Math 1351-024 Texas Tech University
Calculus I Spring 2009

COURSE SYLLABUS

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Office Hours: MW 11am-12noon; 1pm-2pm

* Preferred. Please put "Math 1351-024" in the subject line of your email.

Classroom Lecture
TR 9:30am – 10:50am Math 015

Discussion Sections
755: W 2:00pm – 2:50pm Holden 128
756: W 5:00pm – 5:50pm Math 011

Prerequisite Policy: Students must have completed Math 1350 with a grade of C or better or made a suitable score on the Mathematics Placement Exam before taking Math 1351. Any student who does not meet this requirement will be dropped from the course.

Text: *Calculus* 5th Edition by Strauss, Bradley, and Smith, ISBN: 0-536-46027-2.

Course Webpage: The course webpage contains this syllabus in its most current form, course grades, lecture notes, and other noteworthy material for this course. All course information can be found at *www.webct.ttu.edu*.

Course Objectives: The goal is to develop the student's geometric insight into the concepts of differentiation and integration, and to give them practice in applying these concepts to problem solving and "real world" applications.

Expected Learning Outcomes: Upon completion of this course, all students should be able to:

1. Identify and describe continuous functions
2. Explain the concept of instantaneous rate of change
3. Compute derivatives of polynomial, algebraic, and transcendental functions
4. Apply differentiation techniques to solve optimization problems
5. Distinguish between definite and indefinite integrals
6. Evaluate integrals of polynomial, algebraic, and transcendental functions
7. Apply integration techniques to solve area problems

Methods of Assessment of Learning Outcomes: Assessment will be achieved through one or more activities, non-graded and graded, such as lecture attendance, discussion section attendance, class discussion, board work, short quizzes, selected homework, examinations and other optional activities deemed appropriate by the professor. Class grades will be assigned as follows:

Homework	10 assignments - Handwritten Exercises *No late homework without prior approval or* ***documented*** *excuse.* Due **in lecture** on Jan 15 & 22, Feb 5, 12, & 19, March 5, 12, & 24, Apr 7 & 14	200 pts
Quizzes	6 in-class quizzes - Drop lowest quiz *No make-up quizzes without prior approval or* ***documented*** *excuse.* Jan 20, Feb 10 & 17, March 5 & 12, Apr 9	100 pts
Examinations	4 in-class examinations *No make-up exams without prior approval or* ***documented*** *excuse.* Jan 29, Feb 24, March 26, Apr 21	400 pts
Final Exam	Comprehensive, Friday, May 1^{st} 10:30 a.m. - 1:00 p.m.	200 pts
Total		900 pts

Grading Scale (Base 900 pts)

A+ 100%–97%	A 96.9%–93%	A- 92.9%–90%	
B+ 89.9%–87%	B 86.9%–83%	B- 82.9%–80%	
C+ 79.9%–77%	C 76.9%–73%	C- 72.9%–70%	
D+ 69.9%–67%	D 66.9%–63%	D- 62.9%–60%	F 59.9%–0%

Calculator: A graphing calculator is a useful tool for this course. The TI-86 is recommended. However, CALCULATORS or other electronic devices will NOT be permitted on quizzes and exams.

Reading: There is a lot of content in this course, so it has a necessarily fast pace. You are expected to read the appropriate sections of the text BEFORE coming to the lecture in which the topic is scheduled. Also, you are responsible for all material in Chapters 1 through 5 of the text, regardless of whether it is explicitly covered in lecture.

Style of Lecture: Instead of writing notes on the board during lecture, the professor will post notes in electronic form on WebCT prior to beginning of each chapter. During lecture, I will present additional examples and answer any questions based on the lecture notes. Also, during class, I may give worksheets and/or quizzes based on the notes. **This style requires students to read and rework the examples in the notes prior to class.**

Exercises: You are expected to work the assigned exercises (see Tentative Schedule) after the corresponding material is presented in class, and BEFORE the next class meeting (lecture or discussion). The careful completion of **all** assigned problems is essential for success in this course.

Five of the assigned exercises will be collected for grading; these constitute the above mentioned Homework. Homework is due in lecture on a specified Tuesday or Thursday and will be announced in lecture one period prior to collection. Each submitted exercise should be:

- written in pencil,
- written on loose-leaf paper,
- labelled with section number and exercise number (1.2.14 denotes Exercise 14 of Section 1.2), and
- easy to follow.

All exercises must be written on one side of the page, stapled in the upper left-hand corner, and contain the following heading. Each exercise must be contained to one side of the page; solutions should not carry over to another page. Assignments that do not meet all the above criteria will not be graded. The opportunity to resubmit for grading will be determined by the professor.

