

# Cedar Crest College

Calculus I - MAT-141-00 (Three Credits)

Fall 2009

MWF 8:00 a.m. – 8:50 a.m.      BHA 2

T 2:30 p.m. – 3:20 p.m.      OBC 1

**Professor:** Patrick Ratchford

**Office:** Curtis 217

**Phone:** ext. 3375

**e-mail:** [pmratchf@cedarcrest.edu](mailto:pmratchf@cedarcrest.edu)

## Office Hours

Monday, Wednesday      11:30 a.m. – 3:30 p.m.

Tuesday      10:00 a.m. – 2:00 p.m.

*Additional office hours are available by appointment.*

**Required Text:** Stewart, *Calculus*, 6<sup>th</sup> ed., Thomson, ©2008.

**Calculator:** A Texas Instruments graphing calculator is required.

## Course Description

I'm very well acquainted, too, with matters mathematical,  
I understand equations, both the simple and quadratical,  
About binomial theorem I'm teeming with a lot o' news,  
With many cheerful facts about the square of the hypotenuse.

I'm very good at integral and differential calculus;  
I know the scientific names of beings animalculous:  
In short, in matters vegetable, animal, and mineral,  
I am the very model of a modern Major-General.

from *The Pirates of Penzance*  
by Gilbert and Sullivan

In this course we will be dealing with the differential calculus of the Major-General's song. This branch of calculus developed as mathematicians attempted to answer the following:

Question: Given a curve in the plane and a point on the curve, can we find the slope of the line tangent to the curve at the point?

This question will underlie much of what we do in this course.

**Course Outcomes:** Upon successful completion of the course the student should be able to

- Understand the concept of a limit
- Compute limits numerically and algebraically
- Understand the definition of the derivative of a function.
- Compute derivatives using the power rule, sum rule, difference rule, product rule, quotient rule, chain rule, and rules for trigonometric functions.

- Apply the derivative in various ways , including the derivative as a rate of change, the derivative as a tool for graphing, and the derivative as a tool for finding optimum solutions to real world problems.
- Demonstrate facility with the computer algebra system Mathematica.

### Assessment

There will be four exams (including a cumulative final exam) each accounting for 20% of your final average. (Each exam may consist of both in-class and take-home portions.) The remaining 20% will consist of quizzes (either in-class or take home) and two or three computer assignments involving Mathematica. (If it is to your advantage, I will increase the weight of the final exam to 30% and decrease the weight of your lowest exam to 10%.) Homework will be assigned and discussed daily. ***There will be no extra credit given.***

The grade scale that I will use to assign final grades is A (93 and up), A- (90-93), B+ (87-90), B (83-87), B- (80-83), C+ (77-80), C (73-77), C- (70-73), D+ (67-70), D (60-67), F(Below 60).

***Attendance in class is expected of all students and mandatory on exam days, but it will not be factored numerically into your grade.*** Make-up exams will be given only with ***prior notification*** and documentation of a legitimate excuse. Make-ups for in-class quizzes will not be given under any circumstance. All take-home quizzes are due ***in-class*** on the due date and will not be accepted otherwise. Do not drop take home quizzes off at my office without clearing it with me before hand. (I will drop one lowest quiz grade. Beyond that you will receive a zero for every unexcused missed quiz)

### Notes

- ◆ I fully support the Cedar Crest College Honor Code and the Classroom Protocol code as stated in the Customs Book. Appropriate classroom behavior is implicit in the Cedar Crest College Honor Code. Such behavior is defined and guided by complete protection for the rights of all students and faculty to a courteous, respectful classroom environment. That environment is free from distractions such as late arrivals, early departures, inappropriate conversations and any other behaviors that might disrupt instruction and/or compromise students' access to their Cedar Crest College education.
- ◆ Students should not make any travel arrangements for the end of the semester until after the final exam schedule is published.
- ◆ **Cell phones should be turned off or set to vibrate for the duration of the class period.**
- ◆ Collaboration on daily homework is expected and encouraged, but any work turned in for a grade should be your own. Violations of the college plagiarism policy will be reported to the dean and result in a grade of zero for the particular assignment / exam.
- ◆ Knowledge of pre-calculus or high school algebra with trigonometry is a prerequisite for this course. No previous exposure to calculus is assumed or required. Students who have had some calculus in high school must understand that there are some students in the class who are seeing this material for the first time.
- ◆ It is vitally important for you to keep current with the work. Students who fall behind early quickly find themselves in a hole that is very difficult, if not impossible, to get out of. I'm more than willing

to meet with you during my office hours or otherwise to help you succeed, but you must make the effort. Feel free to drop by my office, even if it's not my scheduled office hour.

