CROCUS PLAINS REGIONAL SECONDARY SCHOOL
COURSE OUTLINE AND ASSESSMENT GUIDE

Course Name: Advanced Mathematics and Functions 45S/Introduction to Calculus 45S

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Course Description: **Advanced Mathematics and Functions45S/Introduction to Calculus45S**

Text/Other Resources: **Calculus: Graphical, Numerical, Algebraic**

Finney, Demana, Waits and Kennedy

Introduction to Calculus

Introduction to Calculus is a one-half credit course that is paired with Advanced Mathematics and Functions. It is the prerequisite to Advanced Placement Calculus and runs in the first term of semester one. Students will be introduced to limits and the concept of the derivative. These tools of Calculus are used to continue the analysis of functions introduced during the pre-calculus program.

Advanced Mathematics and Functions

Advanced Mathematics and Functions is a one-half credit course that is paired with Introduction to Calculus. It runs after the completion of Advanced Placement Calculus during the second term of second semester. Students are introduced to a variety of topics of advanced study including matrices, conic sections, and the history of mathematics.

Introduction to Calculus Outcomes List (Term 1)

Unit Title	Learning Outcomes	Assessment Plan	Proposed Time
Prerequisites for Calculus	Review prerequisite grade 12 knowledge on the following topics : • Lines • Functions and graphs • Exponential Functions • Logarithmic Functions • Trigonometric Functions	Formative Assessment Assessment may include: daily work, observation, mental math Summative Assessment Chapter Test	7 days
Limits and Continuity	Demonstrate an understanding of the concept of the limit Evaluate limits to analyze functions Apply the concept of a limit to the continuity of a function	Formative Assessment Assessment may include: daily work, observation, mental math Summative Assessment 2 quizzes, Chapter Test	13 days
Derivatives	Develop the definition of the derivative as the slope of the a curve at a point Develop and apply differentiation rules Demonstrate an understanding of implicit differentiation Apply derivatives to solve problems in involving the motion of particles	Formative Assessment Assessment may include: daily work, observation, mental math Summative Assessment 3 quizzes, Chapter Test	30 days

Note that the remainder of the outcomes from Introduction to Calculus are covered in Advanced Placement Calculus, which follows this course. Most of these outcomes relate to Integration.*

Advanced Mathematics and Functions (Term 4)

Unit Title	Learning Outcomes	Assessment Plan	Proposed Time
Matrices and Systems of Equations	Demonstrate an understanding of matrices Perform operations on matrices Solve systems of equations using matrices	Formative Assessment Assessment may include: daily work, observation, mental math Summative Assessment Quizzes, Chapter Test	13 days
Conic Sections	Represent and analyze conic sections algebraically and geometrically Demonstrate an understanding of focal points in a conic section Analyze a conic section in terms of its eccentricity	Formative Assessment Assessment may include: daily work, observation, mental math Summative Assessment Quizzes, Chapter Test	10 days
Additional Calculus Topics	Various topics not covered in Introduction to Calculus	Formative Assessment Assessment may include: daily work, observation, mental math Summative Assessment Quizzes, Chapter Test These outcomes will only be assessed in the AP Calculus course	Covered in AP Calculus 20 days
History of Mathematics	Research historical contributions to the development of mathematics	Formative Assessment Class Discussions Summative Assessment Research Project	7 days

Assessment Guidelines

There are various purposes for assessment:

- Assessment *for* learning **(formative assessment)**: where assessment helps teachers gain insight into what students understand in order to plan and guide instruction, and provide helpful feedback to students.

- Assessment *of* learning **(summative assessment)**: where assessment informs students, teachers and parents, as well as the broader educational community, of achievement at a certain point in time in order to celebrate success, plan interventions and support continued progress.

Academic Achievement

Grades will be calculated on summative assessment information only. The final calculation will be a fair reflection of a student's achievement of the learning outcomes.

Term Work 100%

Quizzes

Tests

Projects

Learning Behaviours

Assessment and reporting of learning behaviors will be according to the Brandon School Division Learning Behaviors Rubric.