

**Math 121B:
Mudd 405
Colby College**

**Calculus I
MTWF 10 – 10:50
Fall 2008**

Professor: Scott Taylor
Office Hours: MWF 1 – 3 PM
And by appointment!
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Prerequisites: Mathematics placement questionnaire.

Text: Calculus: Single Variable 4/e, Hughes-Hallet et al.

Major Course Objectives:

- Understand multiple views of the derivative and integral
- Develop ability to communicate mathematics
- Develop mathematical reasoning ability
- Competence using elementary functions and their graphs
- Be able to evaluate a variety of limits
- Be able to calculate a derivative using the limit definition
- Be able to draw the graphs of the derivative and antiderivative of a function given a graph of the function.
- Use the derivative to find maxima and minima
- Be able to calculate derivatives using the power, product, quotient, and chain rules
- Be able to find the derivative of an implicit function
- Be able to set up and solve a variety of related rates problems
- Understand and use the geometric significance of the derivative
- Understand and use the limit definition of the definite integral
- Understand and use the geometric properties of the definite integral
- Understand and use both versions of the fundamental theorem of calculus
- Solve separable differential equations
- Find antiderivatives by using substitution and integration by parts.

Attendance: I value your involvement in the class, therefore class attendance is mandatory. You are allowed 3 unexcused absences. Excused absences may be granted for official Colby activities, major religious holidays, illness (with a note from the doctor or health center), and personal tragedy (eg. death of a family member). You should, however, make every effort to attend class. Absence for official Colby activities requires prior approval. Absence for religious reasons will be considered “excused” if the policy in the college catalogue is followed. More than 3 unexcused absences will result in the reduction by 1/3 of the final course grade. Excessive tardiness or early departure may also result in such a reduction.

Calculators/Computers: You are encouraged to bring a calculator to class. You may use such a calculator on homework (but you must still show all the important steps). On quizzes and exams you may use a graphing calculator, but you may not use any symbolic or numerical differentiation, anti-differentiation, or integral features. The point of an exam is to test for understanding – such understanding must come through clearly in your answers.

Evaluation: The numerical course grade will be a weighted average of the cumulative grades with weightings as follows:

20% Homework	15% Exam 1
5% In-class projects	15% Exam 2
20% Quizzes	20% Final Exam

However, *earning fewer than 50% of the points on the final exam will result in a course grade of “F”.*

Course letter grades will be assigned (subject to above caveat) according to the following scale. Any curve will be determined at the end of the course, according to the discretion of the instructor.

93 - 100 % A	73 - 77 % C
90 - 93 % A-	70 - 73 % C-
87 - 90 % B+	67 - 70 % D+
83 - 87 % B	63 - 67 % D
80 - 83 % B-	60 - 63 % D-
77 - 80 % C+	below 60 % F

Quizzes: A quiz will be given every Monday (except for holidays). Quizzes are an important component of your grade and you should consider them as an exam which is spread out over the course of the semester – in other words, study for them! Typically they will consist of one or two questions and should take about 10 minutes. If you miss a quiz because of either an excused or unexcused absence you may make it up the next time you attend class. It is your responsibility to let me know that you wish to make up the quiz. Your lowest quiz score will be dropped from the computation of your average quiz score at the end of the semester.

Homework: Homework is probably the most important part of this course – it’s when you get to put into practice the concepts you’ve played with during class. Some of the homework questions may require you to read the chapter or to explore some topic which we didn’t discuss in class. The purpose of such questions is to help you develop the ability to read and learn mathematics on your own. If you go into a mathematical or scientific career, there will undoubtedly be times when you need to teach yourself some mathematics. If, *however*, all the homework problems fall into this category, you should check to make sure that you are working on the correct assignment.

Homework will generally be due on Fridays and will always be posted on the course webpage. You are responsible for checking the webpage. If no homework assignment is posted, you should refresh the webpage on your browser and, if that doesn’t work, email me to let me know. In the special circumstance that there is no new homework the webpage will make note of that. If you will not be in class on the Friday that homework is due you should arrange to turn it in at my office or to have a friend bring it to class. Late homework may be penalized.

You should start the homework early, some problems will require multiple attempts and careful thought. If you are having substantial difficulty with a particular problem or the entire homework set you should email me or come to office hours. I am eager to help you!

