MAT 105
Calculus and Analytical Geometry
Fall 2014

Instructor: Bruce Armbrust, ph: 541-4660 x314, email: bruce.armbrust@hotmail.com

Office Hours: Room A210, Mon., Thurs. 12:00 – 1:00 PM
Tues.   9:00 – 10:00 AM
Wed.   11:00 AM – 12:00 PM
Fri.   8:00 – 9:00 AM
And as always, by appointment.

Class Time and Location: Mon., Wed., & Fri. 9:00 - 10:40 AM, E106

Textbook: <u>Calculus</u>, 10th Edition, by Larson, Hostetler, & Edwards

Calculator: A graphing calculator is required for this class. I will be demonstrating with the TI-89. I should be able to help you individually if you have another type of calculator.

Course Description: This course deals with elements of analytical geometry, limit theory, continuity of the derivative and its applications, the antiderivative, the definite integral, the fundamental theorem of calculus, properties of the integral, and area.

Prerequisite: A grade of C or better in MAT 103B and MAT104, or appropriate skills demonstrated through the Math assessment process.

Student Learning Outcomes:
1. Differentiate functions of a single variable using the basic rules of differentiation.
2. Apply the derivative to describe phenomena arising from real-life situations.
3. Sketch and analyze graphs using the first and second derivatives.
4. Prove corollaries and derive equations using the theorems that relate to differential calculus.
5. Determine limits and continuity using graphical, analytical, and tabular techniques.

Course Grade: Your final letter grade will be based on the usual grading scale:
A 90-100%, B 80-89%, C 70-79%, D 60-69%, F 0-59%
The following items will make up the course grade:
Homework: 15%
Quizzes: 15%
Exam1 (October 10)
Exam2 (October 31):   45%
Exam3 (November 24)
Final Exam (December 10): 25%

Homework: Homework will be due by 3:00 PM the class day after it is assigned. Homework not turned in at this time will be considered late. You may turn in homework up to one week after it is assigned for half credit. If all homework is turned in, and no more than three are late, the lowest regular exam score will be dropped. Your homework score will be determined in the following way: up to 5 points for completion and one point each for 5 problems chosen at random to be graded.

Quizzes: There will be 6 quizzes given over the quarter. These quizzes will be designed to help prepare you for the exams, and quiz problems will be taken directly from the homework assignments. Your lowest quiz score will be dropped. Since one score will be dropped, you may not make up a missed quiz.

Exams: All exams will be given in two sections: one portion will allow calculators while the other will not. If you cannot make it to an exam (final not included), you may take it up to 2 school days prior to the scheduled date with proper arrangements. Otherwise, the exam may be made up after the scheduled date with a penalty of 10% per school day. The final exam may not be taken after the scheduled exam time.

Registration Information: You may drop the class with no penalty or mark on your record on or before October 3. After October 3, you may drop the class and receive a grade of W until November 7. After November 7, if still enrolled, you will receive a grade of A, B, C, D, F or I.

How to Succeed in a Math Class: I am often asked how to successfully pass a math class, and here is my advice:

I) Come to every class session. Be prepared, and plan on participating.
II) Do your homework. Remember that what I assign is what I consider a bare minimum. If you need more practice, do it.
III) Read the book. You paid good money for it, so you might as well use it.
IV) Make use of available tutors and my office hours. You will find tutors who know the subject matter in this course at the Math Success Center (MSC).
V) Do math every day. Math is just like everything else: if you don't practice, you become rusty.

Learning Disabled Students: Students with disabilities who may need accommodations for this class are encouraged to notify me and contact the Disability Resource Center (DRC) early in the quarter so that reasonable accommodations may be implemented as soon as possible. Students may contact the DRC by visiting the Center (located in room A205) or by phoning 541-4660, ext. 249 (voice) or 542-1870 (TTY for deaf students). All information will remain confidential.

Academic Dishonesty: Academic dishonesty of any form will not be tolerated. Students caught cheating on exams or quizzes will receive a score of zero on the assignment, and the ability to drop exams and quizzes will be forfeit. Students may work together on homework assignments (and, in fact, are encouraged to) as long as all students understand the material covered.

Technology in the Classroom: All cell phones, headphones, MP3 players, iPods, etc, must be turned off and put away prior to the start of each class. No electronic devices (other than calculators) may be used during quizzes and exams.

