



COURSE OUTLINE: Calculus 12, Year 2018-2019

Instructor:

Mr. Amory KC Wong

amorywong@sd44.ca

<http://amorykcwong.ca>

Course Description:

Calculus 12 is a course that builds on the knowledge gained in Pre-Calculus 12 and prepares students for post-secondary mathematics. This course will assist students to develop the ability to conjecture, reason logically, employ quantitative and spatial information, and apply a variety of mathematical methods to solve problems and make decisions confidently and independently. Students will work collaboratively to problem solve and reflect on their mathematical processes to effectively communicate their understanding. Students will be required to learn one topic on their own. Students taking this course will not receive credit for first-term calculus at a post-secondary institute.

Big Ideas:

- The concept of a limit is foundational in developing calculus.
- Differential calculus develops the concept of instantaneous rate of change of one quantity in relation to another.
- Integral calculus develops the concept of finding the sum of an infinite series.
- Derivatives and integrals have an inverse relationship.

Curricular Competencies:

Reasoning and analyzing

- Use reasoning and logic to analyze and apply mathematical ideas.
- Estimate reasonably.
- Demonstrate fluent and flexible thinking of number.
- Use tools or technology to analyze relationships and test conjectures.
- Model mathematics in contextualized experiences.

Understanding and solving

- Develop, demonstrate, and apply conceptual understanding of mathematical ideas.
- Visualize to explore and illustrate mathematical concepts and relationships.
- Apply flexible strategies to solve problems in both abstract and contextualized situations.
- Engage in problem-solving experiences that are connected to place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures.

Communicating and representing

- Communicate mathematical thinking in many ways.
- Use mathematical vocabulary and language to contribute to mathematical discussions.
- Represent mathematical ideas in a variety of ways.



CARSON GRAHAM SECONDARY SCHOOL

2145 Jones Avenue North Vancouver BC V7M 2W7 Ph. 604-903-3555 Fax 604-903-3556



- Explain and justify mathematical ideas.
- Connecting and reflecting
- Reflect on mathematical thinking.
 - Use mathematics to support personal choices.
 - Connect mathematical concepts to each other and to other areas and personal interests.
 - Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts.

Course Content for Term 1:

- Chapter 2 – Limits and Continuity
- Chapter 3 – Derivatives
- Chapter 4 – Applications of Derivatives
- Chapter 5 – The Definite Integral
- Chapter 6 – Differential Equations and Mathematical Modelling
- Chapter 7 – Applications of the Definite Integral
- Chapter 8 – L'Hopitals Rule, Improper Fractions, and Partial Fractions
- Chapter 11 – Infinite Sequences and Series (time permitted)

Some topics may be moved into different terms based on how quickly or slowly the class is able to grasp the concepts.

Assessment:

- Assessment will be based on chapter tests (60%) and homework (20%).
- The final exam will be worth 20%.
- Marks will be computed on a percentage basis.
- Students may earn bonus marks through presentations or extra work.

**Cheating on a quiz or test, and plagiarism on an assignment or project, will result in zero credit, a possible downgrade of the term letter grade, and a notation in the student's file. Both the lender and the borrower will share in the consequences.

Classroom resources:

Finney, Demana, Waits, and Kennedy. Calculus – Graphical, Numerical, Algebraic. Addison Wesley Longman, 1999.

Resource Materials to be supplied by students:

- Ring binder with ample supply of paper
- Pencils, erasers, colored markers
- Graphing calculator (TI-83/84 Plus or Casio fx-9750/9860 recommended)
- Basic scientific calculator (TI-30XS or Casio fx-300ES Plus recommended)