Calculus 1: MATH 1426-700/710/720

Class Meeting	Section	Time	Place
Lecture	700/710/720	TTH 12:30p – 1:50p	PKH 110
Lab	701	TTH 2:00p – 2:50p	PKH 305
	711/721	TTH 11:00a – 11:50a	PKH 305
A-ESP Workshop	711	W 1:00p – 2:50p	PKH 305
	721	W 3:00p – 4:50p	PKH 305

Instructor Richard Chandler

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Office Hours Tues. 11:00a – 11:50a, 2:00p – 2:50p
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TA Geoffrey Schuette

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ESP Instructor R. Cavender Campbell

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Office Hours Tues. 1:00 – 2:30p
Thurs. 11:30 – 1:00p

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

The "Volume One" textbook is a cheaper option for those who only take Calculus 1. Those who plan on continuing to Calculus 2 (MATH 2425) and Calculus 3 (MATH 2326) should purchase the complete book.

Register for WebAssign at: http://webassign.net **(WebAssign is REQUIRED for this course)**.
Note that the class key for this section is **uta 9721 6045**.

If you purchased your book new, you received 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.

Prerequisites A grade of C or better in MATH 1323 or MATH 1421 or the Math Aptitude Test (MAT) is required.

Description of Course Content	The course focuses upon the study of functions, graphs, limits, continuity, and differential and integral calculus. Roughly, we will study Chapters 1 through 4 in your textbook.

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.

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

Grade Components (700)	Online Homework (WebAssign)……………………………………………………………………………………………5% Quizzes……5% Lab Attendance and Worksheets…………………………………………………………………………………10% Midterm 1 (Friday, 9/19, 6-8pm)…………………………………………………………………………………20% Midterm 2 (Friday, 10/24, 6-8pm)………………………………………………………………………………25% Final Exam (Saturday, December 6th, 12:30-3pm)…………………………………………………………35%

Grade Components (710/720)	Online Homework (WebAssign)..2.5%
	Quizzes..2.5%
	Emerging Scholars Workshop...5%
	Lab Attendance and Worksheets..10%
	Midterm 1 (Friday, 9/19, 6-8pm)...20%
	Midterm 2 (Friday, 10/24, 6-8pm)..25%
	Final Exam (Saturday, December 6th, 12:30-3pm)...35%

Homework

Attached is the departmental assignment sheet for MATH 1426. Students are expected to be able to work all problems on this sheet by the end of the course, although they are NOT collected as part of your grade. It is your responsibility to stay current on the homework. The exam problems and the weekly quizzes are typically based on the problems found on this sheet.

A student must have access to WebAssign for this course as part of your grade will be based on the completion of homework assignments online. The problems will be similar to those off of the assignment sheet. Your homework grade is only based on the online homework.

Quizzes

Quizzes will be administered during your lab section each Tuesday. They will consist of 1-3 problems similar to those on the assignment sheet. You are allowed to use your own handwritten notes on the quizzes. Copies, printouts from the web or notes on electronic devices are not permitted.

I will keep the top 10 quiz grades. You must be present for the entire lab session in order to take the quiz.

Lab Attendance, Recitation & Problem Solving Activities

Each Tuesday, prior to taking your quiz, the lab session will be spent in recitation. This is your opportunity to ask the TA questions from homework, lecture, concepts, etc.

Each Thursday, your lab section will consist of a problem solving worksheet. These are intended to be more in-depth than the problems on the assignment sheet and are to be worked out in groups. Therefore, you will turn in the lab worksheets in groups of 2-4 (no more, no less). Some problems will be due by the end of each lab session and the remainder of the worksheet will be due at the beginning of the following Tuesday lab session. You will turn in **BOTH** parts of the assignment as a group.

I will keep the top 10 lab grades. Because they are group activities, if you are absent, it will hurt you as well as your group. So, attendance will be taken every day. For each absence, 1% of your final lab grade will be deducted. If you are more than 15 minutes late you will be considered absent. Also, you may not leave lab early. If you do so, you will be considered absent for the day. If you are absent on the day of a problem solving activity, you will not be part of a lab group for that week and you will be required to submit the missed lab work individually.

Emerging Scholars Program Workshops (711/721)	Students enrolled in sections 710/711 or 720/721 will also be participating in weekly workshops as part their participation in the Emerging Scholars Program. The purpose of these workshops is to go more in-depth into the topics covered in Calculus 1 than is possible in the standard lecture/lab components. The exact structure and grading of the workshop is at the discretion of the ESP Workshop Instructor and will be discussed at the first workshop meeting.
Midterms & Final Exam	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.