Course Schedule:
The following is a <u>tentative</u> schedule. If things change (and I have money that says they will), I will let you know.

September

22	1.1	Introductions, Preview of Calculus
24	1.2	Limits: Graphing, Numerical
26	1.2	Limits: ε and δ Definition
29	1.3	Limits: Analytical

October

1	1.4	Continuity and One-Sided Limits
3	1.5, **Quiz I**	Infinite Limits
6	2.1	Definition of the Derivative
8	2.2	Differentiation Rules (Basic)
10	**Exam I**	
13	2.3	Product and Quotient Rules
15	2.4	Chain Rule
17	2.5, **Quiz II**	Implicit Differentiation
20	2.6	Related Rates
22	3.1	Extrema
24	3.2, **Quiz III**	Mean Value Theorem
27	3.3	First Derivative Test, Increasing & Decreasing Functions
29	3.4	Concavity
31	**Exam II**	

November

3	3.5	Infinite Limits
5	3.6	Curve Sketching: The Summary
7	3.7, **Quiz IV**	Optimization
12	3.8	Newton's Method
14	3.9	Differentials
17	4.1, **Quiz V**	Antiderivatives and Indefinite Integrals
10	**NO CLASS**	VETERANS DAY
19	4.2	Areas
21	4.3	Riemann Sums and Definite Integrals
24	**Exam III**	
26	4.4	The Fundamental Theorem of Calculus
28	**NO CLASS**	THANKSGIVING

December

1	4.5	Integration by Substitution
3	4.6, **Quiz VI**	Numerical Integration
5		Review
10	**Final Exam**	Note: The final is from 10:00 - 11:50 AM

The following is a list of all homework assignments for this course. The due dates for the various sections will be given in class.

Section	Assignment
1.1	1-6,9,10
1.2 part1	2-5,15-22,24,25,27,28
1.2 part2	30,31,34,35,38,39,41,44,47,67-72
1.3	7,10,15,20,23,26,38,39,49,52,54,55,59,62,67,68,72,84,87,115-120
1.4	1-6,9,12,15,18,39,42,49,52,57,60,62,65,95-98,103-106,111
1.5	1-8,15,17,22,27,28,29-32,34,37,43,48,58,61,65-68
2.1	1,2,6,9,11,14,17,22,23,36,37,39-42,66,67,72,75-80,93-96
2.2	3,8,9,14,19,24,32,36,37,40,43,50,51,57,60,63,66,87-92,93,96,100,111
2.3	3,6,8,11,25,30,35,38,47,54,59,62,77,81,83,99,102,111-114,129-134
2.4	8,11,14,19,24,27,32,49,54,55,61,66,67,86,89,91,94,105,113
2.5	2,5,10,15,21,24,26,27,30,31,36,39,46,49,58
2.6	2,3,6,7,14,17,19,24,27,30,33,35,40
3.1	1,2,14,15,19,24,27,30,42,53,55-58,63-66
3.2	1,2,8,9,11,14,16,19,27,28,31,41,42,55,58,68,73-76
3.3	6,13,19,26,29,34,41,46,56-58,79,95-100
3.4	3-6,12,13,20,25,27,32,38,39,48,53,56,62,63,68,79-82
3.5	3-6,15,18,20,23,27,32,35,36,55,63,66,86,105,106
3.6	1-6,11,16,21,24,33,40,43,49,52
3.7	17,20,23,30,36,41,49,54,56,58
3.8	1,4,5,14,15,17,23,24,27,41-44
3.9	2,3,11,13,14,18,21-24,28,32,35,38,45
4.1	15,22,25,28,32,33,36,39,41,42,43-46,55,58,61,62,64,65,73,87-92,95
4.2	7,10,11,14,17,20,24,25,29,30,39,44,48,51,54,65,72
4.3	3,4,6,7,9,12,15,18,20,21,23,28,29,32,41-44,47,55,56
4.4	6,9,14,15,20,23,27,28,30,31,37,40,42,43,45,48,50,51,55-60,62,73,95,100
4.5	1,2,4,6,7,10,14,17,21,24,29,32,45,48,49,51,54,71,72,76,78,79,112,113,125-130
4.6	2,9,12,17,23-26,31-34