You are encouraged to work with a partner on the homework, but **all work should be your own**. In other words, you may discuss particular problems but you may not copy someone else’s solution. Doing so violates academic honesty. As the course progresses, the question of how much work to show will arise. I encourage you to use common sense. If the problem is testing your ability to take the derivative of a polynomial, you need to show the computation details. If the problem is testing a more advanced concept you probably don’t need to show the details of finding the derivative of a polynomial. In general, **your work is your answer**. I.e. It is possible for someone to obtain a correct answer but to not receive full credit because their work is incorrect. Conversely, (almost entirely) correct work with an incorrect answer may receive full credit.

Homework must be very neat. This means: no messy scratchwork, no cramped writing, no huge eraser marks. Multiple pages should be stapled and the problems should be in order with section and problem number clearly indicated. If these guidelines are not followed you may be penalized. If you are incapable of writing neatly, you should type your solutions.

Exams: In addition to the quizzes, there will be two evening exams and a final exam. Each exam is cumulative, although the final exam is “more cumulative”. Exams will be designed to test your understanding of the course material, not just your computational abilities. You must understand, and communicate, the material. Computers, textbooks, notes, and other people may not be used on the exam. See the policy on calculator use.

The final exam is during exam period 14 on **Sunday, December 14** at **12:30 PM**. It may not be rescheduled for personal convenience (including airline reservations).

Projects: There will be several in-class projects which will be completed in small groups. These will generally be done on Tuesdays.

Tentative Schedule:

Class	Day	Date	Section/Topic	Comments
1	Wed.	Sept. 3	Lines	
2	Fri.	Sept. 5	Rates of change	HW 1 due
3	Mon.	Sept. 8	The derivative	Quiz 1
4	Tues.	Sept. 9	GP 1	
5	Wed.	Sept. 10	1.7/Continuity	
6	Fri.	Sept. 12	1.8/Limits	HW 2 due
7	Mon.	Sept. 15	2.1/2.2/2.3	Quiz 2
8	Tues.	Sept. 16	2.4/GP 2	
9	Wed.	Sept. 17	2.5	
10	Fri.	Sept. 19	2.6	HW 3 due
11	Mon.	Sept. 22	Review	Quiz 3
12	Tues.	Sept. 23	Review/GP 3	
13	Wed.	Sept. 24	3.1	
14	Fri.	Sept. 26	1.2/3.2	HW 4 due
15	Mon.	Sept. 29	3.3	Quiz 4
16	Tues.	Sept. 30	GP 4	
17	Wed.	Oct. 1	3.4	
18	Fri.	Oct. 3	1.5/3.5	HW 5 due
19	Mon.	Oct. 6	1.4/3.6	Quiz 5, Review for Exam 1
20	Tues.	Oct. 7	GP 5	
21	Wed.	Oct. 8		
22	Fri.	Oct. 10	3.7	HW 6 due
	Mon.	Oct. 13		Fall Break
	Tues.	Oct. 14		Fall Break
23	Wed.	Oct. 15	3.9	
24	Fri.	Oct. 17	3.10	HW 7 due
25	Mon.	Oct. 20	4.1	Quiz 6
26	Tues.	Oct. 21	GP 6	
27	Wed.	Oct. 22	4.3	
28	Fri.	Oct. 24	4.4	HW 8 due
29	Mon.	Oct. 27		Quiz 7
30	Tues.	Oct. 28	GP 7	
31	Wed.	Oct. 29	4.5	
32	Fri.	Oct. 31	4.6	HW 9 due
33	Mon.	Nov. 3	GP 8	Quiz 8
34	Tues.	Nov. 4	4.7	
35	Wed.	Nov. 5	Review	
36	Fri.	Nov. 7	5.1	HW 10 due
37	Mon.	Nov. 10	5.2	Quiz 9, Review for Exam 2
38	Tues.	Nov. 11	GP 9	
39	Wed.	Nov. 12	5.3/6.4	
40	Fri.	Nov. 14		HW 11 due

41	Mon.	Nov. 17	5.4	Quiz 10
42	Tues.	Nov. 18	GP 10/6.1	
43	Wed.	Nov. 19	6.2	
44	Fri.	Nov. 21	6.3	HW 12 due
45	Mon.	Nov. 24		
46	Tues.	Nov. 25	GP 11	
	Wed.	Nov. 26		Happy
	Fri.	Nov. 28		Thanksgiving!
47	Mon.	Dec. 1	7.1	Quiz 12,
48	Tues.	Dec. 2	7.2	HW 13 due
49	Wed.	Dec. 3		Review for Final Exam
50	Fri.	Dec. 5		Review for Final Exam, HW 13 due.
	Sun.	Dec. 14	12:30 PM	Semester Exam