AP Calculus 12 AB and Calculus 12
Kelowna Secondary School

Students who take AP Calculus must have completed Pre-Calculus 12 or AP Prep Math 11. AP Calculus not only prepares students for university calculus it allows students to apply for university math credit. Upon the completion of this course, students will have covered all content from Calculus 12, all content from the first semester of a university Differential Calculus and most of the content from the second semester Integral Calculus.

In order to apply for university credit students must write the AP Calculus exam offered by the College Board in May. Students will need to achieve a 4 or 5 on the exam.

Chapter 2 Limits and their Properties	Intro to limits, Properties of Limits, Evaluating Limits, Continuity and One sided limits, Infinite Limits, *Squeeze theorem, Intermediate Value theorem*
Chapter 3 Differentiation	The derivative and the tangent problem, Basic differentiation rules and rates of change, Product & Quotient Rules, Chain Rule, Implicit Differentiation, Related Rates Problems, *Understand proofs of chain rule, quotient rule and product rule*.
Chapter 4 Applications of Differentiation	Extrema on an interval, *Rolle's Theorem and the Mean Value Theorem*, Increasing/Decreasing Functions & 1st Derivative Test, Concavity and the 2nd Derivative Test, Limits at Infinity and *Slant Asymptotes*, Curve Sketching, Optimization Problems, *Newton's Method & Differentials*
Chapter 5 Integration	Antiderivatives, Area, *Riemann Sums*, Definite Integrals, The Fundamental Theorem of Calculus, *Mean Value Theorem,* Substitution Method, *Trapezoidal Rule*
Chapter 6 Applications of the Integral	Area between curves, Volumes of revolution (Disk, washer and *shell method), and Population density*.
Chapter 7 Exponential and Logarithmic Functions	The Natural Logarithmic Function and Integration, Derivatives of Inverse Functions, Exponential Functions ~Derivatives & Integrals, Bases other than *e,* Inverse Trig Functions ~ derivatives and integration*, L'Hopital's rule*
Chapter 8 Techniques of Integration	Integration by parts and *numerical integration. Tabular data* and motion problems.
Chapter 10 Differential Equations	*Reading and drawing Slope Fields*, solving first order Differential Equations.

<u>Evaluation</u>

This course has a value of eight credits, four credits for AP Calculus and four credits for Calculus 12. For AP Calculus the four terms will count 50% and the AP Equivalency exam will count for 50% of the course mark. Every student will write the AP equivalency exam. The course mark will consist of chapter tests, quizzes, tech lab assignments, and exam preparation assignments.

Students need to get at least a 3 on the AP equivalency exam in order to get credit for AP Calculus. Those who do not get a 3 on the AP equivalency exam will write the regular Calculus 12 final exam and only get credit for Calculus 12.

For Calculus 12 the final exam and each of the four terms will count for 20%.

This class will have scheduled tutorial blocks that students must attend (outside of the normal class). Activities during tutorials include collaboration on assignments and projects, required lessons and instruction and assessing student progress.

Students will have assignments outside of class time as part of the AP portion of the course. Tech labs will be given out during the course of the year.   Exam preparation assignments will be given for both the winter and spring break as well as prior to the AP Equivalency exam.

The following provincial recommended letter grade scale is used.
>A   86% and above
>B   73% to 85%
>C+ 67% to 72%
>C   60% to 67%
>C- 50% to 59%
>F (Fail) less than 50%

Effort and work habits come from student behaviour and effort in class as well as frequent homework checks and attendance. These marks will appear on the report card as:
>G – Good effort
>S – Satisfactory effort
>N – Needs improvement

<u>Course Expectations</u>

1. **Regular attendance** is very important for success in AP Calculus. If a student is absent for any reason, it is the student's responsibility to obtain missed notes and satisfactorily complete any missed assignments.

2. Complete all assignments. The student is responsible for all missed assignments and tests.

3. It is expected that students will **arrive to class on time**.

4. Behaviour in the classroom must reflect a serious and responsible attitude where the student strives to reach their potential.

5. Put your cell phone away during the lesson, quiz or test. Students may listen to music during seatwork time. Do not bring food and drinks into the classroom.

Supplies Needed

1. 3 ring binder and paper
2. Pencils and erasers (pen not acceptable)
3. Graphing Calculator
4. Graph paper and ruler

Progress reports will be sent to your school e-mail. It is expected that you will share your progress report with your parents/guardians.