

MATH 1004 Calculus for Engineering or Physics

Section C and D, Fall 2020

Instructor	Mark Blenkinsop
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Office Hours	There will be no formal office hours, so email is best. Any questions related to course operation should be emailed to the Professor. Any questions regarding tutorial, assignments, or homework should be emailed to the TAs. (TA email addresses will be posted on cuLearn).
Lectures	There are no scheduled lectures. Instead, the style of presentation will be recorded podcasts and live Zoom sessions to summarize key ideas. Previous year's scanned notes and tutorial sessions will serve to support learning.
Notes	Notes and additional content will be posted in advance of the related podcasts.
Podcasts	Content will be posted at a quasi-regular interval to maintain a steady flow.
Zoom Sessions	Weekly Zoom Sessions will be held to summarize and wrap up key ideas of the week.
Tutorials	TAs will present tutorials from the Tutorial Manual every week. The <i>Tutorial Compendium</i> is a highly recommended resource - it is a record of all possible tutorial questions, with full solutions, you can possibly be asked!
Assignments	Assignments will be due at regular intervals throughout the term. Please note posting and due dates as they are announced.
Tests	Online tests will be hosted on cuLearn on October 15 th to 16 th , and November 19 th to 20 th . There will be no make up tests .
Textbook	<i>The ABC's of Calculus, Volume 1</i> , by Angelo Mingarelli, Nolan Company, 2019 Edition (available from the Carleton University Bookstore).
Tutorial Manual	<i>The Tutorial Compendium for First Year Calculus, 2nd Edition</i> by Mark Blenkinsop, Prometheus Press (available from Haven Books; eBook coming soon).
MS-LAP	Math & Stats Learning Assistance Program supports first year mathematics courses. It helps students achieve their goals by providing learning support and solutions to homework questions through assistance videos, available on cuLearn.
Grading	Assignments (3 in total, each worth 15%): 45% Tests (2 in total, each worth 15%): 30% Final Exam: 25%

Evaluation

- Scientific calculators and online calculators are permitted in this course, and it is worthwhile learning all functions they have to offer to help learning and understanding.
- Tutorials are compulsory but not graded. The TAs will present tutorial topics from the listed Tutorial Compendium, to coincide with the progress of the topics being covered in the course. Tutorials are one of the best opportunities for learning, and form an integral part of understanding and preparation for the final exam. The listed Tutorial Compendium is a proven reference for students: It is a record of all tutorial questions and solutions you may face throughout the term, and serves both to support tutorials, and to strengthen overall understanding of the entire course. Tutorial books are available from Haven Books; an eBook option is coming soon (details TBA).
- Tests will be hosted on cuLearn at specified dates and times. No make up tests will be offered. If a test is missed for valid reason, term work weight will be redistributed to accommodate the situation.
- Assignments are comprehensive: They are challenging, thorough, and encourage learning. You may seek outside assistance, but it is imperative that you understand all the solutions you present. Assignments must be submitted electronically in pdf format (please familiarize yourself with scanning apps, such as CamScanner). Late submissions may be subject to penalty, at the discretion of the Professor. While unforeseen circumstances may arise, once solutions to the assignment are posted, no further amendments will be considered. Please note all submission details as they are announced.
- All term grades must be resolved before the date of the final exam. Any changes after the fact will only be done at the discretion of the Professor.
- A 3-hour final examination will be held during the exam period, covering the entire course. The exam will be hosted online on a remote server, accessible through cuLearn. The option of 100% Final Exam is NOT available.

Conduct and Content Policies

- TAs are here to help! Anyone seeking assistance solving homework problems, tutorial topics, or assignment questions are encouraged to ask their TA.
- Zoom sessions will be held by the Professor on a weekly schedule (days and times to be determined). There will be more than one Zoom session per week, each one will be a bit different, and they would have important aspects repeated and reinforced in an effort to provide fair access to all students - you aren't expected to attend them all! In fact, Zoom sessions are not compulsory, not recorded, not formal, not scripted, etc.. They are a free form much like usual questions in or after class, or in office hours.
- Incidents of cheating will be dealt with in a formal fashion. All suspected incidents and supporting documentation will be forwarded to The Office of The Dean of Science.
- All classroom teaching and learning activities (lectures and tutorials), and cuLearn content is COPYRIGHTED. Students are encouraged to use the notes and download any and all course materials for their own educational use. However, students are NOT PERMITTED to post or share files externally, or distribute content in any way without permission.

Accommodation Policies

- Students with disabilities entitled to academic accommodations in this course must register with the Paul Menton Centre (PMC) for a formal evaluation, and have a Letter of Accommodation sent to the Professor by their Coordinator. Students entitled to accommodation must confirm their needs with the Professor before the first test or assignment. Students who require accommodations only for the final exam must request accommodations by the last official day to withdraw from classes.
- All other accommodations will be followed in accordance with University policy, and administered by the Office of Equity Services.

Generalized List of Topics

Functions:

General functions, inverses, domains
Absolute functions
Trigonometric functions, identities, inverses-trig
Logarithms and exponentials

Differentiation:

Rules of differentiation
Derivative formulas
Tangent line, slope of the tangent line, equation of the tangent line
Implicit differentiation

Curve sketching:

Intercepts, asymptotes, critical points, points of inflection
Max/min as the second derivative test
Increasing/decreasing segments of the domain
Concavity (segments of the domain)

Integration:

Definite integrals, indefinite integrals
Fundamental Theorem of Calculus; Leibniz Rule
List of anti-derivatives
Improper integrals

Techniques of integration:

Integration by substitution
Integration by parts
Integration by partial fractions
Integration of trig powers (sin/cos and sec/tan)
Integration by factoring
Integration by trig-substitution

Application of integration:

Area under the curve
Area between curves
Volume of a solid in revolution