

**Department of Mathematics**  
**MATH 1510 APPLIED CALCULUS I      Sept.-Dec. 2010**

**INSTRUCTORS:**

A01: Dr. A. Prymak (423 Machray Hall, 480-1246, [prymak@cc.umanitoba.ca](mailto:prymak@cc.umanitoba.ca))

A02: W. Korytowski (452 Machray Hall, 474-9191, [korytows@cc.umanitoba.ca](mailto:korytows@cc.umanitoba.ca))

**LECTURES:**

A01: Monday, Wednesday and Friday, 8:30 - 9:20 a.m., 200 Armes

A02: Tuesday and Thursday - 1:00 - 2:15 p.m., 205 Armes

**WEBPAGE:** <http://server.math.umanitoba.ca/courses/math1510/>

(Rooms for the midterm tests, worksheets for labs, and other important information/announcements will be posted here)

**TESTS:** There will be two midterm tests, of 60-minute duration each, administered in this course. The tests will be on October 13th and November 10th (subject to change), time and rooms for these tests will be announced in class and on the webpage.

**EXAMINATION:** A two-hour final examination will be scheduled, during the December examination period, by the Student Records Office.

**AIDS: Use of notes, books, calculators or other computing devices is NOT permitted during the midterm tests and the final examination.**

**EVALUATION OF STUDENT PERFORMANCE:**

Midterm Tests	25 % each
Final Examination	50 %

**Students with a grade of less than 40% on the final examination will be assigned a final grade of F irrespective of term work.**

**TUTORIAL (LAB) SESSIONS:**

Worksheets for tutorial sessions will be available on the website about a week before the tutorial. You are expected to solve the worksheet problems **before** the lab. The teaching assistants will help you with the difficulties you had with the worksheet problems or any other problems related to the course. Tutorials begin on September 16th. You can attend any of the following sessions (times and locations are subject to change):

10:00-10:50 am Tuesdays in 330 Allen

10:00-10:50 am Thursdays in 205 Armes

11:30-12:20 pm Thursdays in 225 St. Paul's

**TEXTBOOK:**

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

**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.

With reference to the above book, the following topics will be covered:

- 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 irrespectively of 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 logarithmic functions, logarithmic differentiation, mean value theorem.
- Applications of Differentiation (Sections 4.2-4.5, 4.7-4.9) Increasing and decreasing functions, relative extrema, concavity and points of inflection, absolute extrema and applied extrema problems, velocity and acceleration, related rates.
- Indefinite Integrals (Sections 5.1-5.3) The indefinite integral, velocity and acceleration, change of variable.
- Definite Integrals (Sections 6.1, 6.3, 6.4, 6.7) The definite integral, sigma notation, Riemann sums, fundamental theorem of integral calculus, change of variable.

### **ADDITIONAL NOTES**

1. Voluntary withdrawal deadline is November 17.
2. If you miss a midterm test, you will be assigned a mark of zero unless reasons and acceptable supporting evidence are provided to your instructor.
3. Deferred midterm tests (which are usually more difficult) will be scheduled for people missing midterm tests due to acceptable reasons.

### **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) 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.