Course Syllabus

Course Information

UTD Applied Calculus I
Math. 1325.502
Thurs. 7 to 9:45 PM
Room JO3.516
Spring 2008

Professor Contact Information

Instructor: Mr. Norman Aaron. Instructor's email: NAaron_UTD@sbcglobal.net. Study help: Math. Lab located in MC 2.402. Also, if there is a TA assigned to this class, the hours will be announced in class.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisite: Competence in basic algebra

Calculator: A scientific calculator is required for this class. I recommend model TI-30Xa.. Calculators having alphabetic or graphic displays or stored program capacity are not permitted. Possession of such on an exam or quiz is an academic integrity infraction

Course Description

Applied Calculus I "Functions and graphs, differentiation, maxima and minima, exponential and logarithmic functions, applications of integrals." .

Chapter 2: Nonlinear Functions: 2.2, 2.4, 2.5, (2.6, optional)
Chapter 3: The Derivative: 3.1, 3.2, 3.2, 3.4, 3.5
Chapter 4: Calculating the Derivative: 4.1, 4.2, 4.3 , 4.4, 4.5
Chapter 5: Graphs and Derivative: 5.1, 5.2, 5.3, 5.4
Chapter 6: Application of the Derivative: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6
Chapter 7: Chapter sections, if time permits: Integration: 7.1, 7.2, 7.3, 7.4, 7.5

Student Learning Objectives/Outcomes

Students will be able to formulate real world problems into mathematical statements, develop solutions to mathematical problems at the level appropriate to this course and describe or demonstrate mathematical solutions either numerically or graphically.

Required Textbooks and Materials

Textbook: "Calculus with Applications", 8th edition, by Lial, Greenwell and Miller

Suggested Course Materials

Solution Manuel: The student solution manual, associated with this text, is available in the book store and is required for this course.

Calculator: A scientific calculator is recommended, such as a TI-30Xa

Assignments & Academic Calendar

Homework: Your homework problems are shown below. Odd number problems only are assigned, except as indicated. The answers are given in the back of the book. If the class room is available, a help session will be held in the classroom just before class. Help is also available in the Math Lab, which is located in MC 2.402. Each student is responsible for completing each homework assignment prior to coming to class. Please note a quiz will be given each class period, based on prior homework assignments

Homework and Lecture Schedule: The homework is due the class following the associated chapter lecture. There will be a quiz based on the homework during each class period. Problem numbers are for odd numbered problems only, except as indicated. Revisions will be announced in class.

1/10: Algebra Readiness Test
Course Introduction
Lecture: 2.2: 9, 11, 13, 15, 47, 51
2.4: 13-21, 25, 27, 33-37, 45

1/17: Lecture: 2.5: 1-23, 27-61
Quiz: 2.2, 2.4

1/24: Lecture: 3.1: 1-7, 8, 9, 11, 31-51, 77
3 2: 1-6 (all), 7-11, 15, 19
Quiz: 2.5

1/31: Lecture: 3.3: 1, 3, 13, 15
3.4: 11-21, 31, 33
3.5: 7, 9
Quiz: 3.1, 3.2

2/7: Lecture: 4.1 (a): 1-15, 21, 31, 33, 37, 39
Review for Test#1
Quiz: 3.3, 3.4, 3.5

2/14: Lecture: 4.1 (b): 50, 51, 53, 54, 55

Major Test#1 on Chap. 2 & 3

2/21: Lecture: 4.2: 1-7, 11-15, 19, 21, 36, 37
4.3: 1, 3, 7, 11, 23, 25, 27
4.4: 1, 5, 9, 11, 13, 17, 25, 27
Quiz: 4.1 (a & b)

2/28: Lecture: 4.5: 1, 3, 7, 9, 31, 35, 37 (note derivative summary: p.264)
5.1: 9, 11, 15, 19
Quiz: 4.2, 4.3, 4.4

3/6 : Lecture: 5.2: 9, 11, 15
5.3: 1, 5, 13, 17, 19, 35, 37, 59
5.4: 3, 5
Quiz: 4.5, 5.1

3/7 Last day to drop with a WP or WF

3/20 Lecture: 6.1: 1-7, 11, 15, 17
Review for Test#2
Quiz: 5.2, 5.3, 5.4

3/27 Lecture: 6.2: 9, 11, 13, 15, 17

Major Test#2 on Chap. 4 & 5

4/3 Lecture: 6.3: 5-9, 15, 17, 21
6.4: 1-5, 17, 19, 23, 25
Quiz: 6.1, 6.2

4/10: Lecture: 6.5: 9-13, 24
6.6: 1, 3, 9, 11, 17, 19 (find % error in #9, 11, 17a)
Quiz: 6.3, 6.4

4/17: Lecture: 7.1: 5 – 23, 25, 27, 29, 31, 41, 42
Quiz: 6.5, 6.6

4/24 Review for Final Exam
Quiz: 7.1

5/1: Comprehensive final exam, covering the entire course.
Presently scheduled for Thurs. May 1, 7 PM to 9:45 PM, in the regular classroom

Grading Policy

Examinations: There will be an algebra competency test at the first class meeting. This test has no bearing on your grade. There will be two major examinations and a comprehensive final. In addition, there will be a quiz given each class based upon your homework assignments. There are no make-ups examinations or quizzes. Missed exams or quizzes will

count as zero. All exams, as well as the final, will be given in the regular classroom. On each of the examinations and quizzes, you must show your work. If there is no work shown, there will be no credit. All students must take the final exam at the specified time and place.

