MATH 1426 Calculus I

Fall 2015

Section 150: PKH 321, 8:00-9:20 AM, TuTh
Lab 1: PKH 309, 9:30-10:20 AM, TuTh
Lab 2: UH 02, 12:30-1:20 PM, TuTh

Instructor: Hongguang Xi
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Office Hours: 2:00 - 3:00 PM, TuTh; or by appointment.

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`.

Textbook: *Calculus Early Transcendentals (Volume 1), Custom Edition for UTA*, by Briggs, Cochran, Gillett and Schulz.

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

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.

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

Grade components:

1. Midterm 1 — 20%, Friday, September 25, 2015; 6:00-8:00 pm (departmental)

2. Midterm 2 — 25%, Friday, October 30, 2015; 6:00-8:00 pm (departmental)

3. Final examination — 35%, Saturday, December 12, 2015; 12:30-3:00 pm (departmental)

4. Lab — 20% (10% lab activities, 10% HW). Every student should have access to MyLabsPlus (`http://www.uta.mylabsplus.com`) to finish the homework assignments online.

   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. If you have any question about MyLabsPlus, please call the priority hotline for UTA students, 1-855-875-1797.

   Students need prepare Scantron (Form SC882-E in blue color) for quizzes and exams.

   10% lab activities = 2% lab attendance + 8% lab performance (including quizzes).

   10% HW = 2% lecture attendance + 8% homework performance.

Calculator: The calculators allowed for the labs, midterms and final are TI-30XA and TI-30XIIS.

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`.

Solutions to the multiple choice questions are available at https://mavspace.uta.edu/xythoswfs/webui/_xy-1083634_1-t_jbpAg0IM.

Attendance Policy: 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 require both lecture and lab attendances.

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 14th), 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 14th, 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).** No make-ups on HW and Labs, except in extreme circumstances (hospitalization, e.g.). A missed quiz or exam cannot be made up.

Student Support Services Available: The University of Texas at 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. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counselling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit www.uta.edu/resources for more information.

START STRONG Freshman Tutoring Program: All first time freshmen can receive six FREE hours of tutoring for this course and other selected subjects for this semester. 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 in the Central Library. All tutors receive extensive training. Find out more at www.uta.edu/Startstrong.

The Math Department operates the **Math Clinic**, a tutoring service staffed by upper level undergraduate students. When you registered for this course, you were assessed a fee which allows you unlimited access to the Math Clinic. You will need to show your Mav ID to use the Math Clinic. The Math Clinic is in room 324 PKH; the phone number is 817-272-5674; and the hours of operation for fall and spring are

Monday — Thursday	8am - 9pm
Friday	8am - 1pm
Saturday	1pm - 6pm
Sunday	1pm - 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.

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. **Students must consult with their major advisor to drop a course.** Drops can continue through a point two-thirds of the way through the term or session. Any student who drops the course on or before Wednesday, November 4 at 4:00 PM will receive a W. 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/).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 - The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to **provide "reasonable accommodation"** to students with disabilities, so as not to discriminate on the basis of that disability. 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.

Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title

IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

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 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.

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. 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.

Important Dates:

August 27 ..... First Day of Class
September 7 ..... Labor Day Holiday
September 14 ..... Census Date
(**Deadline for makeup requests for <u>ALL</u> exams**)
Friday, September 25 ..... Midterm 1, 6:00-8:00 pm
Friday, October 30 ..... Midterm 2, 6:00-8:00 pm
Wednesday, November 4 ..... Last day to drop a class
(**Submit request to advisor prior to 4 pm**)
November 26, 27 ..... Thanksgiving Holidays
December 9 ..... Last Day of Class
Saturday, December 12 ..... Final Exam, 12:30-3:00 pm

Course Schedule:

1. 8/27/2015, Section 2.1, Idea of Limits.
2. 9/1/2015, Section 2.2, Definitions of Limits.
3. 9/3/2015, Section 2.3, Techniques for Computing Limits.
4. 9/8/2015, Section 2.4, Infinite Limits.
5. 9/10/2015, Section 2.5, Limits at Infinity.
6. 9/15/2015, Section 2.6, Continuity.
7. 9/17/2015, Section 3.1, Introduction to Derivatives.
8. 9/22/2015, Section 3.2, Working with Derivatives.
9. 9/24/2015, Section 3.3, Rules of Differentiation.
10. 9/25/2015, Midterm 1 (comprehensive).
11. 9/29/2015, Section 3.4, Product and Quotient Rules.
12. 10/1/2015, Section 3.5, Derivatives of Trigonometric Functions.
13. 10/6/2015, Section 3.6, Derivatives as Rates of Change.
14. 10/8/2015, Section 3.7 Chain Rule.
15. 10/13/2015, Section 3.8, Implicit Differentiation.

16. 10/15/2015, Sections 3.9 and 3.10, Derivatives of Logarithmic, Exponential, and Inverse Trigonometric Functions.
17. 10/20/2015, Section 3.11, Related Rates.
18. 10/22/2015, Section 4.1, Maxima and Minima.
19. 10/27/2015, Section 4.2, What Derivatives Tell Us.
20. 10/29/2015, Section 4.3, Graphing Functions.
21. 10/30/2015, Midterm 2 (comprehensive).
22. 11/3/2015, Section 4.4, Optimization Problems.
23. 11/5/2015, Sections 4.5 and 4.6, Linear Approximation and Differentials, Mean Value Theorem.
24. 11/10/2015, Section 4.7, L'Hopital's Rule.
25. 11/12/2015, Section 4.9, Antiderivatives.
26. 11/17/2015, Sections 5.1 and 5.2, Approximating Areas under Curves and Definite Integrals.
27. 11/19/2015, Section 5.3, Fundamental Theorem of Calculus.
28. 11/24/2015, Section 5.4, Working with Integrals.
29. 11/26/2015, No Meeting.
30. 12/1/2015, Section 5.5, Substitution Rule.
31. 12/3/2015, Sections 6.1 and 6.2, Velocity and Net Change, Regions between Curves.
32. 12/8/2015, Section 7.7, Numerical Integration.
33. 12/12/2015, Final Exam (comprehensive).

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. — Hongguang Xi

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. For non-emergencies, contact the UTA PD at 817-272-3381.