


Course of Study

1. Course Details

<p>Lawrence Park C.I</p>  <p>TDSB</p>	<p>Teacher(s) : Chi Ho, David Gara, David Lam and Kevin Thmoas</p> <p>Faculty : Mathematics</p> <p>Faculty Office Phone : (416) 393-9500 Ext. 20080</p> <p>Name of ACL : Chi Ho</p> <p>ACL Contact : ChiKin.Ho@tdsb.on.ca</p> <p>Textbook: Advanced Functions Nelson</p>	<p>Date revised : September 2019</p> <p>Course Name : Advanced Functions, Grade 12</p> <p>Course Code : MHF4U1</p> <p>Prerequisite Course Code : MCR3U1 or MCT4C1</p> <p>Credit Value : 1</p> <p>Essential Resource Materials : Sharp EL-510RNB Scientific Calculator</p>
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2. Overall Goals

Overall Expectations:

Exponential and Logarithmic Functions

By the end of this course, students will:

- demonstrate an understanding of the relationship between exponential expressions 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 logarithmic functions, make connections among the numeric, graphical, and algebraic representations of logarithmic functions, and solve related problems graphically;
- solve exponential and simple logarithmic equations in one variable algebraically, including those in problems arising from real-world applications.

Trigonometric Functions

By the end of this course, students will:

- demonstrate an understanding of the meaning and application of radian measure;
- 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;
- solve problems involving trigonometric equations and prove trigonometric identities.

Polynomial and Rational Functions

By the end of this course, students will:

- identify and describe some key features of polynomial functions, and 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;
- demonstrate an understanding of solving polynomial and simple rational inequations.

Characteristics of Functions

By the end of this course, students will:

- demonstrate an understanding of average and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change 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 two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems;
- compare the characteristics of functions, and solve problems by modeling and reasoning with functions, including problems with solutions that are not accessible by standard algebraic techniques.

Refer to Ontario Ministry of Education curriculum for details of Overall and Specific Expectations, found in <http://www.edu.gov.on.ca/eng/curriculum/secondary/math1112curr.pdf>

3. Learning Skills and Work Habits

**Evaluated on Report Card as:
E (excellent); G (good); S (satisfactory); N (needs improvement)**

The Learning Skills demonstrated by a student in every course are evaluated in the following six categories: Responsibility, Organization, Independent Work, Collaboration, Initiative, and Self-regulation. The Learning Skills are evaluated using a four-point scale. The goal for each student is to improve Learning Skills which will translate into improved student's overall success.

In addition, completion of the assigned homework/assignments on time will contribute to student's success. We also know that regular attendance in all classes is essential for success; please avoid scheduling appointments during school time.

Students are expected to demonstrate academic honesty on all assignments, presentations, tests, and examinations. Student who cheat or plagiarize will receive a mark of zero for the assignment, presentation, test, or examination.

Responsibility	<p>The student:</p> <ul style="list-style-type: none"> • fulfils responsibilities and commitments within the learning environment; • completes and submits class work, homework, and assignments according to agreed-upon timelines; • takes responsibility for and manages own behaviour.
Organization	<p>The student:</p> <ul style="list-style-type: none"> • devises and follows a plan and process for completing work and tasks; • establishes priorities and manages time to complete tasks and achieve goals; • identifies, gathers, evaluates, and uses information, technology, and resources to complete tasks.
Independent Work	<p>The student:</p> <ul style="list-style-type: none"> • independently monitors, assesses, and revises plans to complete tasks and meet goals; • uses class time appropriately to complete tasks; • follows instructions with minimal supervision.
Collaboration	<p>The student:</p> <ul style="list-style-type: none"> • accepts various roles and an equitable share of work in a group; • responds positively to the ideas, opinions, values, and traditions of others; • builds healthy peer-to-peer relationships through personal and media-assisted interactions; • works with others to resolve conflicts and build consensus to achieve group goals; • shares information, resources, expertise and promotes critical thinking to solve problems and make decisions.
Initiative	<p>The student:</p> <ul style="list-style-type: none"> • looks for and acts on new ideas and opportunities for learning; • demonstrates the capacity for innovation and a willingness to take risks; • demonstrates curiosity and interest in learning; • approaches new tasks with a positive attitude; • recognizes and advocates appropriately for the rights of self and others.
Self-regulation	<p>The student:</p> <ul style="list-style-type: none"> • sets own individual goals and monitors progress towards achieving them • seeks clarification or assistance when needed • assesses and reflects critically on own strengths, needs, and interests; • identifies learning opportunities, choices, and strategies to meet personal goals.

4. Teaching/Assessment and Evaluation Strategies - Course Work (70%)

Students will demonstrate achievement of all the overall expectations of the course. Missed and/or incomplete assignments will have an impact on the final grade where there are a significant number of curriculum expectations that have not been evaluated because of missed assignments. Timelines and units may be adjusted to accommodate student needs.

Unit #	Culminating Tasks	Achievement Chart Focus (All culminating tasks include knowledge/understanding, thinking, communication and application categories)	Timeline No. of periods
1	Test	Functions: Characteristics & Properties	10
2	Test	Functions: Understanding Rates of Change	8
3	Test	Polynomial Functions	11
4	Test	Polynomial Equations and Inequalities	7
5	Test	Rational Functions, Equations, and Inequalities	9
6	Test	Trigonometric Functions	10
7	Test	Trigonometric Identities and Equations	10
8	Test	Exponential and Logarithmic Functions	10
9	Test	Combinations of Functions	7

4. Teaching/Assessment and Evaluation Strategies - Final Evaluation (30%)

All Students must take part in the culminating activities for each course at every grade level of study

Summative Tasks	Achievement Chart Focus	Weighting
Exam	Includes all units from above	30%

5. Achievement Chart

Achievement Categories For Course Work	Description	Weighting
Knowledge/Understanding	<ul style="list-style-type: none"> - knowledge of facts and terms - understanding concepts, principles, and theories - understanding of relationships between concepts 	35 %
Thinking	<ul style="list-style-type: none"> - critical thinking skills (analyzing, detecting bias) - creative thinking (problem solving) - inquiry skills (formulating questions; conducting research; analyzing, interpreting and evaluating information; drawing conclusions) 	15 %
Communication	<ul style="list-style-type: none"> - communication of information and ideas - use of visuals and technology - multimedia - oral communication (debates, discussions, listening skills, role-playing) - written communication (short essays, writing in role) 	15 %
Application	<ul style="list-style-type: none"> - application of concepts, skills, and procedures - transfer of concepts, skills, and procedures to new ideas - making logical conclusions or generalizations - making predictions and planning courses of action - making connections 	35 %

6. Term Grades for Provincial Reports

Term Grades for Provincial Reports throughout the Year

The grade for each term/reporting period is based on the evaluations that have been conducted to that point in the course and will be preliminary and tentative. They will be based on the most consistent level of achievement to that point in time, but some of the overall expectations, strands, and units will not have been addressed. The students' grades will most likely change when the students' entire work is evaluated by the end of the course.

Reporting cycle 1: September 3rd—November 5th (Report Card: November 14th)

Reporting cycle 2: November 6th—January 24th (Report Card: February 7th)

Reporting cycle 3: January 25th—March 31st (Report Card: April 9th)

Reporting cycle 4: April 1st—June 22nd (Final Report Card pick up: June 25th)

Exam Review Day: June 22nd (9-11 am only)

7. Communication

In addition to class time, students can receive additional assistance from:

- Subject teachers before/after school, during lunch hour or by appointment;