Yukon University

COURSE OUTLINE

MATH 100
Single Variable Calculus I

3 CREDITS

PREPARED BY: Jaclyn Semple, Instructor
DATE: August 31, 2020

APPROVED BY: Joel Cubley, Chair, School of Science
DATE: October 2, 2020

APPROVED BY SENATE: Click or tap to enter a date
RENEWED BY SENATE: Click or tap to enter a date

SINGLE VARIABLE CALCULUS I

INSTRUCTOR: Jaclyn Semple
OFFICE LOCATION: A2410
E-MAIL: jsemple@yukoncollege.yk.ca
TELEPHONE: 867-456-8548

OFFICE HOURS: TBD
CLASSROOM: Zoom
TIME: Class: Mon/Wed/Fri, 8:30 – 9:15am
DATES: Sept 2 – Dec 22, 2020

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.

PREREQUISITES
65% or better in either MATH 060 or MATH 12

RELATED COURSE REQUIREMENTS
In Fall 2020, MATH100 will be delivered remotely using the Zoom platform. Students are required to have access to a computer with a reliable internet connection. A headset with a microphone is recommended.

EQUIVALENCY OR TRANSFERABILITY

UBC	Math 100 (3)	SFU	Math 151 (3)
UVIC	Math 100 (1.5)	UAF	Math 200 (3)
UAS	Math 200 (3)	URegina	Math 110 (3)
UNBC	Math 100 (3)	KWAN	Math 1120 (3)
OC	Math 112 (3)	TRU-OL	Math 1141 (3)
TRU	Math 1140 (3)	TWU	Math 123 (3)
UFV	Math 111 (3)		

For more information about transferability contact the School of Science office.

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 related rates and optimization.
- 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
Lectures: 2.5 hours per week, online via Zoom

Three synchronous lectures will be delivered weekly, and students are encouraged to join the Zoom session so that they can ask questions in real-time and directly engage with the instructor. In addition, expect to spend at least 15 hours per week on self-paced study and homework problems in order to fully understand the material.

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

ASSESSMENTS:

Homework Sets (15%)
Homework problems will be assigned each week in order for you to practice the concepts learned in class. These problems will be marked by the instructor **for completion only**, worth 15% of the final grade. Solutions will be available on the course Moodle page or in the textbook.

Quizzes
There will be around twelve practice quizzes during the term, which will **not** be graded by the instructor. These are meant for you to use on your own to test your understanding. Most questions on the quizzes will be drawn from the assigned homework problems.

Midterm Test (35%)
There will be one midterm test held during the term, worth 35% of the final grade.

Final Examination (50%)
The final examination will cover the entire course and is worth 50% of the final grade. It will be held at the end of the term sometime during the exam period.

EVALUATION

Homework	15%
Midterm Test	35%
Final Exam	50%
Total	**100%**

TEXTBOOKS AND MATERIAL
Anton H, Bivens I, Davis S. *Calculus: Single Variable*. 11th Edition. New York: Wiley, 2016. ISBN 978-1-118-88561-1 (binder-ready version)

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when a student submits work for credit that includes the words, ideas, or data of others, without citing the source from which the material is taken. Plagiarism can be the deliberate use of a whole piece of work, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Students may use sources which are public domain or licensed under Creative Commons; however, academic documentation standards must still be followed. Except with explicit permission of the instructor, resubmitting work which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the University.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon University recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon University program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukonu.ca/yfnccr.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC): lac@yukonu.ca.

TOPIC OUTLINE

Week	Content (numbers refer to textbook sections)	Assessments
1	Review: Functions, transformations, and graphing (Appendices B–E, Web Appendices F–H)	Homework Set #1 Quiz 1
2	Limits of algebraic functions (1.1–1.3)	HS#2,3; Q2
3	Continuity (1.5); Continuity of trigonometric functions (1.6)	HS#4,5; Q3
4	Differentiation (2.1–2.3)	HS#6,7; Q4
5	Differentiation cont'd (2.4–2.6)	HS#8,9,10; Q5
6	Differentiation cont'd (2.7–2.8)	HS#11,12; Q6
7	Analysis of functions and their graphs (3.1–3.2)	HS#13,14
8	Analysis of functions and their graphs cont'd (3.3)	**MIDTERM**
9	Applications of the derivative (3.4, 3.5)	HS#15; Q7
10	Integration (4.1–4.3)	HS#16,17; Q8
11	Integration cont'd (4.5, 4.6, 4.9)	HS#18,19; Q9
12	Applications of integration (5.1–5.2)	HS#20,21; Q10
13	Applications of integration cont'd (5.3-5.5)	HS#22,23,24; Q11
14	Review	

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