Calculation of the Final Grade: The grade from the lower of the two major tests will be counted as the equivalent of two quiz grades. The weekly quiz grades plus the lower of the two major tests, counted twice, will be averaged for the semester quiz grade. For the semester grade, the semester quiz grade and the grade of the higher of the two major tests, will count 30% each, plus the final exam grade will count 40%. This grade will be converted to a numerical grade between 0 and 100. Based on this numerical grade, the letter grade will be determined as follows:

97 - 100 = A +; 94 - 96 = A; 90 - 93 = A -; 87 - 89 = B +; 84 - 86 = B; 80 - 83 = B -; 77 - 79 = C +; 74 - 76 = C; 70 - 73 = C -; 65 - 69 = D +; 60 - 64 = D; 55 - 59 = D -; 0 - 54 = F

Calculation of the Mid-Semester Grade: The mid-semester will be composed of 50% from the class quiz grade and 50% for the first major test grade.

Course & Instructor Policies

Exams There are no make-ups examinations or quizzes. Missed exams or quizzes will count as zero. All exams, as well as the final, will be given in the regular classroom. On each of the examinations and quizzes, you must show your work. If there is no work shown, there will be no credit. All students must take the final exam at the specified time and place.

Calculator: A scientific calculator is recommended, such as a TI-30Xa. Calculators having alphabetic or graphic displays or stored program capacity are not permitted. Possession of such on an exam or quiz is an academic integrity infraction

Field Trip Policies
Off-campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled

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E-mail Request for Withdrawal: You may e-mail me, to my e-mail address above, a request to withdraw from this course. I will respond, with a copy to UTD Records, approving your drop request with a WP (withdrawal/passing) OR WF (withdrawal/failing). You must take a copy of my e-mail response, and the proper withdrawal form, to your advisor for signature and then to the registrar's office to complete the withdrawal process. This process must be completed by the withdrawal deadline.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the deal will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:
The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

These descriptions and timelines are subject to change at the discretion of the Professor.

Formulas for Math 1325, Calculus I

(Note: Do not bring this sheet to quizzes or exams)

Chap. 2, Nonlinear Functions

Quadratic Formula: $x = \frac{| b \pm \sqrt{b^2 | 4 ac}}{2a}$

Simple Interest: $I = Prt$

Compound Interest: $A = P\left(1 + \frac{r}{m}\right)^{tm}$

Continuous Compounding Interest: $A = Pe^{rt}$

Log Conversion: $\log_a x = \frac{\ln x}{\ln a}$

Chap. 3, The Derivative

Average rate of Change $= \frac{f(b) | f(a)}{b| a}$

Instantaneous Rate of Change $= f'(x) = \lim_{h \to 0} \frac{f(a + b) | f(a)}{h}$

Line Equations: $y | y_1 = m(x | x_1)$; $y = mx + b$

Chap. 4, Rules for Derivatives

Power rule: $f(x) = x^n$, $f' = n \bullet x^{n| 1}$
Product Rule: $f(x) = u \bullet v$, $f' = u \bullet v' + v \bullet u'$
Quotient Rule: $f(x) = \frac{u}{v}$, $f' = \frac{v \bullet u' | u \bullet v'}{v^2}$
Chain Rule: $\frac{dy}{dx} = \frac{dy}{du} \bullet \frac{du}{dx}$

Exponential Functions: $D_x(e^{g(x)}) = e^{g(x)} \bullet g'(x)$;
$D_x(a^{g(x)}) = (\ln a)\, a^{g(x)} \bullet g'(x)$

Log Functions: $D_x(\ln | g(x) |) = \frac{g'(x)}{g(x)}$;
$D_x(\log_a | g(x) |) = \frac{1}{\ln a} \bullet \frac{g'(x)}{g(x)}$

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6.0 Apllications of the Derivative

Economic Lot Size: $q = \sqrt{\frac{2\,f\,M}{k}}$

Elasticity of Demand: $E = \left| \frac{p}{q} \cdot \frac{dq}{dp} \right|$

Linear Approximation: $f(x_2) = f(x_1) + f'(x_1) \cdot (x_2 - x_1)$

Percent Error = $\frac{\text{estimated} - \text{actual}}{\text{actual}} \cdot 100$

7.0 Rules for Integration

Power Rule: $\int x^n\,dx = \frac{x^{n+1}}{n+1} + C$

Exponential: $\int e^{kx}\,dx = \frac{e^{kx}}{k} + C; \quad \int a^{kx}\,dx = \frac{a^{kx}}{k \cdot \ln a} + C$

Log: $\int x^{-1}\,dx = \int \frac{1}{x}\,dx + C = \ln |x| + C$

Substitution: $\int u^n\,du = \frac{u^{n+1}}{n+1} + C; \qquad \int e^u\,du = e^u + C$

$\int u^{-1}\,du = \int \frac{1}{u}\,du = \ln |u| + C$

(Note: Do not bring this sheet to quizzes or exams)