Physics 3820: Mathematical Physics II.  
Fall 2016.

Tuesday and Thursday. Slot 19. 2:00 – 3:15. Room C-3067.

PR: Mathematics 2260 (or 3260) and Mathematics 3202.

Course description on department web page:
http://www.mun.ca/physics/undergraduates/syllabus/p3820.php

Instructor.
Prof. Martin Plumer. Rm C3013. Phone 864-2679 plumer@mun.ca.


Course web page: See D2L

Text. 
or
or
Mathematical Methods for Physicists, any edition by Arfken et al. (Elsevier Press).

Recommended Reading.
Mathematical Methods for Physics and Engineering, Riley, Hobson, and Bence.

Evaluation.
Assignments. 20%
Mid-term test 25%
Final Exam 55%

No supplementary exam.

Assignments (approximately 6).
- Due approximately every two weeks, starting near the end of September.
- To be turned in during class on the due date.

Mid-term test
- Approximately mid-October.

Missed work.
- Students who cannot complete assignments or mid-term tests need to consult the University Calendar, Section 6.7.5 Exemptions from Parts of the Evaluation, and speak to the instructor.

Tentative Outline (chapters from Chow).

I. Review of vectors and matrices (Ch. 1 & 3 and some of 5)
- Vector calculus (notation, notation, notation): Levi-Civita, Div, Curl, Intergration,…
- Tensors (more notation, notation, notation): rank, rotations,…
- Matrices, transformations, more rotations, Euler angles, diagonalization,…
II. Complex variables and integration (Ch. 6).
- Complex algebra, functions and derivatives.
- Branch points and cuts.
- Cauchy-Riemann conditions.
- Cauchy integral formula.
- Complex series.
- Residues and integration using residues.
- Gamma factorial function.

III. Partial and ordinary differential equations (Chs. 2 & 10).
- Classification of PDEs.
- Separation of variables.
- Series solutions.

IV. Fourier series and transforms (Ch. 4).
- Series for real functions.
- Series for complex functions.
- Fourier transforms.

Helpful (?) suggestions.
- Read ahead of class.
- Read after class.
- Attend class.
- Ask questions.
- Try some problems in the text before the assignments are given.
- Do the assignments.

Use of Recording Devices in Classrooms
The lectures and displays (and all material) delivered or provided in this course, including any visual or audio recording thereof, are subject to copyright owned by Dr. M. Plumer. It is prohibited to record or copy by any means, in any format, openly or surreptitiously, in whole or in part, in the absence of express written permission from Dr. M. Plumer any of the lectures or materials provided or published in any form during or from the course.

Important general information from the University.

It is the student’s responsibility to acquaint themselves with these items. Please read.

http://www.mun.ca/student/conduct/

6.8.2 Exemptions From Final Examinations
http://www.mun.ca/regoff/calendar/sectionNo=REGS-0628

6.12 Academic Misconduct
http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748

Accommodations for Students with Disabilities
http://www.mun.ca/blundon/accommodations/