

# Calculus I – Math 2413.002

## Syllabus for Spring 2008

**Professor:** Dr. Casey Mann

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**Office Hours:** 8:00 a.m. – 9:50 a.m. M, 9:00 a.m. – 9:50 a.m. WF, 1:00 p.m. – 1:50 p.m. MW, other times by appointment.

**Supplement Instruction (SI) Leader:** Rebecca (Becca) Hawthorne

**SI Sessions:** TBA

**SI Lab Hours:** TBA

**Course Meeting Times:** 11:00-12:15 MWF

**Text:** Essential Calculus Early Transcendentals by James Stewart

**Catalog Course Description:** A study of functions, limits, continuity, differentiation of algebraic and trigonometric functions, applications of the derivative, definite and indefinite integrals with applications.

**Credit hours:** 4 semester hours

**Course Prerequisites:** You must satisfy *one* of the following

- Have a grade of C or better in a college trigonometry class (Math 1316 or equivalent).
- Have a grade of C or better in a Mathematics Department approved college level precalculus course (this is Math 2412 in Texas but is not offered at UTT).
- Pass a trigonometry placement test administered by the Department of Mathematics.
- Score of 675 or higher on the SAT (quantitative section).
- Score of 27 or higher on the ACT (math section).

**Mathematics Learning Center:** The Mathematics Learning Center (MLC) is located in RBN 4021. In this facility, you can ask questions about homework, work online homework, or work with classmates. If you are working with classmates, then please be considerate of others by keeping voices at a decent level so that everyone can enjoy the facility (any problems that are encountered with students or tutors should be reported to me – you will remain anonymous).

**SI sessions:** So, what is SI? SI is a series of weekly peer-assisted study sessions (led by an SI leader) in courses identified as “difficult” by previous students. It is designed to help improve study skills with the goal of improving grades  $\frac{1}{2}$  to 1 whole grade point. The program is voluntary for students who want to improve understanding of course material and content. For more information, see the SI brochure or talk to your SI leader in this class.

### **Blackboard:**

This semester your grades and announcements for this course will be posted on Blackboard. To gain access to UTT Blackboard go to <http://ccs.uttyler.edu/blackboard/> and follow the directions about how to logon. You will need to add my course to your course list. The password to get into the course will be 2413002.

## ***Course Evaluation***

During the semester you will have a variety of assignments to assess your learning outcomes in this course. There will be weekly homework, daily quizzes, tests, and a comprehensive written departmental final exam.

**Pre-test:** You will be given a diagnostic pre-test at the beginning of the semester to determine if there are precalculus skills that you need to brush up on to have a successful semester in Calculus. The pre-test will be modeled from the placement tests for both College Algebra and Trigonometry. You can review for the pre-test by visiting the departmental website (<http://www.math.uttler.edu>). Unsatisfactory performance on this test will result in the mandatory lab usage (see policy below).

**Homework:** You will have hand-in assignments that are due every Friday (if class is cancelled on Friday, then they will be due the next class day). Occasionally homework will be collected another day to accommodate an upcoming test. All homework assignments will be given in Blackboard announcements. Homework should be completed using appropriate mathematical notation and legible handwriting. For submission, fold homework lengthwise (into a 4" x 11") and place on the desk at the front of the classroom before class begins.

**Quizzes:** Daily quizzes will be given at the beginning of class. In every section, five problems will be chosen as potential quiz problems (and these will be part of the problems that you will turn in as hand-in homework assignments on Fridays). To determine what problem will be on the quiz, I will roll a die. If I hit a 3, then the third problem in the list of five will be on the quiz. If I hit a 1, then the first. If I hit a 6, then there will be no quiz that day.

**Tests:** There will be four tests given this semester. All work must be shown on exams for credit. Test dates will be announced in class about a week before the tests and a review sheet will be given. Calculator and computer usage are not allowed during tests. Extra credit may be given on tests (see the Extra Credit section below). In addition, poor performance on an exam will result in mandatory lab sessions until the next test (see Mandatory Lab Usage below).

