



# Cameron Heights Collegiate Institute

301 Charles Street E., Kitchener, Ontario N2G 2P8 (519)-578-8330 [www.chci.wrdsb.on.ca](http://www.chci.wrdsb.on.ca)

| Subject     | Grade | Level | Code   | Prerequisite |
|-------------|-------|-------|--------|--------------|
| Mathematics | 11    | IB    | MCR3UW | 10 Enhanced  |

## Course Description

This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratics relations. Students will investigate properties of discrete and continuous functions, including polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

| Unit of Study   | Overall Expectations<br>(essential understandings)   | Assessment  |
|---|--|---|
| <b>Rational Expressions</b><br>Textbook                   | <ul style="list-style-type: none"> <li>Demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical and rational expressions</li> </ul>  | <ul style="list-style-type: none"> <li>Variety of formative assessments in the form of quizzes and assignments (1-2%)</li> <li>Summative unit test (10%)</li> </ul>   |
| <b>Transformation of Functions</b><br>Textbook            | <ul style="list-style-type: none"> <li>Demonstrate an understanding of functions, their representations, and their inverses, and</li> <li>make connections between the algebraic and graphical representations of functions using transformations</li> <li>Identify and describe some key features of the graphs of rational functions, and represent rational functions graphically</li> </ul>  | <ul style="list-style-type: none"> <li>Variety of formative assessments in the form of quizzes and assignments (1-2%)</li> <li>Summative unit test (10%)</li> </ul>   |
| <b>Exponential &amp; Logarithmic Functions</b><br>Duotang | <ul style="list-style-type: none"> <li>Evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in various ways</li> <li>Make connections between the numeric, graphical, and algebraic representations of exponential functions</li> <li>Identify and represent exponential functions, and solve problems involving exponential functions, including problems arising from real-world applications</li> <li>Demonstrate an understanding of the relationship between exponential expressions and logarithmic expressions, evaluate logarithms, and apply the laws of logarithms to simplify numeric expressions</li> <li>Identify and describe some key features of the graphs of logarithmic functions, make connections among the numeric, graphical, and algebraic representations of logarithmic functions, and solve related problems graphically</li> <li>Solve exponential and simple logarithmic equations in one variable algebraically, including those in problems arising from real-world applications</li> </ul> | <ul style="list-style-type: none"> <li>Variety of formative assessments in the form of quizzes and assignments (1-2%)</li> <li>Summative unit test (10%)</li> </ul>   |
| <b>Polynomial Functions and Equations</b><br>Duotang      | <ul style="list-style-type: none"> <li>Determine the zeros and the maximum or minimum of a quadratic function, and solve</li> <li>problems involving quadratic functions, including problems arising from real-world applications</li> <li>Identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions</li> <li>Solve problems involving polynomial and simple rational equations graphically and algebraically</li> <li>Demonstrate an understanding of solving polynomial and simple rational inequalities</li> <li>Determine functions that result from the composition of two functions</li> </ul>   | <ul style="list-style-type: none"> <li>Variety of formative assessments in the form of quizzes and assignments (1-2%)</li> <li>Summative unit test (10%)</li> </ul>   |
| <b>Probability</b><br>Duotang                             | <ul style="list-style-type: none"> <li>Solve problems involving the probability of an event or a combination of events for discrete sample spaces</li> </ul>   | <ul style="list-style-type: none"> <li>Variety of formative assessments in the form of quizzes and assignments (1-2%)</li> <li>A summative unit test (10%)</li> </ul> |

70%



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|            |  |   |   |
|------------|--|---|---|
|            | <b>Trigonometry &amp; Trigonometric Functions Textbook</b> | <ul style="list-style-type: none"> <li>Determine the values of the trigonometric ratios for angles less than <math>360^\circ</math>; prove simple trigonometric identities; and solve problems using the primary trigonometric ratios, the sine law and the cosine law</li> <li>Demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical and algebraic representations of sinusoidal functions</li> <li>Identify and represent sinusoidal functions, and solve problems involving sinusoidal functions, including problems arising from real-world applications</li> <li>Demonstrate an understanding of the meaning and application of radian measure</li> <li>Make connections between trigonometric ratios and the graphical and algebraic representations of the corresponding trigonometric functions and between trigonometric functions and their reciprocals, and use these connections to solve problems</li> <li>Solve problems involving trigonometric equations and prove trigonometric identities</li> </ul> | <ul style="list-style-type: none"> <li>Variety of formative assessments in the form of quizzes and assignments (1-2%)</li> <li>Summative unit test (10%)</li> </ul> |
| <b>30%</b> | <b>Final Exam</b>  |   | <ul style="list-style-type: none"> <li>Summative Final Exam (30%)</li> </ul>  |