MA132: Calculus II

Course Syllabus--Summer 2006

General Information:

- **Professor:** Scott R. Fulton (367 Science Center, 268-2379, fulton@clarkson.edu)
- **Office hours:** as posted or by appointment (check with me in class, call, or send email)
- **Course website:** http://www.clarkson.edu/~fulton/ma132 lists assignments, etc.
- **Prerequisite:** MA131--Calculus I (Grade of C or better strongly recommended)
- **Required Text:** Calculus/Early Transcendentals (fifth edition) by James Stewart
- **Optional Supplement:** Student Solutions Manual
- **Time/Place:** 8:00-9:30a.m. Monday--Friday in Science Center Room 301
- **Attendance:** You are expected to attend class every day (see Grades below).

Homework:

Homework will be assigned each day in class and collected at the beginning of the next class. The purpose of homework is to help you learn--do your own work. Each day's homework will consist of two parts:

1. Work the assigned exercises and **write up your own solutions**
2. Read the assigned material and **summarize it in writing** (key ideas, formulas, and theorems--no more than one page)

You will receive credit for handing in the above work each day. However, since many exercises assigned will have answers in the textbook, only a few will be graded. It is your responsibility to check your own answers (and to ask for help when you can't solve a problem). Likewise, it is your responsibility to study the textbook--what we do in class will be designed to supplement the reading, rather than duplicate it.

Classwork:

You will be asked (often) in class to answer questions or work problems on the board; these will usually be from the reading or exercises assigned the previous day. Also, there may be a quiz any day in class. Bring your textbook to class--you'll need it.

Calculus ABCs:

As a **minimum** requirement for passing this course with a grade of C or better, you must pass a "Calculus ABCs" test with a score of 90% or better. You will be given six chances to take the test. For details of content and sample tests see the Calculus ABCs web page.
Exams:

There will be two midterm exams (probably in class), and a final exam (Saturday 24 June, 8:00-10:00a.m. in SC301) which will cover the entire course. No A or B exemptions from the final exam. No books, notes, or calculators for exams.

Grades:

Your final score will be a weighted average of your scores on homework (10%), classwork (5%), attendance (10%), two midterm exams (25% for the higher, 20% for the lower), and the final exam (30%). If you lose points for attendance your exams will be weighted more heavily instead (e.g., if your attendance score is 0% then your exams will count a total of 85% instead of 75%). Final scores translate into letter grades using the following scale:

- A (90-100): Solid understanding/complete mastery of the material
- B (80-89): Good understanding/mastery of much of the material
- C (70-79): Basic competency; ready to go on to MA231 and MA232
- D (60-69): Some understanding, but not ready for MA231 and MA232
- F (0-59): Insufficient understanding

There will be no "curve". However, I reserve the right to adjust the letter grade cutoffs (downward only) if needed so that final grades accurately reflect knowledge and performance as indicated above.

Note well: To receive this grade, you must also pass a "Calculus ABCs" test with a score of 90% or better (see above); otherwise, you will receive no higher than a D+.

Late or Missed Work:

All course work is due when stated and will not be accepted late. We will move very quickly, so missed homework, classwork, or exams cannot be made up. Exceptions may be made at my discretion in exceptional circumstances; in such a case you must discuss this with me.

Code of Ethics:

I take the Clarkson Code of Ethics seriously. Any violation will result in a score of zero on the work in question (at best) and will be reported to the Academic Integrity Committee. Cheating on an exam will result in an F for the course. For more information, see the section on Academic Integrity in the Clarkson Regulations (www.clarkson.edu/studentaffairs/regulations/). When in doubt, ask me in advance.

Course Learning Objectives:

- to help you develop a solid understanding of the fundamental concepts of calculus
- to equip you to use calculus effectively in subsequent courses and in your career
Topical Outline:

1. Techniques of Integration [Chapter 7]
   ○ Techniques for finding antiderivatives
   ○ Numerical integration
   ○ Improper integrals
2. Applications of Integration [Chapters 6, 8, and 9]
   ○ Areas, volumes, work, and average value
   ○ Arc length and area of a surface of revolution
   ○ First-order separable differential equations
   ○ Exponential growth and decay
3. Infinite Sequences and Series [Chapter 11]
   ○ Infinite sequences
   ○ Infinite series; geometric, harmonic, and p-series
   ○ Convergence tests
   ○ Power series and Taylor series
4. Additional Topics [Chapter 10 and Appendix G]
   ○ Indeterminant forms [review]
   ○ Parametric equations
   ○ Polar coordinates
   ○ Complex numbers

Course Outcomes:

Upon completing this course you should be able to:

- Get correct answers for basic algebra, trigonometry, derivatives, and integrals
- Evaluate integrals by substitution, parts, trigonometric substitution, and partial fractions
- Approximate integrals by the Trapezoidal and Simpson rules
- Recognize and evaluate improper integrals
- Set up and evaluate integrals for areas, volumes, and average value
- Set up integrals for length of curves and area of surfaces of revolution
- Use integrals to solve first-order separable differential equations
- Set up and solve problems involving exponential growth and decay
- Find the limit of a sequence of numbers
- Recognize a geometric series and find its sum
- Test infinite series for convergence using the integral, comparison, alternating series, ratio, and root tests
- Find the radius of convergence of a power series
- Find power series by substitution, differentiation, and integration
- Find the Taylor series for a given function
- Recognize and evaluate indeterminate forms
- Convert between polar and Cartesian coordinates
- Work with complex numbers in rectangular and polar form and find complex roots