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

Makeups for quizzes will only be given for university activities such as athletics and illness with a doctor's note. |
| **Calculator Policy** | You must only use nonprogrammable calculators with basic computational features, such as arithmetic and transcendental functions. You may NOT use any calculator with the following capabilities: graphing, equation solving, differentiation, integration, QWERTY keyboard, and any device that has internet capabilities (This means NO CELL PHONES, TABLETS, ETC).

The recommended calculator is the TI-30XS or the TI-30XIIS. The TI-30XS has a number of nice typesetting and evaluation features that you may find useful. **If you would like to use another calculator, you must get it approved by me BEFORE the exam date. Failure to do so may result in not being able to use a calculator on you exam.** The same calculator policy applies to labs and quizzes. |

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 www.uta.edu/resources.

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. **Students must sign up and complete their first hour of tutoring by September 19ᵗʰ.** To sign up, visit the University Tutorial and Supplemental Instruction Office (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.

Math Clinic

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

Monday – Thursday………………………………………………………………………………………………8:00a – 9:00p
Friday……8:00a – 1:00p
Saturday……….1:00p – 6:00p
Sunday…….1:00p – 9:00p

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.

Science Education and Career Center (SECC)

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……………………………………………………………………………………………………8:00a – 8:00p
Friday……8:00a – 5:00p
Saturday………..12:00p – 5:00p

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.

Tutor List

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. 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/). Any student who drops this course on or before Wednesday, October 30 at 5 PM will receive a W.
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 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. |
| **Email Policy** | 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. |
| **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. |

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 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.
Grade Replacement & Exclusion	These policies are described in detail in the University catalog and can also be founded online at http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#10 (scroll about half way down the page).

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 at the southeast corner of the building. 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.

Student Disruption

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 at the southeast corner of the building. 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.

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

Important Dates

September 1st ………………………………………………………………………………….Labor Day Holiday
September 8th ……………………………………Census Date (Deadline for ALL Make-up Exam Requests)
September 19th ……………………………………………………………………………………..Midterm 1
October 24th ……………………………………………………………………………………..Midterm 2
October 29th ………………………………………………………………………Last Day to Drop Classes
November 27th/28th …………………………………………………………………Thanksgiving Holidays
December 3rd …………………………………………………………………………..Last Day of Classes
December 6th ……………………………………………………………………………………Final Exam

Course Schedule

8/21 1.1 Intro Limits
8/28 1.2 Limits Techniques
9/2 1.4 Continuous Functions
9/4 1.5 Tangents
9/9 2.1 Derivatives
9/11 2.2 Rules of Differentiation
9/16 2.3 Product and Quotient Rule

[9/19 Exam #1]

9/23 2.4 Real World Problems
9/25 2.5 Trig Function Derivatives
9/30 2.6 Chain Rule
10/2 2.7 Implicit Differentiation
10/7 2.8 Log Function Derivatives
10/9 2.9 Related Rates
10/14 2.10 Differentials and Linear Approximations
10/16 3.1 Extrema
10/21 3.2 Mean Value Theorem
10/23 3.3 First Derivative Test

[10/24 Exam #2]

10/28 3.4 Concavity and Inflection Points
10.28 3.5 Limits and Infinity
10/30 3.6 Curve Sketching
11/4 3.7 Optimization
11/6 3.8 L'Hopital
11/11 4.1 Indefinite Integrals
11/13 4.2 Integration by Substitution
11/18 4.3 Area
11/18 4.4 Definite Integral
11/20 4.5 Fundamental Theorem of Calculus
11/25 4.6 Numerical Integration
12/2 5.1 Areas Between Curves

[12/6 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." – Richard Chandler.