First Name Last Name
Math 1351-024
(to be assigned)

Homework Assignment #

To help develop your problem-solving skills, each homework assignment will contain a documented problem solution. This means providing the specific steps you take in attempting to solve the assigned exercises. You will be told in advance which problem must contain a documented solution. If you make a serious, good-faith effort at documenting the steps taken in solving the specified problem, you will receive full credit on this exercise. However, if you fail to document a problem solution, the best you can earn is 80 percent.

To document a problem solution, draw a line down the middle of a piece paper. On the left side of the paper, show each step in math; on the right side, explain in words what your were doing in each step. Write as though you were explaining the steps to one of your classmates who has never solved this type of problem. Be prepared to talk through your solution during the next class meeting.

Scheduling: A tentative schedule of assignments, quizzes, and exams is included in this syllabus. These details are presented as a guide. The professor may change the dates for each assignment, quiz, and/or exam, modify the exercise list, and/or add assignments. It is your responsibility to keep track of the course details and schedule for your section.

Attendance: Students are cautioned that active participation in all class and discussion section activities is necessary for success. Absences and tardiness must be avoided.

- Absence due to religious observance - *The Texas Tech University Catalog* states that a student who is absent from classes for the observance of a religious holy day will be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence (p.49). Notification must be made in writing and delivered in person no later than the 15th class day of the semester.

- Absence due to officially approved trips - *The Texas Tech University Catalog* states that the person responsible for a student missing class due to a trip should notify the instructor of the departure and return schedule in advance of the trip. The student may not be penalized and is responsible for the material missed.

- Attendance in Discussion - The format of the Discussion Section will be (1) problem question and answer sessions facilitated by the teaching assistant and (2) group work sessions on problem worksheets. Because this style of student engagement forms a critical point of the Calculus I learning experience, attendance at the Discussion Section will be monitored and recorded. Consequences of missed attendance at discussion sections will be:

  - Missed attendance of three (3) discussions will result in a letter grade drop.
  - Missed attendance of five (5) discussions will result in a two letter grade drop.
  - Missed attendance of seven (7) discussions will result in a three letter grade drop.

Communication: My regular office hours will be Tuesday and Thursdays from 2pm to 5pm. Other meeting times can be arranged by appointment. You are invited and indeed strongly encouraged to make use of these office hours and appointments. You may also feel free to stop by my office anytime; you will be welcome, although an appointment will ensure my undivided attention. If at anytime during the course you need help of special consideration regarding any subject, please do not hesitate to speak with me.

The use of information technologies such as email and the internet have become routine learning tools. It is imperative that you learn to use email and the internet as part of your college education. Accordingly, **you must have a TTU email account** and **check it** (and WebCT) **regularly**. I will be communicating with you via email and delivering lecture notes via WebCT. I will hand-out "hard copies" of lecture material in class only if the campus server goes down for extended period or if they are needed within short notice.

In the event that you need to contact me via email, please include **"Math 1351-024"** and the title of the email (e.g., homework question, attendance) in the subject line. For example, the subject line may read " Math 1351-024: Attendance." I will respond to email within 24 hours during the work week (excluding holidays).

Academic Integrity (extracted from OP 34.12): It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

Scholastic dishonesty includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Civility in the Classroom: Be respectful to the instructor, the TA, and to your fellow students. Please **turnoff** cell phones, pager, iPods, etc. Do not hold side conversations and do not read the newspaper in class.

Accommodation for Students with Disabilities (extracted from OP 34.22): Any student who, because of a disability, may require some special arrangements in order to meet course requirements should contact the instructor (in MA 219) as soon as possible to make the necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until the appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405.

