DEPARTMENT OF MATHEMATICS

MATH 3132 ENGINEERING MATHEMATICAL ANALYSIS 3

Winter 2011

Instructor: Dr. M. Davidson
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Lectures: 8:30 - 9:45 TR: 205 Armes

Office Hours: 9:30 - 10:30 Monday, Wednesday
3:00 - 4:00 Tuesday

Textbooks:

- *Calculus for Engineers*, Donald Trim, 4th Edition (or 3rd), Pearson/Prentice Hall;
- Chapters 17 - 21 to be purchased from the Bookstore *Notes for MATH 3132 Engineering Mathematical Analysis 3*

Topics:

- **Vector Calculus:** Vector fields; line integrals; path independence and conservative fields; Greens theorem; surface integrals; divergence theorem; Stokes's theorem.
- **Series solutions to ODE's:** Power series and Frobenius solutions, ordinary and singular points.
- **Fourier Series:** Fourier series; cosine and sine series and their properties.
- **Sturm Liouville systems:** Introduction to theory of Sturm-Liouville systems.
- **Derivation of PDE's:** Heat, vibration and Poisson's equations
- **Separation of variables:** Separation of variables applied to heat, vibration and Laplace's equation.

Course Webpage :

http://home.cc.umanitoba.ca/∼davidsom

(Follow the appropriate links)

Evaluation:
The two tests will each count 20% of the final grade.
A three hour final examination, to be scheduled by the Student Records Office, will count for the remaining 60% of the final grade.

Tests: **Two tests** will be written from 5:45 to 6:45 in the evening. The tentative dates are:
February 16 and **March 23**

Notes:

1. **Voluntary Withdrawal Deadline**: Friday, March 18, 2011.
2. For the tests and the final exam, you may not bring any notes, text(s), calculator or other aid or cell phones. However, you will be provided with some relevant formulae.
3. If you miss a test then you will automatically be given a "zero" mark unless reasons are provided together with evidence (e.g. letter from a medical doctor), in which case the final mark will be adjusted. No make-up test will be given.
4. Read the Academic Dishonesty Policy (below).

Academic Dishonest Policy:
The Department of Mathematics, the Faculty of Science and the University of Manitoba regard acts of academic dishonesty in quizzes, tests, examinations or assignments as serious offenses and may assess a variety of penalties depending on the nature of the offense.

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation. Students are advised to read section 7 (Academic Integrity) and section 4.2.8 (Examinations: Personations) in the "General Academic Regulations and Requirements" of the current Undergraduate Calendar. **Note, in particular that cell phones and pagers are explicitly listed as unauthorized materials, and hence may not be present during tests or examinations.**

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of "F" in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. For specific details about the nature of penalties that may be assessed upon conviction of an act of academic dishonesty, students are referred to University Policy 1202 (Student Discipline Bylaw) and to the Department of Mathematics policy concerning minimum penalties for acts of academic dishonesty.

The *Student Discipline* Bylaw is printed in its entirety in the Student Guide, and is also available on-line or through the Office of the University Secretary. Minimum penalties assessed by the Department of Mathematics for acts of academic dishonesty are available on the Department of Mathematics web-page.

All Faculty members (and their teaching assistants) have been instructed to be vigilant and report incidents of academic dishonesty to the Head of the Department.