Department of Mathematics
MATH 1510 Applied Calculus I, Sept.–Dec. 2007

INSTRUCTORS

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WEB PAGE: A link to a web page with copies of most course information (as pdf files) can be found on the Mathematics Department Server at:

<http://server.math.umanitoba.ca/>

ASSESSMENT IN COURSE

The final grade is a based on two **tests** and one **final exam**. The two tests will take place on Thursday, October 11, 2007 and on Thursday, November 8, 2007, at 5:30 p.m. Locations will be announced in class close to the test date.

Each test will count as 20% of the final mark and the final exam will count as 60% of the final mark. Normally a final mark of 60% or better will guarantee at least a letter grade of C. **Regardless of the final percentage mark,** students with a score of **less than 40%** on the final examination will be assigned a final grade of **F**. One page of information, 21.6x28.0 centimeters (8.5x11 inches), handwritten on both sides (not mechanically reproduced), is allowed for the term tests and the final examination. ***Calculators and other computing devices are NOT permitted***. Cell phones, electronic dictionaries, personal music players, and other such electronic devices are prohibited in test and exam rooms.

Absence from a test will be excused **only** on the submission of valid document supporting that absence, for reasons that the University would normally regard as acceptable for absence from a final examination: medical, compassionate, conflicting test or course, participation in a recognized university activity.

OTHER FORMS OF FEEDBACK

You will receive complete solutions to the two term tests.

During the term we will make available FIVE assignments, each of about three to five questions, on the preceding two weeks of work. If you hand in an assignment by the announced deadline, one or two of the questions (depending on length) will receive a critical grading by a marker and returned to you. These assignments are not compulsory and you will not receive credit for them in your final grade. Solutions will be posted to the web page.

There are four tutorial sessions associated with this course. You must be registered in one of them, but attendance is not compulsory. Demonstrators will be available to help you with problems from the text, the assignments, or from worksheets that we may hand out from time to time.

TEXTBOOK: Calculus for Engineers, 4th edition, by D. W. Trim;
Optional: Student Solutions Manual

ADDITIONAL NOTES

1. The deadline for Voluntary Withdrawal without Academic Penalty is **November 14**.
2. The last day of classes is December 5, and Final Exams run until December 20.
3. There are no lectures October 8 (Thanksgiving) and November 12 (Remembrance Day)

COURSE OUTLINE:

Note that the topics "inverse trigonometric functions" and "hyperbolic functions" are covered in the review sections and appear from time to time throughout Chapters 1 through 6, either in specific subsections or as part of examples and exercises. **These topics are not covered in MATH 1510.** Ignore all references in the text to the inverse trigonometric functions and to the hyperbolic functions. Inverse trigonometric functions are covered in MATH 1710.

- **Review and Self-review** (Sections 1.1–1.7, 1.9)
  A brief review of analytic geometry and functions. Note that only some of these sections will be discussed in class, and students are expected to review the rest on their own. Students are responsible for and are expected to know all material in Chapter 1 whether or not it was discussed during lectures.
- **Limits and Continuity** (Sections 2.1–2.4)
  Limits, infinite limits, limits at infinity, continuity.
- **Differentiation** (Sections 3.1–3.9, 3.11, 3.12, 3.14)
  The derivative, rules for differentiation, higher-order derivatives, velocity and acceleration, chain rule, extended power rule, implicit differentiation, derivatives of trigonometric, exponential, and logarithm functions, logarithmic differentiation, mean value theorem.
- **Applications of Differentiation** (Sections 4.1–4.9, 4.12)
  Newton's method, increasing and decreasing functions, relative extrema, concavity and points of inflection, absolute extrema and applied extrema problems, velocity and acceleration, related rates, differentials.
- **Indefinite Integrals** (Sections 5.1–5.3)
  The indefinite integral, velocity and acceleration, change of variable.
- **Definite Integrals** (Sections 6.1–6.4, 6.7)
  The definite integral, sigma notation, Riemann sums, fundamental theoremintegral calculus, change of variable.

ACADEMIC HONESTY

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) 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.