline for makeup requests for <u>all</u> exams</b> )
<b>Friday, September 23<sup>rd</sup></b>	<b>Midterm 1, 6:00 – 8:00 pm</b>
<b>Friday, October 28<sup>th</sup></b>	<b>Midterm 2, 6:00 – 8:00 pm</b>
Wednesday, November 2 <sup>nd</sup>	Last day to drop a class (by 4 pm)
Tuesday, December 6 <sup>th</sup>	Last day of class
<b>Saturday, December 10<sup>th</sup></b>	<b>Final Exam, 12:30 – 3:00 pm</b>

**Course Schedule:**

(Goal is to be done with the given sections in the textbook by the dates listed)

8/25 2.1 Idea of Limits  
8/30 2.2 Definitions of Limits  
9/1 2.3 Techniques for Computing Limits  
9/6 2.4 Infinite Limits  
9/6 2.5 Limits at Infinity  
9/8 2.6 Continuity  
9/13 3.1 Introduction to Derivatives  
9/15 3.2 Working with Derivatives  
9/20 3.3 Rules of Differentiation  
9/22 Review for Exam #1  
[9/23 Exam #1]  
  
9/27 3.4 Product and Quotient Rules  
9/29 3.5 Derivatives of Trigonometric Functions  
10/4 3.6 Derivatives as Rates of Change  
10/6 3.7 Chain Rule  
10/11 3.8 Implicit Differentiation  
10/13 3.9 Derivatives of Logarithmic and Exponential Functions  
10/13 3.10 Derivatives of Inverse Trigonometric Functions  
10/18 3.11 Related Rates  
10/20 4.1 Maxima and Minima  
10/20 4.2 What Derivatives Tell Us  
10/25 4.3 Graphing Functions  
10/27 Review for Exam #2  
[10/28 Exam #2]

11/1 4.4 Optimization Problems  
11/3 4.5 Linear Approximation and Differentials  
11/3 4.6 Mean Value Theorem  
11/8 4.7 L'Hopital's Rule  
11/10 4.9 Antiderivatives  
11/10 5.1 Approximating Areas Under Curves  
11/15 5.2 Definite Integrals  
11/17 5.3 Fundamental Theorem of Calculus  
11/22 5.4 Working with Integrals  
11/29 5.5 Substitution Rule  
11/29 6.1 Velocity and Net Change  
12/1 6.2 Regions Between Curves  
12/1 7.7 Numerical Integration  
12/6 Review for Final Exam  
[12/10 Final Exam]

*"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." – Dr. Karl Backs.*

<b>Emergency Phone Numbers:</b> In case of an on-campus emergency, call the UT Arlington Police Department at <b>817-272-3003</b> (non-campus phone), <b>2-3003</b> (campus phone). You may also dial 911. Non-emergency number 817-272-3381
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