SOUTH CARLETON HIGH SCHOOL
Ottawa-Carleton District School Board
STUDENT OUTLINE
MHF4U
ADVANCED FUNCTIONS
UNIVERSITY

Credit Value: 1 credit	Hours: 110	Prerequisite: MCR3U/MCT4C

Expectations

This course extends students' experience with functions. Students will investigate the properties of polynomial, rational logarithmic and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.

Course Expectations

Strand	Overall Expectations
Exponential and Logarithmic Functions	Demonstrate an understanding of the relationship between exponential and logarithmic expressions, evaluate logarithms and apply the laws of logarithms to simplify numeric expressions; identify and describe some key features of the graphs of log functions, make connections between the numeric, graphical and algebraic representations of log functions and solve related problems graphically; solve exponential and simple logarithmic equations in one variable algebraically, including those arising from real-world applications
Trigonometric Functions	Demonstrate an understanding of the meaning and application of radian measure; make connections between trig ratios and the graphical and algebraic representations of the corresponding trig functions and their reciprocals, and use these connections to solve problems; solve problems involving trigonometric equations and prove trig identities
Characteristics of Functions	Demonstrate an understanding of average and instantaneous rates of change; determine(numerically and graphically) and interpret the average rate of change of a function over a given interval and the instantaneous rate of change of a function at a given point; determine functions that result from the addition, subtraction, multiplication and division of 2 functions and from the composition of 2 functions describe properties of the resulting functions; compare the characteristics of functions and solve problems by modeling and reasoning with, including problems with solutions that are not accessible by standard algebraic techniques
Polynomial and Rational Functions	Identify and describe key features of polynomial functions, make connections between the numeric, graphical and algebraic representations of polynomial functions; identify and describe some key features of the graphs of rational functions and represent rational functions graphically; solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and simple rational inequalities

Accommodations for Exceptional Students

The Mathematics department makes every effort to accommodate the identified needs of exceptional (IPRC'd) students and will attempt to differentiate curriculum delivery methods, student modes of expression, and assessment methods as recommended by the student's individual education plan (IEP).

Career Planning

The Mathematics department makes every effort to ensure students are aware of career opportunities related to various fields of Mathematics. In particular, the teacher will help the student to be aware of "real world" applications of the topics presented in this course.

Technology and Textbooks

Students will have the opportunity to use available software in Mathematics appropriate to the course including software packages: Zap-a-Graph, MathTrek and Geometer's Sketchpad. Graphing calculators will also be available to the students.

Calculators   Each student requires a *scientific calculator* that will be used on a daily basis. Graphing calculators will be supplied when required

Resources   *Advanced Functions,* Nelson

Evaluation

Term reports	Final Report	
Students will be evaluated on the overall expectations listed above. Evaluations will cover a balance of Knowledge & Understanding, Application, Communication, Thinking, Inquiry and Problem Solving.	Term Summative Evaluation Final Exam	70% 10% 20% **100%**
Assessment tools include tests/quizzes, assignments, performance tasks and rich assessment tasks		

More information on South Carleton High School's policy on Assessment and Evaluation and on Academic Integrity can be accessed on our school website.
Please see **Student Planner** for policies on punctuality, absenteeism and examinations, and other student responsibilities.