MATH 2004E-- Calculus for Engineering – Winter 2022

Instructor	Dr. Eric Hua
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Course Web	Brightspace
Office Hours	Tue & Thu, 12:55-13:15, online, or by email (email Subject: MATH 2004E).
Textbook	**The ABC's of Calculus, Volume 2,** by Angelo Mingarelli, Nolan Company, https://mingarelli.com/books/the-abcs-of-calculus-multi-variable/
Classes	Jan 10- Apr 12. Tue & Thu, 11:35-12:55, online.
Tutorials	DT: Tue. 16:35 - 17:25. **Tutorial will start from** Jan 19. TA will analyze some questions for you. Tutorial attendance: expected but not graded.
Assignments	You will have some assignments, details will be on course website.
Tests	There will be two Midterm tests, on the following dates: - Feb 17 (Test 1), Thursday, 11:35-12:55. - March 24 (Test 2), Thursday, 11:35-12:55.

EVALUATION, Your final grade will be calculated as:
Midterm tests: 30%
Assignments: 45%
Final exam: 25%

Any change about term marks (tests and assignments) should be done within one week after you receive marks.

- **Assignments:** Assignments will be posted on Brightspace, and they will be submitted through Brightspace. Only a **single** pdf will be accepted with the questions in the correct order. If you have any changes after submission, you can resubmit before **Due** time. Missed assignment(s) will be counted as 0.

- **Midterm Tests**: The tests will be held on Brightspace. There will be neither early nor make up tests. If you miss a test with justifications, its weight will be transferred to the final exam.

- **Calculators:** Non-programme non-graphing calculators.

- **Course Information:**
   o   All course related materials (slides, assignments, solutions, grades, announcements) will be posted on course website.
   o   It is your responsibility to keep up with information announced in class, on course website, or sent to your Carleton e-mail account.
- **E-mail:**
   o   According to Carleton University policy under the Freedom of Information of Privacy Act (FIPPA), Please use your Carleton account ONLY for all course related email, and write your course code on the subject line.

- **Copyright:**
  - **All course related materials (including slides, assignments, solutions, and tests) are intended for personal use only and MAY NOT be reproduced or redistributed without prior written consent of the author(s).**
- **Online proctoring:**
  - Please be aware by registering in this course you acknowledge that this course may use online proctoring tools. These online proctoring tools could require you to identify yourself via webcam. Additionally, while you are completing the proctored exam, your activities will be monitored. This could include direct observation via webcam and through the use of screen recording software. Evidence of academic misconduct during an exam will be treated seriously.

University Policies

- **Academic Integrity:**
  - Students are required to be familiar with Section 10 of the Academic Regulations of Carleton University. All tests, assignments, quizzes, and exams are to be done independently.
  - Academic dishonesty in any form will not be tolerated.
  - Students who violate the standards of academic integrity during a test/examination will receive a grade of zero for that test/examination, and will be required to meet with the Associate Dean of Science for further disciplinary action.
- **Students with disabilities requiring academic accommodations:**
  - Students requiring academic accommodations in this course must contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary Letters of Accommodation. You must request accommodations by the official accommodation deadline published on the PMC website.

- **Pregnancy obligation:**

  - For more details see the Student Guide.

- **Religious obligation:**

  - For more details see the Student Guide.

- **Science Student Success Centre: http://sssc.carleton.ca/**
- **Important dates:**

  http://carleton.ca/registrar/registration/dates-and-deadlines/

  February 22-25, 2022: Winter Break. Classes are suspended.
  April 12: classes follow Friday schedule.

- **Medical Notes**
  The Self Declaration Form:
  https://carleton.ca/covid19/cu-faq/what-academic-accommodations-are-in-place/

Weekly Schedule

(Subject to change)

In the following table, **1 week represents 2 lectures.**

WEEK	HOMEWORK	SECTIONS	TOPICS
1	Set 1 through Set 9	1.1-1.10 2.1-2.6	Vectors: Dot Product, Cross Product, Triple Product; Direction Cosines; Lines and Planes; Rotations of axes and translations in the plane.
2	Set 10 through Set 18	2.7-2.8 2.9-2.10	Planar curves and their parametric representations; Conic sections; Sketching parametric curves. Applications to Area and Length of curves;
3	Set 19 through Set 25	2.11-2.14 3.1-3.3	Polar coordinates, Curve sketching in polar coordinates, Applications Limits; Continuity; Partial Derivatives (Read over Section 3.4 on Differentiability for completeness.)
4	Set 27, Set 29, Set 30	3.5 - 3.5.1 3.6	Directional derivatives; Gradients (Read over MVT in 3.5.2 for completeness) The Chain Rule, Implicit differentiation, Tangent planes and normal lines
5	Set 31 - Set 36	3.8 4.1-4.3	Conservative fields, Divergence, and Curl. Line Integrals
6	Set 37 through 39	5.1-5.2.2 5.3	Double Integral, Iterated integrals Applications to Volume under a surface, Volume of solids of revolution, Centroids, and Area of a surface
7	Set 40 and 41	5.4	Change of variables in double integrals

		5.5	Three dimensional plots
8	Set 42 and 43	5.6	Parametric equations of a surface
		6.1-6.2	Surface integrals and some applications
9	Sets 44 and 45	6.3	Green's Theorem
		6.4	Stokes' Theorem
10	Sets 46	6.5-6.6	Triple integrals; Change of variables in triple integrals
11	Set 47	6.7	Describing solids in cylindrical and spherical coordinates
		6.8	The Divergence Theorem
12	Sets 49 and 50	7.2 - 7.3	Maxima and minima of functions of two variables
			Lagrange multipliers
13			Review