**Departmental Final Exam:** There will be a departmental written comprehensive final exam for all sections of Calculus I. The common time that has been scheduled for this exam is Monday, May 5 from 5:15 to 7:15 in LIB 401. Since this is not the regularly scheduled final exam time, then if a student has a conflict with this time because they have another final exam at this time, then arrangements will be made for a make-up. Also, if this final exam time causes a student to have three or more final exams in one day, then a make-up exam will be given. No make-ups will be given to accommodate travel or work schedules. All make-ups will be taken *after* the regularly scheduled time for the final. No calculators will be allowed on the final exam. The grading of the final exams will be a joint effort amongst Calculus I instructors to ensure consistent grading.

**Grading:** Semester grades will be computed using 10% for hand-in assignments, 10% for quizzes, 50% for tests, and 30% for the departmental final exam. *Your semester grade shall not exceed more than one letter grade above the letter grade on the final exam. That is, if you fail the final, then at most you can make a D in the course!!! If you make a C on the final, then at most you can make a B in the course!*

# Course Outline

The following is a detailed list of the sections that will be covered this semester from your textbook.

## Chapter 1: Functions and Limits

Section 1.3: The Limit of a Function

Section 1.4: Calculating Limits

Section 1.5: Continuity

Section 1.6: Limits Involving Infinity

## Chapter 2: Derivatives

Section 2.1: Derivatives and Rates of Change

Section 2.2: The Derivative as a Function

Section 2.3: Basic Differentiation Formulas

Section 2.4: The Product and Quotient Rules

Section 2.5: The Chain Rule

Section 2.6: Implicit Differentiation

Section 2.7: Related Rates

Section 2.8: Linear Approximation and Differentials

## Chapter 3: Inverse Functions

Section 3.1: Exponential Functions

Section 3.2: Inverse Functions and Logarithms

Section 3.3: Derivatives of Logarithmic and Exponential Functions

Section 3.5: Inverse Trigonometric Functions

Section 3.6: Hyperbolic Functions

## Chapter 4: Applications of Differentiation

Section 4.1: Maximum and Minimum Values

Section 4.2: The Mean Value Theorem

Section 4.3: Derivatives and the Shapes of Graphs

Section 4.5: Optimization Problems

Section 4.6: Newton's Method

Section 4.7: Antiderivatives

## Chapter 5: Integrals

Section 5.1: Areas and Distances

Section 5.2: The Definite Integral

Section 5.3: Evaluating Definite Integrals

Section 5.4: The Fundamental Theorem of Calculus

Section 5.5: The Substitution Rule

**Student Learning Outcomes:** Upon completion of this course, students should be able to do the following:

- Discuss the solution to the tangent and area problems involving the calculus concepts of limits, derivatives, and integrals.
- Use graphs of algebraic and transcendental functions to determine limits, continuity, and differentiability at a point.
- Determine whether a function is continuous and/or differentiable at a point using limits.
- Apply differentiation rules to differentiate algebraic and transcendental functions.
- Choose appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
- Compute definite integrals using the Fundamental Theorem of Calculus.
- Recognize and discuss the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.

**Important Dates:**

January 21 – Martin Luther King Jr. Holiday

March 10-14 – Spring Break

March 21 – Last day to drop a course with a W

May 5 – Departmental Comprehensive Final Exam

**Tentative Schedule:** The table below provides a tentative schedule for the semester. Exact due dates will be determined by the instructor as the semester progresses.

Week	Dates	Sections	Tests
1	1/14-1/18	1.3	Pre-test
2	1/23-1/25	1.4, 1.5	
3	1/28-2/1	1.5, 1.6	
4	2/4-2/8	2.1, 2.2, 2.3	
5	2/11-2/15	2.4	Test 1
6	2/18-2/22	2.5, 2.6, 2.7	
7	2/25-2/29	2.7, 3.1, 3.2	
8	3/3-3/7	3.3, 3.5, 3.6	
9	3/17-3/21	4.1	Test 2
10	3/24-3/28	4.2, 4.3	
11	3/31-4/4	4.5, 4.6	
12	4/7-4/11	5.1	Test 3
13	4/14-4/18	5.2, 5.4	
14	4/21-4/25	5.3, 5.5	
15	4/28-5/2	Review	Test 4
16	5-May		Final Exam

## ***Instructor's Policies***

**Technology policy:** *Mathematica* or graphing calculators may be useful for a small amount of homework. If you do not have a graphing calculator, then it is suggested that you use *Mathematica*. UT Tyler has a site license for this software so it will cost nothing to use it in the computer labs. You can also buy it for \$30 from the UT Tyler bookstore. Use of *Mathematica* or calculators will not be allowed on the tests.

