Faculty of Science
Department of Mathematics and Statistics
Course Information Sheet: Mathematics 253/263 L08 Winter 2005

Lectures: TuTh 12:30-2:00 ST 145
Additional for 263: Tu. 11:00-12:30 MS 527
Continuous Tutorials: M-F 11:00-4:00 MS 365

Instructor: Jack Macki jmacki@math.ucalgary.ca, jackmacki@mac.com
Office: MS558, Ph. 220-6302 **Office Hours**: TuTh 11:00-12:30
Labs:

B29 Thu: 4:00-4:50 MS371 J. Macki jmacki@math.ucalgary.ca
B30 Thu.: 4:00-4:50 MS325 P. Rozenhart pieter@math.ucalgary.ca
B31 Fri.: 1:00-1:50 MS371 D. Kinzebulatov damir@math.ucalgary.ca
B32 Fri.: 1:00-1:50 MS325 J. Shen jshen@math.ucalgary.ca

Prerequisites: Math 249 or Math 251 or AMat 217
Grades: 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:

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 two-hour final examination scheduled by the Registrars Office. The use of a calculator up to the level of TI 83 will be allowed on all tests.
Examinations: The mid-term test will be in class on Thursday, March 10, 2004.
There will be five quizzes of approximately 35 minutes duration which will be held in labs. The best four quiz marks will be used calculating your grade.

Textbook: Robert A. Adams: Single-Variable Calculus (or Complete Course) - Any edition. This is the text the lectures will follow, but any reasonably decent calculus text will work.

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 students responsibility to familiarize herself/himself with these regulations. **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. Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the current University Calendar (see www.ucalgary.ca/pubs/calendar), Faculty of Science, section 5C. 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is students responsibility to ensure that they have the prerequisites for the course and if they do not, they will be withdrawn from the course without notice. There are no co-requisites to this course. Fee policy: After the last day to drop/add courses (January 21, Friday), there will be no refund of tuition fees if a student withdraws from a course, courses or the session.
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 see: http://www.ucalgary.ca/honesty

MATHEMATICS 253 CALCULUS II

Calendar Description: H(3-1T-1) Exponential and trigonometric functions and their inverses, hyperbolic functions. Methods of integration, improper integrals. Separable differential equations, first and second order linear differential equations, applications. Note: Credit for both Mathematics 253/263 and either Applied Mathematics 209 or 219 will not be allowed. Note: This course is a prerequisite for many 300-level courses in Pure Mathematics, Applied Mathematics, Statistics and Actuarial Science.

Week	**Sections**	**Week**	**Sections**
1 (Jan. 10)	Review 5.6, 3.1	8 (Feb. 28)	Review 4.9, 6.5
2 (Jan. (17)	3.5, Labquiz 1	9 (Mar. 7)	6.6, **Midterm 10th**
3 (Jan. 24)	5.7, 6.1	10 (Mar. 14)	7.1, 7.2
4 (Jan 31)	6.2, Labquiz 2	11 (Mar. 21)	7.3, 4.8, Labquiz 4
5 (Feb. 7)	6.3	12 (Mar. 28)	Differential Equations
6 (Feb. 14)	6.4, Labquiz 3	13 (April 4)	7.9, A23-27, Labquiz 5
7 (Feb. 21)	Reading Week	14 (April 11)	3.7, handout

Note: In the detailed syllabus below, recommended drill problems are listed, the idea being to improve your skills on relatively routine problems. If you do not have access to a student solutions manual, then the odd numbered problems are for you because the answers are in the back of the book. If you have access to a student solutions manual, then the even numbered problems are for you, since the manual has detailed solutions to even numbered problems from the text. If you are using a text other than Adams, email me and I will provide a relevant list of drill problems.

