

MA 213 – 001, 002: CALCULUS III  
SYLLABUS – FALL 2008

**Text:** *Calculus*, 5<sup>th</sup> Edition  
By: James Stewart

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This course is intended to be an introduction to the theory and applications of the calculus in several variables. It is here that the laws of nature which bind the earth to its orbit and govern the world around us find their most natural expression. Among these are Kepler's three laws of planetary motion, the law of universal gravitation, as well as the very notions of force and acceleration in terms of which those laws are made manifest. Our goal will, therefore, be twofold: That each student acquire

- A. An understanding of the underlying infinite processes necessary for translating problems arising in nature into the language of the calculus;
- B. The computational skills necessary to solve these problems once they have been suitably formulated

The topics to be considered fall roughly into four categories, corresponding to the sections of the text indicated below:

1. Vector geometry and vector valued functions: length and motion along curves in space, velocity, acceleration, etc. (Chapts.13 & 14).
2. Partial differentiation and max-min problems in several variables, etc. (Chapt.15).
3. Integration in higher dimensions: volume, surface area, center of mass, etc. (Chapt.16).
4. Vector calculus: line integrals, Green's theorem, divergence theorem, etc. (Chapt.17).

## GRADING

Final grades will be determined on the basis of three midterm examinations, periodic quizzes, and a *comprehensive* final examination scheduled as follows:

Quizzes (100 points):	unannounced
Exam 1 (100 points):	Wednesday, September 24
Exam 2 (100 points):	Wednesday, October 22
Exam 3 (100 points):	Wednesday, November 19
Final Exam (200 points):	Wednesday, December 17 (1:00-3:00)

Final letter grades corresponding to a numerical average of  $x\%$  will be determined as follows: A ( $90 \leq x \leq 100$ ), B ( $80 \leq x < 90$ ), C ( $70 \leq x < 80$ ), D ( $60 \leq x < 70$ ), E ( $x < 60$ )

*Note:* In keeping with the stated objectives examination questions will be a combination of two types requiring routine calculations and the construction of proofs. In a proof the argument must be clearly expressed and conform to good English usage. ***The use of calculators and/or cell phones will not be permitted during examinations. All make-up examinations will be given during dead week. There will be no make-up quizzes; only the top ten will be counted, and the others will be dropped.***