

Math 101: Integral Calculus with Applications to Physical Sciences and Engineering

Ed Belk

Summer, 2019

Instructor: Ed Belk

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TA: Elizabeth Xiao

Lecture times: Monday, Thursday, Friday 16.00–18.00; Wednesday 16.00–17.00 in LSK 200.

Office hours: Monday 12.00–13.00; Wednesday 11.00–12.00; Friday 13.00–14.00 in LSK 300B

Course webpage: <http://www.math.ubc.ca/~belked/m101.3.html>

Recommended (*not* required) textbooks: Calculus: Early Transcendentals, 7th edition, by James Stewart (aka ET[7]); CLP-2 by Joel Feldman, Andrew Rechnitzer, and Elyse Yeager (aka CLP-2).

Course description: Sequences and limits; Riemann sums; definite and indefinite integration; the fundamental theorem of calculus; substitution methods; improper integrals; work, volume, and centroids; integration by parts; partial fraction decomposition; approximation of integrals; separable differential equations; series; convergence tests; absolute and conditional convergence; Taylor series; power series.

Academic misconduct: The official policy of UBC on academic misconduct is outlined on this webpage: <http://www.calendar.ubc.ca/vancouver/?tree=3,54,111,959>

Any form of academic misconduct, including (but not limited to) plagiarism, cheating, or impersonation of another student, is taken very seriously by UBC. Cases of possible academic misconduct are reported to the undergraduate chair, then forwarded to the faculty of science. After due investigation, students found in breach of the academic honesty policy are usually given a grade of 0 for the course, possibly together with other penalties such as suspension, forfeiture of scholarships, or possible expulsion; information on penalties is available on this webpage:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,960>

Mark breakdown:

50% - Final exam

40% - In-class quizzes (Wednesdays; best 4 of 5 will be counted)

10% - WeBWorK (due Mondays at 22.00)

Quizzes will cover topics learnt in the previous calendar week; the final exam will be cumulative.

Tentative schedule:

Date	Topics	ET[7] section(s)	CLP-2 section(s)
2019/07/03	Introduction, terminology, sequences	11.1	3.1
2019/07/04	Limits of sequences	11.1	3.1
2019/07/05	Properties of sequences; examples	11.1	3.1
2019/07/08	Riemann sums; definite integrals	5.1-5.2	1.1
2019/07/10	Quiz one		
2019/07/11	Properties of integrals; the fundamental theorem	5.2-5.3	1.2-1.3
2019/07/12	FTC continued; indefinite integration	5.3-5.4	1.3
2019/07/15	u -substitution; applications of integration	5.5, 6.1	1.4
2019/07/17	Quiz two		
2019/07/18	Work, volumes, average value, centres of mass	6.2, 6.4-6.5, 8.3	2.1
2019/07/19	Integration by parts	7.1	2.1
2019/07/22	Trigonometric integrals; trigonometric substitution	7.2-7.3	1.8-1.9
2019/07/24	Quiz three		
2019/07/25	Partial fractions; improper integration	7.4, 7.8	1.10, 1.12
2019/07/26	Approximation; separable differential equations	7.7, 9.3	1.11
2019/07/29	Introduction to series; properties and examples	11.2	3.2
2019/07/31	Quiz four		
2019/08/01	The integral test; the comparison test	11.3-11.4	3.3.2-3.3.3
2019/08/02	Alternating series; absolute and conditional convergence	11.5-11.6	3.3.4, 3.4
2019/08/05	Power series; Taylor series	11.8-11.10	3.5-3.6
2019/08/07	Quiz five		
2019/08/08	Power series; Taylor series (continued)	11.8-11.10	3.5-3.6
2019/08/09	Review		