Detailed Syllabus

Week 1 (Jan. 10-14): Sections 5.6, 3.1-3.2-3.3 No Labs
Topics: Substitution (Change of Variable), Trig Integrals, Inverse Functions
Recommended Drill Problems: 5.6: Odds: 5, 7, 9, 25, 33; Evens: 4, 6, 12, 26, 28, 42. 3.1: Odds: 3, 7, 29; Evens: 4, 28; 3.2: None (review) 3.3: Odds: 15; Evens: 16.
Week 2 (Jan. 17-21): Section 3.5 Lab Quiz 1 on Substitution and Trig Integrals
Topic: Inverse Trig Functions
Drill: 3.5: Odds: 1, 3, 7, 9, 13, 19, 23, 29; Evens: 2, 4, 6, 10, 14, 16, 20, 22, 28.
Dont use your calculator on the drill problems!
Week 3 (Jan. 24-28): Sections 5.7, 6.1
Topics: Area between curves, Integration by Parts
Drill: 5.7: Odds: 1, 5, 19 , #19 on p. 347 ; Evens: 2, 4, 16, 18. 6.1: Odds: 1, 3, 5, 7, 9, 17, 21; Evens: 2, 4, 8, 12, 18.
Week 4 (Jan. 31-Feb. 4): Sections 6.1, 6.2 (mostly), Lab Quiz 2 on inverse functions and arcsin(x), arctan(x).
Topics: Advanced Integration by Parts, Trigonometric Substitutions
Drill: pp. 404-405 (Review Exercises): Odds: 17, 71; Evens: 8, 26, 34, 50.
Section 6.2: Odds: 1, 3, 5, 9, 11,15, 29, 41; Evens: 2, 4, 8, 10, 16, 18, 30.

Week 5:(Feb. 7-11): Section 6.2 **Topic:** Partial Fractions
Drill: Odds: 5 (Two different ways: trig substitution and partial fractions), 11, 17, 21, 23, 25; Evens: 8, 10, 12, 18, 20.

Week 6 (Feb. 14-18): Section 6.4, Lab Quiz 3 on Integration by Parts, Trig Substitution and Partial Fractions
Topics: Using Maple to compute integrals.
Drill: Use Maple to calculate the following integrals from pp. 404-405 (Review Exercises on Techniques of Integration): 1, 3, 5, 715, 17, 19.

Week 7 (Feb. 21-25): Reading Week, take a break!
Topics: Snow structure in Rocky Mountains.

Week 8: (Feb. 28-March 4): Section 6.5 **Topic:** Improper Integrals
Drill: Odds: 1, 3, 5, 9, 15, 17, 21 Evens: 2, 4, 6, 10, 16, 20.

Week 9: (March 7-11): Section 6.6 **Topic:** Numerical Integration (Trapezoidal Rule)
Drill: Odds: 1, 3 Evens: 2, 4.

Midterm Thursday, March 10 in class

Week 10: (March 14-18): Sections 7.1 and 7.2 **Topic:** Calculating Volume by Rotation and by Slicing
Drill: 7.1: Odds: 1, 3, 9(a)(b), 11 Evens: 2, 6(a)(b), 12;
7.2: Odds: 1, 3, 11, Evens: 2, 4.

Week 11: (March 21-25): Sections 7.3, 4.8, **Lab Quiz 4**
Topics: Arc Length and Surface Area; Taylor Polynomials
Drill: 7.3: Odds: 1, 3, 9, 23, 25 Evens: 4, 8, 10, 22, 28.

Week 12: (March 28-April 1): Sections 4.8, 7.9 (with some of 3.4) **Topics:** Taylor Polynomials, Ordinary Differential Equations (ODEs)
Drill: 4.8: Odds: 1, 5, 11, Evens: 2, 8, 10.
7.9: Odds: 1, 5, 7, 9, 11, 15, Evens: 2, 6, 8, 10, 12, 16
3.4: Odds: 9, 11 Evens: 12, 14.

Week 13: (April 4-8): Sections: A23-27, Notes on ODEs , **Lab Quiz 5** **Topic:** ODEs
Drill: Odds: A38-39: 1, 3, 5, 7, 9, 11, 19, Evens: 2, 4, 6, 8, 10, 12, 20.

Week 14: (Feb. 11-15): Section 3.7, Notes **Topic:** Second Order Linear ODEs
Drill: Odds: 1, 3, 11, 13, 15; Evens: 2, 6, 10, 14.

Final Examination is on Monday, April 25, 1200-1400 hours, Gold Gym.