COURSE SYLLABUS

COURSE TITLE: MATH-250A-Intermediate Calculus 1

CLASS SECTION: X01 (Civil)

TERM: 2024F

COURSE CREDITS: 3

DELIVERY METHOD(S): Interurban Campus

Camosun College respectfully acknowledges that our campuses are situated on the territories of the Lək̓ʷəŋən (Songhees and Kosapsum) and WSÁNEĆ peoples. We honour their knowledge and welcome to all students who seek education here.

INSTRUCTOR DETAILS

NAME: Raymond Lai

EMAIL: lai@camosun.ca

PHONE: 250-370-4491

OFFICE: CBA 152

OFFICE HOURS: Tuesday and Thursday 10:30am – 11:20am and 12:30pm – 1:20pm, 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

This course in single variable calculus includes integrating using various techniques, evaluating limits in indeterminate forms, testing convergence and approximating value of infinite series, integrating in polar coordinates, and calculus of vector-valued functions.

PREREQUISITE(S) or CO-REQUISITE(S):	C in MATH 251	EQUIVALENCIE (S):	Not Applicable

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon completion of this course students will be able to:

- Differentiate inverse trig functions.
- Integrate polynomials, trigonometric and inverse trigonometric functions, and exponential and logarithmic functions.
- Evaluate limits of indeterminate forms, and calculate improper integrals.
- Use integration to find area, volume, arc length, surface area of revolution, work, moments and centroids.
- Integrate using substitution, parts, trigonometric integrals, trigonometric substitution, and partial fractions.
- Test a sequence for convergence and explain the difference between convergence of a sequence and convergence of a series.
- Test series for convergence using the integral test, p-test, comparison tests, alternating series test and ratio test and explain the difference between convergence and absolute convergence.

- Estimate the error in approximating a series using improper integrals and the alternating series remainder.
- Calculate Taylor polynomials, power series, Taylor series, and MacLaurin series and estimate the error in an approximation using Taylor's Theorem.
- Determine the interval of convergence of a power series.
- Graph and analyze parametric and polar curves and find their first and second derivatives.
- Perform integration computations with parametric and polar curves to compute area, arc-length, volume and surface area.
- Sketch, differentiate, and integrate vector-valued functions to find velocities, accelerations, tangents, and normals.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

(a)   Course Notes (accessible from the course D2L site)
(b)   Text (Optional Reference): Gilbert Strang, Edwin "Jed" Herman, Calculus: Volume 1, 2, and 3, OpenStax, 2016 [all available for free at BCCampus Open Education https://open.bccampus.ca/]
(c)   Non-graphing non-programmable scientific calculator.

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 & DATE RANGE	ACTIVITY or TOPIC
Week 1 (9/2 – 9/6)	9/2 (Monday): Labour Day - College Closed
	Section 1.1 Basic Differentiation Rules; Tangent Line and Normal Line [~2 hours]
	Section 1.2 Derivatives of Inverse Trigonometric Functions [~1 hour]
	Section 2.3 Integration Rules and General Power Rule [~1 hour]
Week 2 (9/9 – 9/13)	Section 2.4 Integration by Substitution [~1 hour]
	Section 2.5 Applications of Integrals [~4 hours]
	Section 2.6 Integration of Exponential Functions [~1 hour]
Week 3 (9/16 – 9/20)	Section 2.7 Inverse Trigonometric Functions [~2 hours]
	Section 2.8 Integration by Parts (Tabular Method) [~2 hours]
	Section 2.9 Trigonometric Integrals [~3 hours]

WEEK & DATE RANGE	ACTIVITY or TOPIC
Week 4 (9/23 – 9/27) and Week 5 (9/30 – 10/4)	Section 2.9 (Continued)
	Section 2.10 Integration of Rational Functions by using Partial Fractions [~2 hours]
	Study Session (for preparation of test 1 covering sections 1.1 – 2.6 on Friday 10/7)
	9/30 (Friday): National Day for Truth and Reconciliation - College Closed
	Section 2.11 Trigonometric Substitutions [~2 hours]
Week 6 (10/7 – 10/11)	Section 2.11 (Continued)
	Section 3.12 Basic Indeterminate Forms ($0/0$ and ∞/∞) and L'Hôpital's Rule [~1 hour]
	Section 3.13 Other Indeterminate Forms ($0 \cdot \infty$, $\infty - \infty$, 1^{∞}, ∞^{0}, and 0^{0}) [~2 hours]
	Section 3.14 Improper Integrals: Infinite Limits and Infinite Discontinuities [~2 hours]
Week 7 (10/14 – 10/18)	10/14 (Monday): Thanksgiving Day - College Closed
	Section 3.14 (Continued)
	Section 4.15 Parametric Curves, First and Second Derivatives [~1 hour]
	Section 4.16 Applications of Parametric Curves [~2 hours]
Week 8 (10/21 – 10/25)	Study Session (for preparation of test 2 covering sections 2.7 – 4.2 on Friday 10/28)
	Section 5.17 Polar Coordinates, Polar Graphs, First Derivative [~2 hours]
Week 9 (10/28 – 11/1)	Section 5.7 (Continued)
	Section 5.18 Applications of Polar Curves [~3 hours]
	Section 6.19 Sequence Convergence [~1 hour]
	Section 6.20 Series Convergence: Geometric Series and nth Term Divergence Test [~1 hour]
	Section 6.21 The Integral Test [~2 hours]
Week 10 (11/4 – 11/8)	Section 6.21 (Continued)
	Section 6.22 The p-series Test [~1 hour]
	Section 6.23 Direct Comparison Test and Limit Comparison Test [~2 hours]
	Section 6.24 The Alternating Series Test and Absolute Convergence [~1 hour]

