MATH 264: Advanced Calculus for Engineers   Fall Semester 2018

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➢ General Information

Prerequisites: Math 151, Math 152, Math222 and Math 260 or Math 262 Co-requisite: Math263

Restrictions: This course is not open to students who have taken Math248 or Math265 and is only open to Engineering students.

Course Website: All important class announcements (for both sections), and other information will be periodically posted on the course website http://www.math.mcgill.ca/~mei/teaching.html

Textbooks: There are two recommended textbooks:
   (a) Adams and Essex, Calculus, several variables (Chapters 12–16)
   (b) Boyce and DiPrima, ODE and boundary value problems (Chapters 10-11).
Note that Chapters 3 and 5 contain materials covered in previous courses which are essential background for this course. Other corresponding texts may be used as long as you find that most of the topics of the course are covered. The Schaum's outline vector analysis is a good cheap alternative for the Calculus portion of the course and the Schaum's online Fourier analysis covers the portion of Fourier series and Boundary Value Problems as well.

Tutorials: There will be optional tutorials starting the second week of classes. The schedule, location, and names of the TAs will be announced on the website shortly. You may also use the Math Help Desk, which is open Monday-Friday from 12:00 to 5:00 PM, in Burn 911

➢ Grading

Evaluation policy: We will choose the maximum of (A) and (B).
                    (A) WebWork: 10%, Midterm: 30%, Final: 60%
                    (B) Final: 100%

Midterm: The midterm will be in class on **October 30, 2018, Tuesday.**

Final Examination: TBA

Note: No calculators and cell phones are permitted on the Midterm and Final Examination.

WebWorks: Webworks are done online via the link on the course web page. The due for each webwork will be specified and noticed on the course website.

➢ **Tentative schedule**

Calculus in Several Variables (cf. Adams and Essex):

- **Review** of functions of several variables, partial derivatives, the chain rule, gradients and directional derivatives (Chapter 12 of Adams and Essex) and review of iterated and multiple integrals (Much of Chapter 14 of Adams and Essex). This will take approximately one week.

- **Differential and integral calculus of vector fields** including theorems of Gauss, Green and Stokes. Chapters 15 and 16 of Adams and Essex). This consists of core material and will take several weeks.

- **Two short topics:** Differentiating integrals with parameters (Section 13.5 of Adams and Essex) and (Change of variables in multiple integrals (Section 14.6 of Adams and Essex). This will take one or two lectures.

Fourier series and Applications to Partial Differential Equations (cf. Chapter 10 and a little of Chapter 11 of Boyce and DiPrima):

- **Introduction to partial differential equations and boundary value problems**

- **Fourier series**

- **The method of separation of variables for solving boundary value problems.**

➢ **Terms and rights**

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

o In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

o 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/students/srr/honest/ for more information).