McGill University
Department of Mathematics and Statistics

MATH 222 (Calculus III)
COURSE OUTLINE – Fall Semester 2007
REVISED

Instructors:
Section 1. Dr. Pengfei Guan (Burnside Hall 918), telephone: 398-3806,
Email: guan@math.mcgill.ca, Office Hours: Tu & Thur, 10am-11:30am
Section 2. Dr. Wilbur Jonsson (Burnside Hall 922), telephone: 398-3807,

Course Webpage: http://www.math.mcgill.ca/guan/courses/m222.html

Prerequisite: MATH 141.
Corequisite: MATH 133 or familiarity with vector geometry.
Restriction: Not open to students who have taken CEGEP course 201-303, MATH 150, or MATH 151.

Textbook: J. Stewart, Multivariable Calculus: Early Transcendentals. Any edition will do.
Publisher: Thomson Brooks/Cole.
The book is (supposed to be) available in the McGill bookstore. Any calculus book covering the material should be a satisfactory substitute.
Reference: R. A. Adams, Calculus: a Complete Course, Addison-Wesley.
It will be available on reserve in the Schulich Science and Engineering Library.

Classroom attendance and taking notes in class are important. The lectures will not follow exactly what is written in the text. Your classroom notes will be of essential help for the preparation of the midterm and final examinations.

Course Outline:

(1) Infinite series. Infinite sequences and series. Testing convergence and divergence of series. Power series and their use for representing functions. Taylor polynomials and Taylor series. Approximately 4 weeks of the course.
(2) Vector functions. Review of parametric equations and polar coordinates. Review of vector geometry. Derivatives and integrals of vector functions; arc length and curvature of space curves; motion in space: velocity and acceleration; Kepler's laws of planetary motion. Approximately 3 weeks.
(3) Partial derivatives. Functions of several variables and their partial derivatives. Tangent planes. The chain rule. Directional derivatives and gradient vectors. Maximal and minimal values; Lagrange multipliers. Approximately 4 weeks.
(4) Multiple integrals. Approximately 2 weeks.

Course work:
Homework assignments: The homework assignments will be available on the website:
http://www.math.mcgill.ca/guan/courses/m222.html
There will be at most 10 homework assignments.
Final examination: there will be a 3-hour written final examination, in the usual exam period,
No calculators will be allowed during the exam.

Marking System: homework mark 15%, final exam 85%.

The Senate of the University has resolved that the following statement be included in this course outline: "McGILL UNIVERSITY VALUES ACADEMIC INTEGRITY. THEREFORE ALL STUDENTS MUST UNDERSTAND THE MEANING AND CONSEQUENCES OF CHEATING, PLAGIARISM AND OTHER ACADEMIC OFFENSES UNDER THE CODE OF STUDENT CONDUCT AND DISCIPLINARY PROCEDURES (see www.mcgill.ca/integrity for more information)."