MATHEMATICS 317 Section 201

CALCULUS IV

Prerequisite:

o One of MATH 200, MATH 226, MATH 253. MATH 221 is recommended.

INSTRUCTOR:

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PRIMARY TEXT:

• Feldman and Rechnitzer, CLP-IV Vector Calculus.

http://www.math.ubc.ca/~feldman/m317/clp/

SECONDARY TEXTS:

 \circ Whitman, Community Calculus, primarily chapters 13 and 16.

http://communitycalculus.org

o Gilbert Strang, Calculus, primarily chapters 12 and 15.

https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=10

• James Stewart, Multivariable Calculus, seventh edition, chapters 13 and 16. This has been the textbook for this course in the past.

SECTION WEB PAGE: I will post all handouts, problem sets, etc. on the web at http://www.math.ubc.ca/~feldman/m317/

TOPICS:

1. Curves $(\S 1)$:

Parametrized curves, velocity, acceleration, arc length, curvature, normal and binormal vectors, tangential and normal components of acceleration.

2. Vector Fields and Line Integrals (§2):

vector fields, conservative fields, line integrals.

3. Surface integrals ($\S 3$):

surfaces, tangent planes, surface area, surface integrals, flux integrals.

4. Integral Theorems (§4):

gradient, divergence and curl, vector identities,

divergence theorem,

Green's theorem, Stokes' theorem, applications.

GRADING:

- There will be two midterms (tentatively scheduled for Wednesday, February 7 and Wednesday, March 14) accounting for about 40% of the final mark.
- There will be weekly problem sets accounting for about 5% of the final mark.
- The final exam will account for about 55% of the final mark.
- Grades will probably be scaled.

Schedule of Problem Sets and Midterms

	Mon	Wed	Fri
Jan	1	3	5
Jan	no class		
	8	10	12
		Problem Set I	
	15	17	19
		Problem Set II	
	22	24	26
		Problem Set III	
	29	31	2
		Problem Set IV	
D.1	5	7	9
Feb		Midterm I	
	12	14	16
	no class	Problem Set V	
	19	21	23
	midterm break	midterm break	midterm break
	26	28	2
		Problem Set VI	
Mar	5	7	9
Mar		Problem Set VII	
	12	14	16
		Midterm II	
	19	21	23
		Problem Set VIII	
	26	28	30
		Problem Set IX	no class
Apr	2	4	6
Apr	no class	Problem Set X	