

MthSc 106 – Calculus of One Variable

Fall Semester 2000

General Information

Text: Calculus, by Larson, Hostetler & Edwards, 6th Edition, published by Houghton Mifflin.

Calculator: A graphing calculator such as the TI-89 is highly recommended. The Department of Mathematical Sciences will offer support for the TI-89.

Prerequisites: Demonstrated proficiency in precalculus mathematics, either by a satisfactory score on the Math Level II placement exam, satisfactory completion of MthSc 103 or MthSc 105 (Precalculus), or sufficient high school mathematics preparation.

Course Description: MthSc 106 will cover material typically seen in a first semester single variable calculus course: a very brief review of precalculus, limits, continuity, derivatives, antiderivatives, definite integrals, and some applications of the definite integral.

Course Objectives: Calculus is an important building block in the education of any professional who uses quantitative analysis (e.g., engineers, scientists, economists, mathematicians, etc.). It introduces and develops the mathematical skills required for analyzing change and creating mathematical models that imitate real-life situations. The general goals of this first semester calculus course are to expand the students' knowledge of calculus, and to use the calculus environment to develop critical thinking and problem solving skills. More specifically, by the end of this course you should be able to:

1. Describe the concept of limit, and calculate limits graphically, numerically, and analytically.
2. Describe what a derivative is, and calculate derivatives through the use of the definition and the basic rules of differentiation. Apply knowledge of the derivative to solve related rates and optimization problems (max-min), aid in the graphing of a function, and provide linear approximations to a function.
3. Describe an antiderivative of a function, and calculate indefinite integrals by using the basic rules of antidifferentiation and the method of substitution.
4. Describe the definite integral in terms of limits and Riemann sums, and compute a definite integral by means of the definition, the Fundamental Theorem of Calculus, basic properties of definite integrals, and areas of common geometric figures. Use the definite integral and its properties to define the natural logarithm function and then determine the derivative of the natural logarithm. Apply the notion of the definite integral to compute areas of regions in the plane.
5. Present logical arguments that exhibit your knowledge of the above objectives.

Material Covered:

Chapter	Section
P	4
1	1 – 5
2	1 – 6
3	1 – 7, 9
4	1 – 6
5	1, 2
6	1

Grading: Your final grade will be computed as follows:

Four in-class exams	60 %
Daily assignments	15 %
Final Exam	25 %

Note: (1) The final exam grade may be substituted for the lowest test grade. (2) In borderline cases the instructor reserves the right to subjectively determine grades based on class attendance, participation, quality of work, etc.

The letter grades will be assigned as follows:

A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	Below 60

Exams: There will be 4 in-class exams during the semester. In addition, there will be a **Precalculus Basic Skills Exam** administered on the second day of classes. The score on this exam will count as one daily grade.

The use of a calculator on the Precalculus Basic Skills Exam, Exam 2, and Exam 4 will be prohibited. A portion of the final exam will also not allow the use of a calculator. Graphing calculators may be utilized on the other exams.

The exam schedule for the semester is found below.

Precalculus Basic Skills	August 25, 2000
Exam 1	September 12, 2000
Exam 2	October 3, 2000
Exam 3	October 24, 2000
Exam 4	November 21, 2000

NOTE: Exam 4 will occur the day before the Thanksgiving holidays. DO NOT MAKE TRAVEL ARRANGEMENTS THAT CONFLICT WITH THIS EXAM.

Daily Assignments: These assignments may be short quizzes, assigned problems, short writing assignments, problem presentations, or projects.

Final Exam: A comprehensive final examination will be given at the time the University schedules for the class. There will be no exemptions.

Attendance: Regular and punctual attendance is necessary for each student to maximize his/her understanding of the material. You are strongly encouraged to attend class every day. Please consult your instructor for his/her attendance policy. Students are expected to wait 15 minutes before leaving if the instructor is not present at the scheduled start time of the class.

Make-Up Policy: No make-up tests will be given for unexcused absences. If you know you will have an excused absence on an exam day, arrangements should be made for a make-up prior to the exam. In any event, if you have a documented excused absence on an exam day, you must notify your instructor within 48 hours of the exam in order to receive a make-up. The make-up policy for daily work is up to the discretion of the instructor.

Academic Dishonesty: The University policy on academic dishonesty will be strictly enforced. The following is the university's official statement on "Academic Integrity."

"As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form."

Course Coordinator: Dr. Shari Prevost, O-227 Martin Hall, 656-4276, sprevos@clemson.edu

Tutorial Center: Students will be able to receive (free) tutoring in MthSc 106 Monday through Thursday. The hours of operation for the tutorial center are 2:00 p.m. to 6:00 p.m. (The center is open 6-7 p.m. on Mondays.) The center is located in Martin E-1. Students will receive help on a first-come, first-serve basis.

Web Site: <http://www.math.clemson.edu/calculus>

Tips for Success: A college level calculus course moves at a very fast pace. Most topics are introduced and discussed in one class period. Even so, professors expect the students to be proficient in these subjects by the next class meeting. In order for this to occur, the students must complete the required reading and assignments on time. However, too often students let their homework and reading for their calculus courses to go untouched. This is a losing strategy.

In order to succeed in a calculus class, you will need to develop a disciplined work ethic. Below are some ideas to help you form good study habits.

1. **Set aside at least 2 hours a day to be spent on calculus.** College instructors expect their students to spend an average of 2 hours outside of class for each hour they spend in class. Calculus instructors are no different. Some topics will be harder to grasp than others. As a result, there will be days when you will need to spend more two hours on calculus. Learning calculus is just like learning to play a sport or a musical instrument: you must practice if you want to become adept in the subject.
2. **If you do not understand a topic, get help immediately.** Getting assistance early is important. Many times an instructor can easily clear up any confusion a student may have about a concept if the help is elicited as soon as it is needed. However if the misunderstanding is allowed to sit for a long period of time, it often grows to become a roadblock to the comprehension of the remaining material in the course.

It is best to go to your instructor for assistance, but you can also receive help from qualified tutors and tutorial centers. Be wary of help from a friend or a roommate: while this may be the most convenient, it has the potential to be the most unreliable.

3. **Form a study group with other students from your class.** Study groups can foster a greater understanding of the material and a sense of confidence. After all, if you can describe a topic in calculus to a peer and get them to understand it, then you will develop a more profound appreciation of the topic. Also, study groups give you an out of class opportunity to get to know your classmates.
4. **Learn to read the textbook.** Most students believe that mathematics textbooks are used only for the problems at the end of the sections. Wrong! The text will have careful explanations of the topics, complete with examples, illustrations, and, of course, problems.
5. **Take advantage of the resources provided for you.** Many instructors maintain web sites for their courses that contain helpful materials. Typically these materials include solutions for various assignments and exams, study guides for exams, and sometimes, practice exams. If an instructor goes to the trouble of providing such a resource, it is to your advantage to make use of it.
6. **Read and practice the advice given in ["How to Survive Your College Math Class \(and Take Home Something of Value\)."](http://www.math.clemson.edu/~mjs/courses/misc/study.pdf)**
(<http://www.math.clemson.edu/~mjs/courses/misc/study.pdf>)

