

COURSE SYLLABUS



COURSE TITLE: MATH-100: Calculus 1

CLASS SECTION:

TERM: S2023

COURSE CREDITS: 3

DELIVERY METHOD(S): In person

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.

Learn more about Camosun's [Territorial Acknowledgement](#).

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Dr. Torsten Schoeneberg

EMAIL: schoenebergt@camosun.ca

OFFICE: Ewing 252

HOURS: Tuesdays & Thursdays 11.30am-12.20pm, and by appointment.

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR DESCRIPTION

For mathematics and science students. Topics include: limits, derivatives of algebraic, trigonometric, logarithmic and exponential functions, applications of differentiation and the Fundamental Theorem of Calculus. Students will complete some assignments using Maple.

PREREQUISITE(S):

One of:

B in Pre-calculus 12; B in MATH 097; A in MATH 107; B in MATH 115; A in MATH 173

CO-REQUISITE(S):

Not Applicable

EXCLUSION(S):

Notes: Only one of MATH 100 or MATH 108 may be used towards a Camosun College credential.

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon completion of this course a student will be able to:

1. Find the limit of elementary functions as the independent variable approaches some finite value or approaches infinity.
2. Define continuity.
3. Find the derivative of simple functions using the definition.
4. Find the derivative of functions (polynomial, trigonometric, logarithmic and exponential functions) using the product, quotient and chain rule.
5. Find the derivative using implicit differentiation.
6. Solve problems involving rates of change.
7. Find relative and absolute extrema of functions.
8. Sketch graphs of functions identifying such features as relative extrema, intervals where the function is increasing and decreasing, points of inflection, intervals where the function is concave up and concave down, and asymptotes.
9. Solve problems that involve maximizing or minimizing some variable associated with the problem.
10. Solve equations using Newton's method.
11. Find the area under a curve using the limit of the area of a set of approximating rectangles.
12. Evaluate a definite and an indefinite integral of polynomial, trigonometric, logarithmic and exponential functions using the Fundamental theorem of Calculus.
13. Use the Mean Value Theorem of integrals to find the mean value of a continuous function.
14. Evaluate integrals using the method of substitution.
15. Evaluate definite integrals using the trapezoidal rule and Simpson's rule.
16. Solve elementary differential equations using the method of separation of variables.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

- a) **Optional Textbook:** *Calculus of a Single Variable*, by R. Larson and B. Edwards. The 12th edition is available at Camosun Bookstore. If you have an older edition, you can probably still use it. We will occasionally use this book in class, to look at examples, and I will refer to many recommended exercises from it.
- b) **Lecture Notes:** Both "pre-lecture" notes (with blanks) and completed lecture notes (after lectures) will be posted on the D2L site. It is strongly recommended to look through the pre-lecture notes before class.
- c) **Calculator:** Any non-graphing calculator is allowed on tests and the exam, but I will be using and demonstrating things with a Sharp EL-510R. If you use a different calculator, you are responsible for figuring out how to use it effectively and efficiently.

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
Week 1	Review, Limits, Continuity	
Week 2	Intro to Derivatives	
Week 3	Applications of Derivatives: Implicit Differentiation, Related Rates, Extrema on Finite Closed Intervals	
Week 4	Applications of Derivatives: Curve Sketching, Newton's Method	Mon May 22 College closed (holiday)
Week 5	Sums, Areas, Integrals	
Week 6	Fundamental Theorem, Integration by Substitution, Numerical Integration	
Week 7	Logarithms and Exponentials, Separable DEs	
June 19 – June 21	Exam Period	Exam Schedule will be posted by College on May 19

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Seven weekly quizzes, 35 minutes each, each Friday (except last week: Thursday). Five best scores count. No make-up tests.	65%
Comprehensive Final Exam (120 minutes)	35%
	TOTAL
	100%

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information. <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

Due to the tight schedule of this class, no make-up tests will be possible. If you have to miss one of the weekly tests due to some serious and exceptional circumstance, you have to inform the instructor as soon as possible. To compensate for such cases, only the five best of the seven weekly tests count towards your grade. If you miss more than two of the tests, you have to contact your instructor immediately, and you should consider applying for a medical/compassionate withdrawal, see below under “college-wide policies”.

COURSE GUIDELINES & EXPECTATIONS

Math 100 (Calculus) is many students' first encounter with post-secondary mathematics, in all its beauty and its challenges. You can pass this class by learning the basic techniques to compute limits, to compute and apply derivatives, and to compute and apply integrals; but to excel in the class, you will need to go beyond memorization of techniques, and acquire a deeper understanding of (sometimes rather abstract) mathematical concepts. You are supposed to think, argue, reason and explain, sometimes more so than to follow rules and to calculate.

One learns mathematics by solving mathematical problems. The lectures are there to provide you with the tools for that; to acquire the skills, you have to practice them on your own, which includes getting stuck and making mistakes occasionally. Learn to not be afraid of, nor frustrated by, this natural part of learning.

It is expected that students follow lectures attentively (asking questions is encouraged and welcome!), but also continuously work on course topics outside of class hours. The recommended exercises are an excellent way to keep up to date with the course material. The key to success is practice. It is strongly recommended that you spend several hours each week on practice problems from the textbook and / or recommended in class.

This class has a faster pace than many students are used to, especially if they come from high school. Again, it is important that you constantly work on the class material; since every part of this class builds on a previous part, it is extremely difficult to catch up once one has fallen behind.

SCHOOL OR DEPARTMENTAL INFORMATION

The **Access Math Help Centre** at Lansdowne Campus is located in Ewing 342, and the **Math Lab** in Ewing 224. Both offer drop-in help (first come, first serve) as well as online meetings by appointment, and help via e-mail. For schedules and further information see

<https://camosun.ca/services/academic-supports/help-centres/math-help>

The Math & Stats Department has prepared a handout regarding **academic integrity**. Please read this document carefully and understand what behaviours would fall under what college policy regarding academic integrity and (dis)honesty (like cheating and plagiarism):

<http://georgeballinger.ca/StudentGuidelinesforAcademicIntegrity.pdf>

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit

<http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-3703841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.