

## COURSE OUTLINE

### WINTER 2011

1. **Course:** Math 331 Multivariable Calculus  
**Lecture/Time:** L01 TR 12:30-13:45 MS 527  
**Instructor:** C. Rios  
**Office/Phone/Email:** MS 546. 220-3221 [crios@ucalgary.ca](mailto:crios@ucalgary.ca)  
**Labs:** T01 W 14:00 MS 431 C. Rios  
           T02 R 15:00 MS 569 G. Piroozfar
2. **Prerequisites:** [Mathematics 253](#) or 263 or [283](#) or [Applied Mathematics 219](#) and one of [Mathematics 211](#), [213](#) or 221. (see Section 3.5C of Faculty of Science [www.ucalgary.ca/pubs/calendar/current/sc-3-5.html](http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html) and Course Descriptions: [www.ucalgary.ca/pubs/calendar/current/course-desc-main.html](http://www.ucalgary.ca/pubs/calendar/current/course-desc-main.html))
3. **Grading:** The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course, the following weights will be used:

<i>Assignments</i>	[ 5 ]	10 %
<i>Quizzes</i>	[ 4 ]	15 %
<i>Midterm Test</i>	[ 1 ]	25 % (week of March 7-11 )
<i>Final Exam</i>		50% (To be scheduled by the Registrar)

The various components above will be assigned a percentage score and will be combined with the indicated weights to produce an overall percentage in the course. The conversion table between course percentage and letter grade will be provided at least one week before the withdrawal deadline.

A passing grade in the Final Examination is necessary for an overall grade of C- or better.

4. **Missed Components of Term Work.** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in section 3.6: [www.ucalgary.ca/pubs/calendar/current/sc-3-6.html](http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html). It is the student's responsibility to be familiar with these regulations. See also [www.ucalgary.ca/pubs/calendar/current/e-3.html](http://www.ucalgary.ca/pubs/calendar/current/e-3.html).
5. **Textbook:** *Calculus, Several Variables* 7th Edition, R. A. Adams Pearson Education Canada ISBN 9780321549297
6. **Examination Policy:** The use of aids such calculators, open book, etc. **is not** permitted at quizzes, the midterm test, and the final exam. Students should also read the Calendar, Section G, on Examinations: [www.ucalgary.ca/pubs/calendar/current/g.html](http://www.ucalgary.ca/pubs/calendar/current/g.html)

#### 7. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **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 University Calendar under K. Student Misconduct (<http://www.ucalgary.ca/pubs/calendar/current/k.html>) to inform yourself of definitions, processes and penalties
- (b) **ASSEMBLY POINTS in case of emergency during class time.** Be sure to **FAMILIARIZE YOURSELF** with the information at <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- (c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links: Calendar entry on students with disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html>  
 Disability Resource Centre: <http://www.ucalgary.ca/drc/>

- (d) **SAFEWALK:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call **220-5333** for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **FREEDOM OF INFORMATION AND PRIVACY:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, **students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page.** For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **STUDENT UNION INFORMATION:** VP Academic **Phone:** 220-3911 **Email:** [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).  
 SU Faculty Rep. **Phone:** 220-3913 **Email:** [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca) **Website** [www.su.ucalgary.ca/home/contact.html](http://www.su.ucalgary.ca/home/contact.html).  
 Student Ombudsman: <http://www.su.ucalgary.ca/services/student-services/student-rights.html>
- (g) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

8. The assignments are delivered by the Webwork system. The quizzes are held in the tutorial room during the scheduled Lab time.

**SCHEDULE**

Week		Text sections		Assignments due	Quiz, test
10-Jan	14-Jan	Notes on systems of differential equations	Notes on systems of differential equations		
17-Jan	21-Jan	Notes on systems of differential equations	14.1 Functions in Two or More Variables		
24-Jan	28-Jan	14.2 Limits and Continuity in Several Variables	14.3 Partial Derivatives	Assignment 1	
31-Jan	4-Feb	14.4 Linear Approximation, Differentiability, and Tangent Planes	14.5 The Gradient and Directional Derivatives		Quiz 1
7-Feb	11-Feb	14.6 The Chain Rule	14.6 The Chain Rule	Assignment 2	
14-Feb	18-Feb	14.7 Optimization in Several Variables	14.8 Lagrange Multipliers		Quiz 2
21-Feb	25-Feb	Reading week			
28-Feb	4-Mar	15.1 Integrals in Several Variables	15.2 Double Integrals over More General Regions	Assignment 3	
7-Mar	11-Mar	15.3 Triple Integrals	15.4 Integration in Polar, Cylindrical, and Spherical Coordinates		<b>Midterm</b>
14-Mar	18-Mar	15.4 Integration in Polar, Cylindrical, and Spherical Coordinates	15.5 Change of Variables		
21-Mar	25-Mar	16.2 Line Integrals	16.3 Conservative Vector Fields	Assignment 4	Quiz 3
28-Mar	1-Apr	16.4 Parametrized Surfaces and Surface Integrals	16.5 Integrals of Vector Fields		
4-Apr	8-Apr	17.1 Green's Theorem	17.2 Stokes' Theorem	Assignment 5	Quiz 4
11-Apr	15-Apr	17.3 Divergence Theorem	17.3 Divergence Theorem		

The topics for the quizzes will be announced in advance.

The text sections in the schedule refer to *Calculus, Several Variables* 7th Edition by R. A. Adams. Some departures from this schedule may occur.