

MATH 101, Calculus II

3 Credits, 3 hours lecture, 1 hour tutorial

3.5 Engineering units for the University of Alberta

Course Description

This course covers applications of integration to lengths, areas, volumes, and masses, inverse trigonometric and hyperbolic functions, methods of integration, polar and parametric equations, vector functions and derivatives.

Pre and Co-requisites

MATH 100

Course Learning Outcomes (CLOs)

Upon successful completion of the course, the student shall be able to:

- CLO1: Evaluate integrals using a variety of integration techniques including substitution, integration by parts, trigonometric substitution, partial fractions, and approximation via the Midpoint Rule, the Trapezoidal Rule, and Simpson's Rule.
- CLO2: Express and evaluate areas, volumes, surface area, arc length, work, and centroids using integrals.
- CLO3: Apply integration techniques to solve separable and linear differential equations.
- CLO4: Plot curves in 2-space and 3-space using parametric equations and use calculus to study the behavior of these curves.
- CLO5: Represent points, curves, and surfaces in alternate coordinate systems (polar, spherical, cylindrical) and convert back-and-forth to our traditional Cartesian coordinates.
- CLO6: Apply convergence/divergence tests to study sequences and series.
- CLO7: Create a Taylor/Maclaurin series representation of a function and employ it to solve problems regarding the function.

Evaluation

Assessment Type	Percentage
Assignments (At-home, In-class, etc.)	5%
Term Tests (Midterms, Quizzes, etc.)	45%
Final Exam	50%

Course Completion Requirements

Minimum passing mark of 50% or D is required. Note: A C- is required to use this course as a prerequisite for subsequent courses or to often transfer this credit successfully to other institutions. It is the student's responsibility to be aware of their specific program requirements.

Grading Scale

4.0 Grade Scale	Alpha Grade	Percentage Grade
4.0	A+	93-100
4.0	A	85-92.9
3.7	A-	80-84.9
3.3	B+	77-79.9
3.0	B	74-76.9
2.7	B-	70-73.9
2.3	C+	67-69.9
2.0	C	64-66.9
1.7	C-	60-63.9
1.3	D+	55-59.9
1.0	D	50-54.9
0.0	F	0-49.9

Land Acknowledgement

We respectfully acknowledge that Keyano College is located on Treaty 8 territory, the traditional & contemporary meeting grounds and gathering places of the Denesuline, Cree and Métis Peoples of this region. Our name, Keyano (kiyânaw in nêhiyawêwin - Cree language), translates to “we, us, our” and speaks to the connection we have as a community and our commitment to being in right relationships with the First Peoples of these lands.

Every effort has been made to ensure that information in this course outline is accurate at the time of publication. Keyano 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.

Keyano College reserves the right to modify the syllabus, curriculum, or schedule of any course/program, or to cancel a course/program entirely, at any time and for any reason. Such changes may be necessary due to unforeseen circumstances, regulatory requirements, or to ensure the highest quality of education.

Students will be notified of any significant changes as soon as possible. Keyano College is not responsible for any inconvenience or disruption caused by these changes. It is the responsibility of the students to stay informed about any updates or modifications to their courses.

All Rights Reserved: No part of this course outline may be reproduced or resold without Keyano College's written permission.

Course Outline Review Date: June 2025