- ◆ The format of the course will be lecture/discussion with much emphasis on homework discussion. In order for this to work it is vitally important for you to come to class prepared.
- ◆ It will be beneficial for you to have read the day's material **before** coming to class.
- ◆ Students with documented disabilities who may need academic accommodations should discuss these needs with me during the first two weeks of class. Any student who wishes to request accommodations should contact the Advising Center.
- ◆ Professional tutoring is available from Gary moll in Academic Services. Gary can be reached at extension 3485 or via e-mail at [glmoll@cedarcrest.edu](mailto:glmoll@cedarcrest.edu) .

### Tentative Schedule

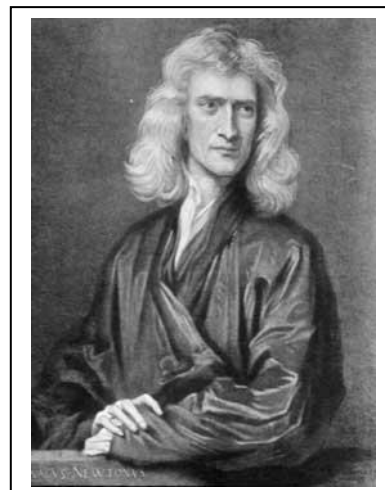
Day	Date	Material Covered *
Monday	8/24	Introduction
Tuesday	8/25	Diagnostic Quiz
Wednesday	8/26	1.1
Friday	8/28	1.2
Monday	8/31	1.3
Tuesday	9/1	
Wednesday	9/2	1.4 / Appendix D
Friday	9/4	Appendix D
Monday	9/7	<b>No Class – Labor Day</b>
Tuesday	9/8	<b>Exam I</b>
Wednesday	9/9	2.2
Friday	9/11	2.2/2.3
Monday	9/14	2.3
Tuesday	9/15	
Wednesday	9/16	2.5
Friday	9/18	2.5
Monday	9/21	2.1
Tuesday	9/22	
Wednesday	9/23	3.1
Friday	9/25	3.1
Monday	9/28	Review/Problem Session
Tuesday	9/29	<b>Exam II</b>
Wednesday	9/30	3.2
Friday	10/2	3.2 / 3.3
Monday	10/5	3.3
Tuesday	10/6	
Wednesday	10/7	3.4
Friday	10/9	3.4
Monday	10/12	<b>No Class – Fall Break</b>
Tuesday	10/13	<b>No Class – Fall Break</b>
Wednesday	10/14	3.5

Friday	10/16	3.5
Monday	10/19	3.6
Tuesday	10/20	3.6 / 3.7
Wednesday	10/21	3.7
Friday	10/23	<b>NO CLASS - INAUGURATION</b>
Monday	10/26	3.8
Tuesday	10/27	
Wednesday	10/28	3.9
Friday	10/30	3.9
Monday	11/2	Review/Problem Session
Tuesday	11/3	<b>Exam III</b>
Wednesday	11/4	4.1
Friday	11/6	4.2
Monday	11/9	4.3
Tuesday	11/10	
Wednesday	11/11	4.3
Friday	11/13	4.4
Monday	11/16	4.4
Tuesday	11/17	
Wednesday	11/18	4.5
Friday	11/20	4.1
Monday	11/23	4.7
Tuesday	11/24	4.7
Wednesday	11/25	<b>No Class - Thanksgiving</b>
Friday	11/27	<b>No Class - Thanksgiving</b>
Monday	11/30	4.8
Tuesday	12/1	
Wednesday	12/2	4.8
Friday	12/4	4.9
Monday	12/7	4.9
Tuesday	12/8	<b>Last Day of Classes Friday Schedule</b>
<b>TBA</b>	12/11 – 12/15	<b>Final Exam</b>

\* Section numbers from *Stewart*



**Gottfried Wilhelm von Leibniz**



**Sir Isaac Newton**