Yukon University	School of Science
	MATH 100 **Single Variable Calculus I**
	Term: Fall 2024 **Number of Credits: 3**

Course Outline

• Instructor: Simon Geoffroy-Gagnon, EIT, Research Professional

• E-mail: sgeoffroygagnon@yukonu.ca

• Office Location: YRC NR48, but always happy to meet in person, just send me an email!

• Classroom: A2206

• Class Times: Mon/Wed/Fri, 9–10:20am

• Dates: Sept 3 – Dec 9, 2023

COURSE DESCRIPTION

This is a first course in calculus. The topics include limits and continuity; the derivatives of elementary, trigonometric and logarithmic/exponential functions; applications of the derivative in solving problems and graphing; and integration of elementary and trigonometric functions. Also covered are the Mean Value Theorem and the first and second fundamental theorems of calculus.

COURSE REQUIREMENTS

Prerequisite(s): 65% or better in either MATH 060 or MATH 12

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at: https://www.yukonu.ca/admissions/transfer-credit

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

• Apply the concept of the limit of a function in order to determine the continuity and end behaviour of a function.

• Establish the concept of the derivative in terms of limits and demonstrate proficiency in basic differentiation techniques, including: power rule, product rule, quotient rule, chain rule and trigonometric differentiation.

• Use graphing techniques related to differentiation and solve applied differentiation problems such as optimization and related rates.
• Apply the Fundamental Theorem of Calculus and demonstrate the relationship between the area as a limit and the definite and indefinite integral.
• Demonstrate basic integration techniques, including the antiderivative and substitution methods.
• Apply integration techniques to problems involving areas and volumes.

COURSE FORMAT

Weekly breakdown of instructional hours

• Lectures: 3 hours per week

• Tutorial: 1.5 hours per week

The course content is covered through lectures, in-class tutorials, and homework / practice assignments using the prescribed textbook. Students with a sound mathematical background can expect to spend 2—4 hours in preparation and study for every hour spent in class.

Delivery format

In-person

Course material will be posted on Moodle, including weekly lecture notes, textbook readings, homework problems, announcements, and other useful or interesting material related to the course.

EVALUATION

Weekly Quizzes	30 %
Midterm Test	30 %
Final Exam	40 %
Total	100%

Weekly Quizzes (30%)

There will be weekly quizzes during the term, worth a total of 30% of the final grade. These quizzes will use some modified practice questions from the same week and happen on Fridays.

Midterm Test (30%)

There will be one midterm test worth 30% of the final mark.

Final Examination (40%)

The final examination will cover the entire course and is worth 40% of the final grade. It will be held at the end of the term during the exam period. The exact date of the exam will be announced as soon as it is set by the School of Science. A minimum mark of 50% on the final exam is required in order to pass the course.

COURSE WITHDRAWAL INFORMATION

Refer to the YukonU website for important dates.

TEXTBOOKS & LEARNING MATERIALS

- Non-graphing scientific calculator
- Free Textbook: Calculus 1 Textbook

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact Accessibility Services for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE

Week Content (numbers refer to textbook sections)

1 Review: Functions, transformations, and graphing

2 Limits of algebraic functions

3 Continuity; Continuity of trigonometric functions

4 Differentiation

5 Differentiation cont'd

6 Differentiation cont'd

7 Analysis of functions and their graphs

8 Analysis of functions and their graphs cont'd; MIDTERM

9 Applications of the derivative

10 Integration

11 Reading Week

12 Integration cont'd

13 Applications of integration

14 Applications of integration cont'd

15 Review

Specific dates of topic coverage and assessments may be subject to change.