

## MATH 1426-300

Calculus I

Fall 2013

**Instructor(s):** Ahmed Ali

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**Office Hours:** Mondays Noon-2pm or by appointment.

**Section Information:** MATH 1426 - 300

**Time and Place of Class Meetings:** COBA 147 - Monday & Wednesday 4:00 - 5:20 pm

**Description of Course Content:** Concepts of limit, continuity, differentiation and integration; applications of these concepts. Prerequisite: C or better in MATH 1323 or MATH 1421 or the Math Aptitude Test (MAT) is required to register for this course. See <http://www.uta.edu/math/pages/main/mpt.htm> for test details.

**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:

CALCULUS, *EARLY TRANSCENDENTALS, CUSTOM EDITION FOR UT-ARLINGTON*, BY SOO T. TAN **OR**

CALCULUS, *EARLY TRANSCENDENTALS VOLUME ONE, CUSTOM EDITION FOR UT-ARLINGTON*, BY SOO T. TAN\*

Register\*\* for WebAssign at: <http://webassign.net/>

Class Key for 1426-300: **uta 6036 1865**

\*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 WebAssign. Otherwise, you will need to purchase this. There is a 14-day trial period before action is needed regarding purchasing access.

**Course Prerequisite:** A grade of C or above in Math 1323 (Precalculus II) or a sufficient score on the Math Aptitude Test or sufficient SAT/ACT math scores.

<b>Grading Scale:</b>	90-100	A
	80-89	B
	70-79	C
	60-69	D
	0-59	F

### Grade Components:

Midterm 1	Friday, September 20, 2013 from 6-8 pm	20%
Midterm 2	Friday, October 25, 2013 from 6-8 pm	25%
Final Exam	Saturday, December 7, 2013 from 12:30 - 3 pm	35%
Problem Solving Activities	Mondays (weekly) (includes attendance) (Due following Monday)	10%
Quizzes	Wednesdays (weekly) (last 15 minutes in the lab)	8%
Homework (WebAssign)	Weekly Due by Wednesday midnight	2%

**Midterms and Finals:** These exams are departmental, i.e., all sections of Math 1426 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\\_jbpAq0IM](https://mavspace.uta.edu/xythoswfs/webui/xy-1083634_1-t_jbpAq0IM).

**Make-up Policy:** If you have a conflict with either midterm or final, you must contact your instructor no later than Census Date (September 9), 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 9, contact your instructor immediately. **Delays in submitting a make-up request may mean that your request cannot be approved by the course coordinator.**

**No make-up quizzes or late homework; except for proven emergencies or medical reasons.**

**Lab Attendance Policy:** Attendance is required for the lab sessions, no admission after 15 minutes from the lab start.

**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, October 30 at 5 PM will receive a W

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

**If you wish to use a different calculator, then you must get permission to do so BEFORE an exam.** Only nonprogrammable calculators with basic computational features, such as arithmetic and transcendental functions will be allowed. Calculators with the following features are **NOT** allowed: graphing, equation solving, differentiation and integration. Any device that has internet or e-mail capabilities – **this means NO cell phones** – and any device with a QWERTY keyboard are also not permitted.

**Americans with Disabilities Act:** The University of Texas at 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)*. 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. 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.

Student responsibility primarily rests with informing faculty **at the beginning of the semester** and in providing **authorized documentation through designated administrative channels.**

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.

**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 as they see fit in their courses, including (but not limited to) 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.

**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](mailto:resources@uta.edu), or view the information at [www.uta.edu/resources](http://www.uta.edu/resources).

### **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 20th.** 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. 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 [www.uta.edu/Startstrong](http://www.uta.edu/Startstrong)

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>.

**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:** 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 \[insert a description of the nearest exit/emergency exit\]](#). 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 handicapped individuals.

**Grade Replacement and Grade Exclusion Policies:** These policies are described in detail in the University catalog and can also be found online at [http://www.uta.edu/catalog/content/general/academic\\_regulations.aspx#10](http://www.uta.edu/catalog/content/general/academic_regulations.aspx#10) (scroll about half way down the page).

**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.

**Drop for Non-Payment of Tuition:** If you are dropped from this class for non-payment of tuition, you may secure an Enrollment Loan through the Bursar's Office.

**Important Dates:**

September 2	Labor Day
September 9	Census Date
	<b>Deadline for makeup requests for <u>all</u> exams</b>
Friday, September 20	Midterm 1, 6 – 8 pm
Friday, October 25	Midterm 2, 6 - 8 pm
Wednesday, October 30	Last day to drop a class
November 28-29	Thanksgiving Holidays
Wednesday, December 4	Last day of classes
Saturday, December 7	Final Exam, 12:30 - 3 pm

### **Course Schedule as of August 20, 2013**

*“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. –Ahmed T. Ali.”*

Date	Lecture	Quiz
Monday, August 26, 2013	Syllabus /Pre-Calc Review/Introduction	
Wednesday, August 28, 2013	1.1 Intro to Limits / 1.2 Techniques for Limits	
<b>Monday, September 02, 2013</b>	<b>(No Class) Labor Day</b>	
Wednesday, September 04, 2013	1.4 Continuous Functions	1.1, 1.2
Monday, September 09, 2013	1.5 Tangents & Rates of Change	
Wednesday, September 11, 2013	2.1 The Derivative	1.4, 1.5
Monday, September 16, 2013	2.2 Rules of Differentiation	
Wednesday, September 18, 2013	2.3 The Product & Quotient Rules	2.1, 2.2
<b>Friday, September 20, 2013</b>	<b>Midterm 1, 6 – 8 pm</b>	
Monday, September 23, 2013	2.4 Derivative in the Real World	
Wednesday, September 25, 2013	2.5 Trig Derivatives	2.3, 2.4
Monday, September 30, 2013	2.6 The Chain Rule	
Wednesday, October 02, 2013	2.7 Implicit Differentiation	2.5, 2.6
Monday, October 07, 2013	2.8 Derivatives of Log Functions	
Wednesday, October 09, 2013	2.9 Related Rates	2.7, 2.8
Monday, October 14, 2013	2.10 Differentials & Linear Approx.	
Wednesday, October 16, 2013	3.1 Extrema of Functions	2.9, 2.10
Monday, October 21, 2013	3.2 The Mean Value Theorem	
Wednesday, October 23, 2013	3.3 Increasing & Decreasing Funct.	3.1, 3.2
<b>Friday, October 25, 2013</b>	<b>Midterm 2, 6 - 8 pm</b>	
Monday, October 28, 2013	3.5 Limits Involving Infinity	
Wednesday, October 30, 2013	3.4 Concavity	3.3, 3.5
Monday, November 04, 2013	3.6 Curve Sketching	
Wednesday, November 06, 2013	3.7 Optimization	3.4, 3.6
Monday, November 11, 2013	3.8 Indeterminate Forms	
Wednesday, November 13, 2013	4.1 Indefinite Integrals	3.7, 3.8
Monday, November 18, 2013	4.2 Substitution	
Wednesday, November 20, 2013	4.3 Area	4.1, 4.2
Monday, November 25, 2013	4.4 Definite Integral	
Wednesday, November 27, 2013	4.5 The Fundamental Theorem	4.3, 4.4
Monday, December 02, 2013	4.6 Numerical Integration	
Wednesday, December 04, 2013	5.1 Areas Between Curves	4.5, 4.6
<b>Saturday, December 07, 2013</b>	<b>Final Exam, 12:30 - 3 pm</b>	

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