WEEK & DATE RANGE	ACTIVITY or TOPIC
Week 11 (11/11 – 11/15)	11/11 (Friday): Remembrance Day Observed - College Closed
	Section 6.24 (Continued)
	Section 6.25 The Ratio Test [~1 hour]
	Section 6.26 Taylor Polynomials and Taylor's Remainder Theorem [~2 hours]
Week 12 (11/18 – 11/22)	Study Session (for preparation of test 3 covering sections 5.1 – 6.7 on Friday 11/18)
	Section 6.27 Maclaurin Series and Taylor Series [~1 hour]
	Section 6.28 Power Series: Interval of Convergence and their Operations [~2 hours]
Week 13 (11/25 – 11/29)	Section 6.28 (Continued)
	Section 7.29 Vector-Valued Functions for Velocity and Acceleration [~2 hours]
	Section 7.30 Tangential and Normal Components of Acceleration [~1 hour]
Week 14 (12/2 – 12/6)	Study Session (for preparation of test 4 covering sections 6.8 – 7.2 on Friday 12/2)
Dec 9 – Dec 17	Final Exam Period for other courses– No final exam in this course **(Plan your travel and book your flights wisely)**

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 noticed is required. Deadlines can be reviewed on the CAL exams page.
https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams

EVALUATION OF LEARNING

WEIGHTS (DATES)	Assignments	Term Tests
Assignment 1 /Test 1	4% (due end of class Friday Sep 27)	23% (Wednesday Oct 2)
Assignment 2 /Test 2	4% (due end of class Monday Oct 21)	23% (Wednesday Oct 23)
Assignment 3 /Test 3	4% (due end of class Monday Nov 18)	23% (Wednesday Nov 20)
Assignment 4 /Test 4	3% (due end of class Monday Dec 2)	16% (Wednesday Dec 4)
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 policy for more information. https://camosun.ca/sites/defalt/files/2021-05/e-1.14.pdf

Notes:

- Assignment solutions will be posted in D2L soon after the due time, hence <u>late assignments will not earn credits</u>.
- There is no makeup for missed test (except for documented medical reasons).
- <u>As a prerequisite for your next calculus course Math 250B, you need at least 60% (letter grade C) in Math 250A</u>. Please check the College Website for the most updated information.

SCHOOL OR DEPARTMENTAL INFORMATION

Interurban Math Lab (TEC 142)

    Services: Individual free tutoring and study space

    Schedule: posted on the door

    Format: Drop in – first-come first-served

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 camosun.ca/services.

Support Service	Website
Academic Advising	camosun.ca/services/academic-supports/academic-advising
Accessible Learning	camosun.ca/services/academic-supports/accessible-learning
Counselling	camosun.ca/services/health-and-wellness/counselling-centre
Career Services	camosun.ca/services/co-operative-education-and-career-services
Financial Aid and Awards	camosun.ca/registration-records/financial-aid-awards
Help Centres (Math/English/Science)	camosun.ca/services/academic-supports/help-centres
Indigenous Student Support	camosun.ca/programs-courses/iecc/indigenous-student-services
International Student Support	camosun.ca/international
Learning Skills	camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills

Support Service	Website
Library	camosun.ca/services/library
Office of Student Support	camosun.ca/services/office-student-support
Ombudsperson	camosun.ca/services/ombudsperson
Registration	camosun.ca/registration-records/registration
Technology Support	camosun.ca/services/its
Writing Centre	camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills

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.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Integrity

Students are expected to comply with all College policy regarding academic integrity; which is about honest and ethical behaviour in your education journey. The following guide is designed to help you understand your responsibilities: https://camosun.libguides.com/academicintegrity/welcome
Please visit https://camosun.ca/sites/default/files/2021-05/e-1.13.pdf for Camosun's Academic Integrity policy and details for addressing and resolving matters of academic misconduct.

Academic Accommodations for Students with Disabilities

Camosun College is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging appropriate academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a documented disability and think you may need accommodations, you are strongly encouraged to contact the Centre for Accessible Learning (CAL) and register as early as possible. Please visit the CAL website for more information about the process of registering with CAL, including important deadlines: https://camosun.ca/cal

Academic Progress

Please visit https://camosun.ca/sites/default/files/2023-02/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 https://camosun.ca/sites/default/files/2021-05/e-2.2.pdf for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit https://camosun.ca/registration-records/tuition-fees#deadlines.

Grading Policy

Please visit https://camosun.ca/sites/default/files/2021-05/e-1.5.pdf for further details about grading.

Grade Review and Appeals

Please visit https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf for policy relating to requests for review and appeal of grades.

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 (see Medical/Compassionate Withdrawals policy). Please visit https://camosun.ca/services/forms#medical to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence

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 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 Policy: https://camosun.ca/sites/default/files/2021-05/e-2.9.pdf and camosun.ca/services/sexual-violence-support-and-education.
To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-370-3841

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 https://camosun.ca/sites/default/files/2021-05/e-2.5.pdf to understand the College's expectations of academic integrity and student behavioural conduct.

Looking for other policies?

The full suite of College policies and directives can be found here: https://camosun.ca/about/camosun-college-policies-and-directives

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.