

MATHEMATICS 317 Section 202

CALCULUS IV

Prerequisite:

- 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:

- **Whitman, Community Calculus**, primarily chapters 13 and 16.
<http://communitycalculus.org>
- **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/~mstephan/m317/>

TOPICS:

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