MATHEMATICS 121 Section 201

(Honours) INTEGRAL CALCULUS

Math 121 is the honours version of Math 101, covering mostly the same topics, but in greater foundational depth and with more emphasis on harder and/or theoretical exercises. Some precise definitions and statements of theorems will be given, but only limited theoretical facility will be expected of students.

Prerequisite: A grade of 68% in Math 120 or 80% in Math 100, 102 or 104, or a score of 5 in AP Calculus AB, or permision of the Head of the Department.

INSTRUCTOR:
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TEXT:
Adams, Single Variable Calculus, fifth edition.

I will post all handouts, problem sets, final grades, etc. on the web at
http://www.math.ubc.ca/∼feldman/m121/

TOPICS:

chapter		lecture hours
5	Definite Integrals and the Fundamental Theorem area under curves, Riemann sums and the definite integral, properties of the definite integral, the Fundamental Theorem of Calculus, the average value of a function	8
6	Techniques of Integration substitution, integration by parts, integrals of trig functions, inverse trig substitutions, partial fractions	7
6	Improper Integrals improper integrals and comparison	3
6	Approximate Integration midpoint and trapezoidal rules and error estimates, Simpson's rule	3
7	Applications of Definite Integrals areas, volumes, arc length, surface area, continuous probability density functions, expectation, variance, differential equations	9
8	Parametric and Polar Curves sketching and derivatives of parametric and polar curves	4
9	Infinite Series convergence of series, comparison and integral tests, alternating series, power series, Taylor's theorem with integral remainder	7

GRADING:
- There will be weekly problem sets. Of these, five are to be handed in (due on Tuesdays, Jan 14, Jan 28, Feb 11, Mar 11 and Mar 25). The best four of these will account for about 5% of the final mark.
- There will be five quizzes (on Tuesdays, Jan 21, Feb 4, Mar 4, Mar 18 and Apr 1). The best four of these will account for about 20% of the final mark.
- There will be one midterm (Tuesday, Feb 25) accounting for about 20% of the final mark.
- The final exam will account for about 55% of the final mark. The final exam of Math 101 and Math 121 will have at least 50% in common. This will be used to normalize grades in Math 121.
- Grades **will** probably **be scaled**.

Schedule of Problem Sets, Quizzes and Midterms

	Mon	Tues	Wed	Fri
Jan	6	7	8	10
	13	14 Problem Set I	15	17
	20	21 Quiz I	22	24
	27	28 Problem Set II	29	31
Feb	3	4 Quiz II	5	7
	10	11 Problem Set III	12	14
	17 midterm break	18 midterm break	19 midterm break	21 midterm break
	24	25 Midterm	26	28
Mar	3	4 Quiz III	5	7
	10	11 Problem Set IV	12	14
	17	18 Quiz IV	19	21
	24	25 Problem Set V	26	28
Apr	31	1 Quiz V	2	4
	7	8	9	11 no class