

THE UNIVERSITY OF CALGARY  
FACULTY OF SCIENCE  
Department of Mathematics and Statistics

COURSE INFORMATION SHEET  
Winter 2008 MATH 353 (Calculus IV) L01

(1) **Course schedule:**

Lect./tut.	Days	Time	Location	Instructor
L01	MWF	14:00-14:50	ST 147	Dr. C. Cunningham ( <a href="mailto:cunning@math.ucalgary.ca">cunning@math.ucalgary.ca</a> )
T01	T	14:00-14:50	MS 431	C. Cunningham
T02	T	14:00-14:50	MS427	P. Rozenhart
T03	Th	12:00-12:50	MS 427	P. Rozenhart

(2) **Topics:**

- Differentiation: review of the derivative as a linear transformation and the Chain rule; extreme values and Lagrange multipliers.
- Integration: integration on  $\mathbb{R}^2$  and  $\mathbb{R}^3$ ; Fubini's Theorem; Change of Variables Theorem.
- Vector Fields: vector fields; conservative fields; gradient, divergence and curl.
- Differential forms on  $\mathbb{R}^2$  and  $\mathbb{R}^3$ : 0-, 1-, 2- and 3-forms; the exterior algebra; integration of differential forms; Stokes' and Divergence Theorems for  $\mathbb{R}^2$  and  $\mathbb{R}^3$ .
- The classical theorems: Green's Theorem, Gauss' Theorem; Flux integrals; Stokes' Theorem on surfaces.

(3) **Prerequisites:** Math 349.      **Exclusions:** Credit for more than one of Mathematics 353, 331 and Applied Mathematics 309 will not be allowed.

*Note:* The Faculty of Science policy on pre- and co-requisite checking is outlined in the current University Calendar, *Faculty of Science, Section 5C*. It is the student's responsibility to ensure that they have the pre- and/or co-requisites for the course, and if they do not they will be withdrawn from the course without further notice.

(4) **Textbook:** *Calculus: a Complete Course, 6th edition* by Adams, published by Addison-Wesley.

(5) **Webpage:** The webpage for this section is available through the site <http://blackboard.ucalgary.ca>.

(6) **Grading:** The University policy on grading and related matters is described in the current University Calendar, *Academic Standings*. In determining the overall grade in the course, the following weights will be used:

Midterm test (90 min.)	20%
Quizzes (best 4 of 5, 50 min. each)	30%
Final exam	50%

- (7) **Homework and quizzes:** Homework questions will be assigned weekly. Each second week (roughly) you will write a quiz, based on homework questions assigned during the preceding two or three weeks.
- (8) **Mid-term test:** The mid-term test will be held on Wednesday, March 12th, from 17:00 to 18:30. Location to be announced. Note that regularly scheduled classes have precedence over any out-of-class activity. If you have a conflict with this out of class time activity, please inform your instructor **at least one week in advance** of the activity so that other arrangements may be made for you.
- (9) **Final examination:** The final examination will be scheduled by the Registrar's Office during the period April 20-31. Students must obtain at least a grade D on the final examination in order to obtain an overall final grade of D or better.
- (10) **Calculators:** The use of calculators and integration tables during quizzes, the midterm test, and final examination **is** permitted.
- (11) **Fee policy:** After the last day to drop/add courses, there will be no refund of tuition fees if a student withdraws from a course, courses or the session.
- (12) **Academic accommodations:** It is the student's responsibility to request academic accommodations. A student with a documented disability who may require academic accommodation must register with the Disability Resource Centre to be eligible for formal academic accommodation. DRC registered students are required to discuss their needs with the instructor no later than fourteen (14) days after the start of this course.
- (13) **Missed components of term work:** The regulations of the Faculty of Science pertaining to this matter are outlined in the current University Calendar, *Faculty of Science, Section 6A*. It is the student's responsibility to familiarize herself/himself with these regulations.
- (14) **Academic misconduct:** Cheating, plagiarism, or any other form of academic misconduct is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the current University Calendar. See: <http://www.ucalgary.ca/honesty/>

(15) **Schedule of lectures:**

Dates	Topics	Text reading	Quiz
Jan. 14, 16, 18	review of differentiation; extreme values	13.1	tutorials begin
Jan. 21, 23, 25	Hessian; Lagrange multipliers	13.2, 13.3	
Jan. 28, 30, Feb. 1	integration on $\mathbb{R}^2$ and $\mathbb{R}^3$ ; Fubini's Theorem	14.1, 14.2, 14.3	quiz 1
Feb. 4, 6, 8	Change of Variable Theorem	14.4, 14.5, 14.6	
Feb. 11, 13, 15	Vector fields; conservative fields	15.1, 15.2	quiz 2
Feb. 18-22	Reading Week		
Feb. 25, 27, 29	divergence and curl	16.1, 16.2	quiz 3
Mar. 3, 5, 7	differential forms on $\mathbb{R}^2$ and $\mathbb{R}^3$		
Mar. 10, 12, 14	integration of differential forms		
Mar. 17, 19	Stokes' and Divergence Theorems	16.3	
Mar. 24, 26, 28	line integrals	15.3, 15.4	quiz 4
Mar. 31, Apr. 2, 4	surface integrals; flux integrals	15.5, 15.6	
Apr. 7, 9, 11	classical theorems: Green's, Divergence	16.4, 16.5	quiz 5
Apr. 14, 16, 18	Review		