

McGill University
Department of Mathematics and Statistics

MATH 248 (Honours Advanced Calculus)
COURSE OUTLINE – Fall Semester 2015

Instructor: Dr. Pengfei Guan (Burnside Hall 918),
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Office hours: Tuesday and Thursday, 1pm-2pm, or by appointment.
Course Webpage: <http://www.math.mcgill.ca/guan/courses/m248/m248.html>

Textbook: *Vector Calculus* by Marsden and Tromba, published by Freeman. Any edition of the book can be used (numbering of the problems of the assignments will follow 6th edition)

Prerequisite: MATH 133 and MATH 222 or consent of the department.

Syllabus:

- (1) Derivatives: Frechet, directional, partial. The Jacobian matrix.
- (2) Maxima and Minima: Lagrange multipliers.
- (3) Scalar and vector fields, divergence, grad and curl. Orthogonal curvilinear coordinates.
- (4) Review and extension of topics on multiple integration emphasizing triple integration and change of variables.
- (5) Integrals over path and surfaces and the integral theorems of vector analysis.

The syllabus is covered in chapters 2 through 8 inclusive of the text with the exception of orthogonal curvilinear coordinates. Chapter 1 of the text is regarded as prerequisite material, that is you are supposed to be completely familiar with it. Many of the topics in chapters 2 through 8 should also be familiar to you from MATH 222 (Calculus 3).

Assignments: There will be six assignments (will be posted in the course website), due on following days by 4:00pm: Sept. 21, Oct. 5, 19, Nov. 2, 16, 30. *NO LATE ASSIGNMENTS WILL BE ACCEPTED.*

Middle Term Tests: There will be one mid-term test in class time on October 22.

Final Examination: The final examination will be of 3 hours duration (to be scheduled). There is no "additional work" option and the grade of incomplete will not be given. A supplemental exam will be available for students enrolled in a faculty that subscribes to the concept.

Marking System: *option 1:* Assignments 15% Midterm Test 25% and Final Examination 60%. Students who write midterm test or with medical notes can choose *option 2:* Assignments 15% and Final Examination 85%. In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

Note: In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

Academic Integrity: McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).

Assignment Plagiarism: Assignments must be done individually. You may not copy another person's work. Furthermore, you must not give a copy of your work to another student.