Calculus Early Transcendentals by Soo Tan

1.1: Intuitive Introduction to Limits
> 1, 2, 3, 4, 5, 6, 7, 8, 11, 17, 18, 20, 21, 22, 31, 33

1.2: Techniques for Finding Limits
> 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 48, 49, 55, 56, 60, 65, 68, 70, 75, 77, 86, 93, 99,100, 101

1.4: Continuous Functions
> 3, 4, 8, 10, 15, 16, 23, 27, 29, 34, 35, 41, 42, 49, 50, 54, 56, 59, 63, 96

1.5: Tangent Lines & Rates of Change
> 1, 5, 6, 9, 14, 18, 20, 22, 29, 41-44

2.1: The Derivative
> 4, 6, 9, 13, 17, 20, 25, 26, 27, 28, 29, 30, 33, 34, 35, 39, 44, 45, 46, 50, 51, 57, 60

2.2: Basic Rules of Differentiation
> 2, 7, 19, 26, 30, 32, 34, 35a, 38a, 39, 42, 57, 58, 74

2.3: The Product and Quotient Rules
> 1, 4, 8, 9, 14, 18, 23, 24, 28, 32, 33, 37, 45, 48, 50, 57, 61, 63, 69

2.4: The Role of the Derivative in the Real World
> 3, 7, 12, 16, 17, 22, 26, 33, 34

2.5: Derivatives of Trigonometric Functions
> 3, 6, 9, 15, 18, 19, 22, 26, 28, 32a, 33, 36, 37, 40, 43, 52

2.6: The Chain Rule
> 1, 3, 5, 10, 12, 17, 19, 20, 30, 43, 48, 61, 62, 63, 64, 71a, 73, 74, 78, 80, 85, 87a, 94, 111

2.7: Implicit Differentiation
> 5, 8, 16, 21, 26, 28, 36, 37, 42, 46, 47, 59, 65, 75, 76, 91

2.8: Derivatives of Logarithmic Functions
> 6, 7, 13, 18, 26, 31, 33, 34, 40, 43, 48, 54

2.9: Related Rates
> 3, 6, 8, 9, 14, 16, 18, 24, 25, 26, 28, 29

2.10: Differentials and Linear Approximation
> 2, 3, 8, 10, 13, 19, 22, 25, 27, 30, 33, 42, 45

3.1: Extrema of Functions
> 1, 2, 4, 13, 16, 17, 21, 23, 26, 30, 37, 39, 42, 48, 51, 52, 59, 66, 67, 70, 79

3.2: The Mean Value Theorem:
> 4, 8, 11, 12, 16, 18, 20, 21, 24, 26, 27, 36, 50, 51

3.3: Increasing & Decreasing Functions & the First Derivative Test
> 3, 4, 6, 7, 8, 9, 14, 15, 17, 22, 27, 32, 35, 42, 43, 47, 56, 58, 59, 63, 75

3.4: Concavity and Inflection Points
> 2, 4, 7, 8, 9, 10, 13, 22, 27, 38, 42, 52, 53, 56, 61, 64, 66, 75

3.5: Limits Involving Infinity; Asymptotes
> 2, 11, 14, 21, 23, 24, 30, 35, 39, 51, 54, 56, 57, 60, 62, 68, 89

3.6: Curve Sketching
  4, 9, 15, 18, 24, 26, 41, 42, 46, 50

3.7: Optimization Problems
  3, 4, 8, 13, 15, 21, 28, 33, 34, 46, 57, 67

3.8: Indeterminate Forms and L'Hôpital's Rule
  2, 3, 5, 6, 10, 14, 15, 24, 31, 32, 38, 39, 49, 50, 51, 57, 58

4.1: Indefinite Integrals
  7, 9, 14, 19, 21, 24, 29, 40, 41, 46, 48, 54, 58, 65, 67, 68, 70, 71, 75

4.2: Integration by Substitution
  3, 4, 6, 11, 13, 17, 18, 19, 24, 29, 33, 36, 41, 47, 52, 65, 67, 76, 77, 86, 87

4.3: Area
  2, 8, 15, 20, 22, 25, 29, 39, 42, 50, 52, 59

4.4: The Definite Integral
  1, 4, 8, 9, 13, 16, 18, 20, 24, 27, 31, 32, 63, 64, 65, 66, 67, 70

4.5: The Fundamental Theorem of Calculus
  1, 3, 7, 9, 14, 18, 19, 21, 22, 24, 31, 32, 34, 35, 43, 46, 51, 54, 57, 58, 60, 62, 69,
  76, 79, 85, 93, 97, 99

4.6: Numerical Integration
  1, 4, 6, 7, 21, 27, 44, 45

5.1. Areas between Curves
  2, 4, 6, 9, 15, 23, 24, 26, 28, 32, 33, 34, 35, 38, 40

<u>Optional</u>
1.3: A Precise Definition of Limit
  Concept Questions 1, 2, 3, 4
  Exercises 3, 5, 8, 13, 14, 21, 23, 28, 31, 32, 33, 34