Tentative Schedule

Date			Section and Topic		Exercises
Jan	8	R	1.1	Preliminaries	6, 16, 24, 28, 34, 40, 52, 58
			1.2	Lines in the Plane	2, 8, 12, 14, 20, 28, 32, 46, 50, 61
	13	T	1.3	Functions and Graphs	2, 8, 16, 24, 36, 44
			1.4	Inverse Functions; Inverse Trigonometric Functions	4, 8, 12, 32, 38
	15	R	1.4	Inverse Functions; Inverse Trigonometric Functions	4, 8, 12, 32, 38
			2.1	The Limit of a Function	4, 6, 20, 24, 26, 36, 46
	20	T	2.2	Algebraic Computation of Limits	2, 6, 18, 28, 36, 40, 42, 48, 54, 59, 63
			2.3	Continuity	6, 10, 12, 16, 24, 28, 30, 38, 40, 46
	22	R	2.3	Continuity	6, 10, 12, 16, 24, 28, 30, 38, 40, 46
			2.4	Exponential and Logarithmic Functions	2, 14, 18, 32, 40, 43, 56, 68, 74
	27	T	2.4	Exponential and Logarithmic Functions	2, 14, 18, 32, 40, 43, 56, 68, 74
	29	R		**Exam 1**	
Feb	3	T	3.1	An Introduction to the Derivative: Tangents	3, 6, 8, 14, 24, 28, 32, 38, 45, 60
			3.2	Techniques of Differentiation	2, 12, 18, 22, 26, 28, 38, 46
	5	R	3.2	Techniques of Differentiation	2, 12, 18, 22, 26, 28, 38, 46
			3.3	Derivatives of Trigonometric, Exponential, and Logarithmic Functions	4, 6, 12, 16, 28, 32, 38, 52, 54
	10	T	3.3	Derivatives of Trigonometric, Exponential, and Logarithmic Functions	4, 6, 12, 16, 28, 32, 38, 52, 54
			3.4	Rates of Change: Modelling Rectilinear Motion	4, 10, 12, 18, 24, 34
	12	R	3.5	The Chain Rule	8, 12, 18, 22, 32, 44, 48, 62
	17	T	3.6	Implicit Differentiation	4, 14, 18, 24, 36, 40, 46, 60
			3.7	Related Rates and Applications	6, 10, 14, 18, 26, 34, 40
	19	R	3.7	Related Rates and Applications	6, 10, 14, 18, 26, 34, 40
				Exam 2 Review or Catch-Up	
	24	T		**Exam 2**	
	26	R	4.1	Extreme Values of Continuous Functions	2,8, 10, 14, 18, 24, 26, 34, 40, 50, 56
			4.2	The Mean Value Theorem	6, 10, 16, 20, 26, 32, 40
Mar	3	T	4.2	The Mean Value Theorem	6, 10, 16, 20, 26, 32, 40
			4.3	Using Derivatives to Sketch the Graph of a Function	4, 8, 16, 18, 22, 30, 44, 46, 52
	5	R	4.3	Using Derivatives to Sketch the Graph of a Function	4, 8, 16, 18, 22, 30, 44, 46, 52
			4.4	Curve Sketching with Asymptotes: Limits Involving Infinity	6, 10, 18, 22, 30, 40, 48, 50
	10	T	4.4	Curve Sketching with Asymptotes: Limits Involving Infinity	6, 10, 18, 22, 30, 40, 48, 50
			4.5	l'Hopital's Rule	4, 8, 12, 20, 28, 34, 42, 44, 52, 56
	12	R	4.5	l'Hopital's Rule	4, 8, 12, 20, 28, 34, 42, 44, 52, 56
			4.6	Optimization in the Physical Sciences and Engineering	4, 12, 14, 30, 36
	17	T		**Spring Break – No Lecture**	
	19	R		**Spring Break – No Lecture**	
	24	T	4.6	Optimization in the Physical Sciences and Engineering	4, 12, 14, 30, 36
				Exam 3 Review or Catch-Up	
	26	R		**Exam 3**	
	31	T	5.1	Antidifferentiation	2, 6, 12, 16, 26, 34, 40, 48
			5.2	Area as the Limit of a Sum	4, 8, 10, 14, 16, 24, 32, 42, 46
Apr	2	R	5.2	Area as the Limit of a Sum	4, 8, 10, 14, 16, 24, 32, 42, 46
			5.3	Riemann Sums and the Definite Integral	2, 10, 12, 14, 18, 20, 24, 28, 30, 36
	7	T	5.3	Riemann Sums and the Definite Integral	2, 10, 12, 14, 18, 20, 24, 28, 30, 36
			5.4	The Fundamental Theorem of Calculus	2, 6, 12, 16, 22, 34, 38, 42, 48
	9	R	5.4	The Fundamental Theorem of Calculus	2, 6, 12, 16, 22, 34, 38, 42, 48
			5.5	Integration by Substitution	4, 8, 10, 16, 22, 30, 34, 36, 42, 46, 58, 62
	14	T	5.5	Integration by Substitution	4, 8, 10, 16, 22, 30, 34, 36, 42, 46, 58, 62
			5.6	Introduction to Differential Equations	2, 4, 6, 8, 21, 22, 23, 28, 30, 43, 46, 59
	16	R	5.6	Introduction to Differential Equations	2, 4, 6, 8, 21, 22, 23, 28, 30, 43, 46, 59
				Exam 4 Review or Catch-Up	
	21	T		**Exam 4**	
	23	R		**Catch-Up/Final Exam Review**	
	28	T		**Catch-Up/Final Exam Review**	
				Last Day of Class	