**Attendance Policy:** Attendance for this class is very important to your success. Therefore, I feel an attendance requirement should be set. You will be allowed three free absences this semester without penalty. Upon the fourth or fifth absence your semester grade will be lowered one letter grade. That is, if you have an A, then you will get a B. Upon the sixth or seventh absence your semester grade will be lowered two letter grades. Upon the eighth or ninth absence your semester grade will be lowered three letter grades. Upon the tenth absence you will fail the course. I will keep daily attendance with your quizzes – if you turn in a quiz, then you were there and if you don't then you were not. If you come in late and miss the quiz, then it is your responsibility to let me know that you came in late. Two tardies will equal an absence. For those involved in official university activities, turn in official paperwork to me and those absences will not be held against you.

**Extra Credit Opportunities:** There will be a chance to earn back some points missed on exams and have the final exam replace the lowest test grade. Here is how things will work: Time spent in the MLC or at SI sessions will earn you these privileges. Specifically, if you spend three hours per week (no more than two hours in a given day) working on Calculus in the lab after a test and you show promise on the next exam (by earning a C or better), then you will have the opportunity to earn back half of the points you lost on the first test with test corrections. Test corrections will be done as a homework assignment and submitted with the original test. Do not write on your original test! Credit will be given if the answer is totally correct – no partial credit will be given on test corrections. There will be opportunities for test corrections on Tests 1-3 but not on test 4. It is your responsibility to check both in and out of the MLC (by swiping your student ID) so that your time in the lab is properly recorded. If you do not sign-out then you will not receive credit for attending lab! Make sure that the SI leader documents the time that you spend in sessions with them by signing in as well.

To gain the privilege of replacing your lowest test grade with the final, you must attend lab or SI sessions three hours per week for every week (except one week) throughout the semester. That is, in a 16 week semester, you must fulfill the requirement of 3 hours per week for a total of 15 weeks to be able to replace your lowest test grade with the grade you make on the final.

**Mandatory Lab Usage:** Students that score below a C on an exam (including the pre-test) will be required to go to the Mathematics Learning Center for three hours per week (no more than two hours in a given day) until the next exam is taken. Fulfilling this mandatory lab time in addition to passing the next exam will make it possible to do test corrections (see extra credit opportunities above). Violating mandatory lab time will result in lowering your next test grade by 10 points.

**Make-ups:** If you know that you will be away from campus for a *required* UT Tyler activity, then let your professor know at least one week in advance (preferably at the beginning of the semester). There will be no make-ups on quizzes. For an official university absence, you will not receive a zero for a quiz. Also notify your professor within the first two weeks of classes if you are unable to meet at the scheduled final exam time due to class conflicts. A time will be scheduled for a make-up on the final exam. *Athletes and other students involved in extensive university activities should schedule a meeting in my office during the first two weeks of class to discuss this further.*

**Cell Phones:** Before class begins, you must turn your cell phone/PDA/pager/gizmo off or put it on silent mode. NOT VIBRATE – SILENT OR OFF! Any student who is seen texting or otherwise fooling around with their cell phone/PDA/pager/gizmo during class will be counted as absent for that day and the grade for that day's quiz will be 0.

# *University Policies*

## **ADA Compliance:**

If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s) must provide documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: <http://www.uttyler.edu/disabilityservices>.

## **Social Security Statement:**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number.

## **Note Regarding Student Absence Due to Religious Observance:**

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor by the second class meeting of such absences.

## **Grade Replacement:**

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12<sup>th</sup> day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grade point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-2008 Catalog, p. 35)