



COURSE OUTLINE

MATH 100

SINGLE VARIABLE CALCULUS I

45 HOURS

30 TUTORING HOURS

3 CREDITS

PREPARED BY: Mark Shumelda

DATE: September 9, 2015

APPROVED BY: Margaret Dumkee

DATE: October 20, 2015

APPROVED BY ACADEMIC COUNCIL: (date)

RENEWED BY ACADEMIC COUNCIL: (date)



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SINGLE VARIABLE CALCULUS I

INSTRUCTOR: Mark Shumelda

OFFICE HOURS: Open-door policy
anytime, but to confirm my
availability email me beforehand

OFFICE LOCATION: A2208

CLASSROOM: A2601

E-MAIL: mshumelda@yukoncollege.yk.ca

TIME: M-F (9am-10am)

TELEPHONE: 668-8775

DATES: Sept. 9 - Dec. 18, 2015

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

MATH 070, or 65% or better in one of MATH 060, Principles of Mathematics 12 or Pre-Calculus 12

EQUIVALENCY OR TRANSFERABILITY

UBC Math 100 (3)

UVIC Math 100 (1.5)

UAS Math 200 (3)

UNBC Math 100 (3)

SFU

UAF

URegina

KWAN

Math 151 (3)

Math 200 (3)

Math 110 (3)

Math 1120 (3)

OC Math 112 (3)
TRU Math 1140 (3)
UFV Math 111 (3)

TRU-OL Math 1141 (3)
TWU Math 123 (3)

For more information about transferability contact the School of Science.

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 the integration techniques to problems involving areas and volumes.

COURSE FORMAT: (3-2-0)

Lectures: three hours per week

Tutorials: two hours per week

The course content is covered through lectures, tutorials and assignments using the prescribed textbook. Students with a sound mathematical background can expect to spend between two and four hours in preparation and study for every hour spent in class.

ASSESSMENTS

Homework

Problems (not graded by the instructor) will be assigned each week and solutions are generally available in the back of the textbook.

Tutorials

Students will be assigned tutorial questions to work on together in groups during tutorial sessions. Solutions will be posted online. Not graded by the instructor.

Quizzes (20%)

There will be *around* ten quizzes during the term, worth 20% of the final mark. Most questions on the quizzes will be drawn from the assigned problems, thus completing the homework should guarantee good quiz results. Missed quizzes cannot be made up, but the lowest quiz result will be discarded. I will give advance notice of when the quiz is to take place (at least 2 class days ahead of time).

Pre-Calculus Assessment (10%)

As a way of encouraging you to appropriately review the relevant mathematical concepts required for success in the course there will be a test on **Wednesday, September 16**. It will cover what we learn in the first week of the course, including Chapter 0, Appendices E, F, G, H and the three review sheets distributed in class.

Term Tests (30%)

There will be three short tests, one on each of the three main topics of the course (limits, derivatives, integration). Each will be worth 10% of the final mark. Schedule as follows:

Term Test 1: Wednesday, September 30 (topic: limits)

Term Test 2: Wednesday, October 28 (topic: derivatives)

Term Test 3: Wednesday, November 25 (topic: integration)

Final Examination (40%)

A final examination, which will cover the entire course, and be worth 40%, will be held at the end of the term. The examination date (anytime from December 7 - 18, 2015) will be announced as soon as it is set by the School of Science.

EVALUATION

Quizzes (approx. 10)	20%
Midterm Exams (3)	30%
Pre-Calc test	10%
Final Exam	40%
Total	100%

REQUIRED TEXTBOOKS AND MATERIALS

Anton, Howard, Irl Bivens and Stephen Davis. *Calculus:Single Variable*. Tenth edition. New York: Wiley, 2012. ISBN: 978-0-470-64770-7.

Note the student companion site for this textbook is on <http://ca.wiley.com>

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the Academic Regulations:
http://www.yukoncollege.yk.ca//downloads/Yukon_College_Academic_Regulations_and_Procedures_-_August_2013_final_v1.pdf

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper 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 College.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon College 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 College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukoncollege.yk.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 College Academic Regulations (available on the Yukon College 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) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

TOPIC OUTLINE

Week	Content (numbers refer to textbook sections)
1	Review: Inequalities, absolute value, functions and graphing (Web appendices e, f, g, and Chapter 0).
2	Limits of algebraic functions (1.1-1.3) PRE-CALCULUS TEST SEPTEMBER 16
3	Continuity (1.5); Continuity of trigonometric functions (1.6)
4	Differentiation 2.1-2.3 LIMITS TEST SEPTEMBER 30
5	Differentiation (cont.): 2.4 & 2.5
6	Differentiation (cont.): 2.6-2.9
7	Analysis of functions and their graphs: 3.1-3.3
8	Applications of the derivative: 3.4-3.6 DERIVATIVES TEST OCTOBER 28
9	Integration: 4.1-4.3
10	Integration (cont.): 4.4-4.6
11	Integration (cont.): 4.7-4.8
12	Applications of integration: 5.1-5.3 INTEGRALS TEST NOVEMBER 25
13	Applications of integration (cont): 5.4-5.7