Math 1004H, 1004I Calculus for Engineering or Physics, Winter 2022

(Course outline, subject to change, updated Dec. 17, 2021)

Calendar Description: Limits. Differentiation of the elementary functions. Rules of differentiation. Inverse trigonometric functions. Applications of differentiation: max-min problems, curve sketching, approximations. Definite and indefinite integrals, techniques of integration. Applications to areas and volumes.

Prerequisites: Ontario Grade 12 Mathematics: Advanced Functions, or MATH 0005 and MATH 0006, or equivalent, or permission of the School.

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Course Web Site: `https://people.math.carleton.ca/~angelo/calculus/cal104.html`

Textbook: *The ABC's of Calculus Single Variable* A. Mingarelli, `https://books.mingarelli.com` and click on Single Variable

Lectures: Tuesdays and Thurssdays from 2:35pm to 3:55pm, LA C264. Lectures begin on Monday Jan. 11, 2022, and end on Tuesday April 12, 2022. The class will be online via zoom, until Jan. 31. After Jan. 31 1004I will be in person and 1004H will be on zoom synchronous, unless university policy changes. Recordings of the lectures will be available on Brightspace. These two classes will both have the same lecture.

Tutorials: Mondays 7:35 – 8:25. There will be online problem-solving sessions during the tutorial hours. There are two tutorials, both will be online synchronous until Jan. 31. After Jan. 31, the tutorial 1104 C1 is in person in LA A720, and tutorial 1104 CT is online synchronous.

Grading Scheme:

- 2 online tests of 120 minutes, each worth 15% each (30% total)
- 3 written assignments worth 15% each (45% total)
- 1 final exam worth 25%

Online final exam: There will be a 3-hour online final exam scheduled during the usual exam period. It is the responsibility of each student to be available

at the time of the final examination.

Additional resources: The Math Tutorial Centre will be available via a link in Brightspace called "(MTC) Online Math Tutorial Centre (Winter 2022)". More details can be found here: `https://carleton.ca/math/math-tutorial-centre/`

Tentative Lecture Schedule

Week	Dates	Tests	Sections	Topics
1	Jan. 11,13		Ch. 1	Functions, Review of Chapter 1 in text, Trigonometry, Appendix C
2	Jan. 18,20		Ch. 2, 3.1–3.3	Intro to Chapter 2 Limits and continuity, Evaluating and guessing limits at infinity, Derivatives and the Chain rule.
3	Jan. 25,27		3.4–3.8	Implicit functions, Derivatives of trigonometric functions, Inverse functions.
4	Feb. 1,3		3.8, 3.9	Inverse trigonometric functions and their derivatives, L'Hospital's Rule
5	Feb. 8,10		4.1–4.6	Exponentials, logarithms and their derivatives
6	Feb. 15,17		6.1–6.4	Anti-derivatives, Indefinite integral, Summation, Area, Definite integral, Riemann Integral
7	Feb. 22,24			WINTER BREAK(NO CLASSES)
8	Mar. 1,3		7.1–7.2	Area, Trig identities (review), Integration by substitution (change of variable)
9	Mar. 8,10		7.3.1–7.3.4	Integration by Parts (inc.all subsections)
10	Mar. 15,17		7.4.1–2,7.5.1	Integration of Partial fractions, Integration of powers of sines and cosines,
11	Mar. 22,24		7.5.2, 7.6.1–2, 7.7	Integration of powers of secants and tangents
12	Mar. 29,31		7.7–8	Improper Integrals
13	April 5,7		7.9	Area between two curves Volumes of solids of revolution, Arc length (if time permits)
14	April 12			Review

Policies:

Academic accommodation: You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Academic accommodations for students with disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or `https://carleton.ca/pmc/` for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in- class scheduled test requiring accommodation. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. For the deadline to request accommodations for the formally-scheduled exams, visit the PMC website `https://carleton.ca/pmc/`

Religious obligations and/or accommodation for pregnancy: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the student guide at `https://carleton.ca/equity/accommodation/academic/students/`