

Faculty of Science
DEPARTMENT OF MATHEMATICS AND STATISTICS

Course Information Sheet

Course:	MATH 331	Winter 2004
Lecture/Time/Session	L02 M W F 13:00-13:50	ST 147
Instructor/e-mail:	Elena Braverman	maelena@math.ucalgary.ca
Labs		
T 13:00 MS 427	Elena Braverman	maelena@math.ucalgary.ca
T 13:00 MS 431	Garth Boucher	garth@math.ucalgary.ca
M 10:00 MS 317	Leung Lung Chan	lchan@math.ucalgary.ca
Office/Phone/Hours:	MS 444, 220-3956	MWF 2-2:50pm T 10-12am
Prerequisites:	MATH 253 or 263 or AMAT 219	and MATH 221 or 221
Co-requisites:	None	
Course's homepage:	www.math.ucalgary.ca/~maelena/331.html	

1. **The university policy on grading** and related matters is described on pages 41-42 of the 2003-2004 Calendar. In determining the overall grade in the course, the following weights will be used:

Quizzes	[best 4 of 5]	30 %
Mid-term exam	[one]	20 %
Final exam		50 %

A passing grade on the final exam is necessary to pass the course. There will be a final examination **scheduled by the Registrar's Office**. The use of aids such as open book, etc. is not permitted. **Calculators and tables are allowed on quizzes, the midterm test and the final exam.**

2. **The mid-term** will be in class on **March 12, 2003**. There will be five quizzes of approximately 35 minutes durations which will be held in labs: **January 26 or 27, February 9 or 10, March 1 or 2, March 22 or 23, April 5 or 6**. The best four marks will be used in the assessment.
3. **Textbook:** Richard E. Williamson: Multivariable mathematics (recommended).
4. **Missed Components of Term Work.** The regulations of the Faculty of Science pertaining to this matter are outlined on page 199, of the 2003-2004 Calendar. It is the student's responsibility to familiarize herself/himself with these regulations.
5. **Out-of-class activities:** There will be no out-of-class scheduled activities. Regularly scheduled classes have precedence over any out-of-class-time-activity.
6. It is students' responsibility to ensure that they have the prerequisites for the course and if they do not, they will be withdrawn from the course without notice.
7. **Fee policy:** After the last day to drop/add courses (January 23, Friday), there will be no refund of tuition fees if a student withdraws from a course, courses or the session.
8. **Academic misconduct** (cheating, plagiarism, or any other form) 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 2003-2004 University Calendar under the heading "Student Misconduct", pages 53-56.

9. There are no lectures on **February 16-20** and no tutorial on **January 12-13**.

MATHEMATICS 331

“MULTIVARIATE CALCULUS”

Calendar Description: H(3-1T)

Systems of ordinary differential equations. Calculus of functions of several variables. Introduction to vector analysis, theorems of Green, Gauss and Stokes.

Prerequisites: Mathematics 253 or 263 or Applied Mathematics 219 and either 221 or both 211 and 013.

Syllabus

Topics	Sections and problems	Dates
Systems of linear differential equations	13.1AB (1-15), 13.2D (1,2), 13.3A-C (1-3)	12.01-23.01
Functions of several variables	4.2A-B (1-17), 2D (1-3,9-19)	26.01-30.01
Limits and continuity	5.1A-C (17-29)	2.02-4.02
Partial derivatives	3.3A-C (1-25)	6.02-9.02
Differentiability, linear approximation, gradient	2A-B (1-15) 6.1A-B (1-5,7-9)	11.02-13.02
Directional derivatives	6.3A-B (1-11)	13.02
The Chain Rule	6.2B (1-7)	23.02-25.02
Implicit differentiation	6.3 (1-7)	27.02
Curvilinear coordinates	6.5 A-D (1-9,12)	1.03
Extreme values	6.4A-D (1-15,27), 6.4E-F (3-13)	3.03-8.03
Multiple integration	7.1A-D (1-17,21,27), 7.2A-E (1-3,7-11)	8.03-10.03
Change of variables	7.4A-D (1-15)	12.03-15.03
Line integrals	8.1A-B (1-17), 8.2 (1-9)	17.03-19.03
Conservative vector fields	9.2A-D (3,5,9-13,17,19-22)	22.03
Surface integrals	9.3 (1-5,9)	24.03-29.03
Curl and divergence	8.4 (1-9)	31.03
Green's Theorem	9.1A-C (1-11)	2.04-5.04
Gauss's Theorem	9.4 (1-14)	5.04-7.04
Stokes's Theorem	9.5A-C (1-9)	9.04-12.04