THAMES VALLEY DISTRICT SCHOOL BOARD

LONDON CENTRAL SECONDARY SCHOOL

COURSE OVERVIEW 2019-2020

Course Name:	**Advanced Functions**	**Course Code:**	**MHF 4U**
Course Type:	**Grade 12 University Preparation**	**Credit Value:**	**1.0**
Teachers(s):	**Ms. Dymock, Mr. Kenagy**		

Course Description:

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.
http://www.edu.gov.on.ca/eng/curriculum/secondary/math1112currb.pdf
Prerequisite: Functions , Grade 11, Univ. Preparation or Mathematics for College Technology, Grade 12, College Preparation

Course Overall Expectations:

Strand	Overall Expectations
Exponential and Logarithmic Functions	**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	**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	**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;
	solve problems involving polynomial and simple rational equations graphically and algebraically;
	demonstrate an understanding of solving polynomial and simple rational inequalities.
Characteristics of Functions	**demonstrate an understanding of average and instantaneous rate of change, and 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;**

Course Overall Expectations:	
Strand	**Overall Expectations**
	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 modelling and reasoning with functions, including problems with solutions that are not accessible by standard algebraic techniques.

Assessment and Evaluation Strategies:

The purpose of assessment and evaluation is to improve student learning. Assessment and evaluation is based on the provincial curriculum expectations and the achievement levels outlined in the curriculum document. In order to ensure that assessment and evaluation are valid and reliable, and that they lead to the improvement of student learning, teachers use a variety of strategies throughout the course, including: providing students with feedback about their work (known as assessment for learning), helping to set learning goals and monitor their own progress (known as assessment as learning), and evaluation and reporting of progress in the form of grades and marks (known as assessment of learning).

Unit Overview	Assessment and Evaluation Methods (May include major evaluations)
Polynomial Functions	**quizzes, performance tasks, assignments, projects, unit tests**
Solving Equations and Inequalities	
Rates of Change	
Exponential and Logarithmic Functions	
Rational Functions	
Trigonometric Functions - Part 1, Part 2	
Combining Functions	
Course Culminating Activities-by strand	**One for each strand**
Final Exam	**Course culminating**

Assessment and Evaluation Categories and Weights:

Achievement Chart Categories		Evaluation/Weight of Marks	
Achievement Category	**Percentage**	**Evaluation**	**Percentage**
Knowledge/Understanding	**35**	**Term Evaluation**	**70**
Thinking/Inquiry	**15**	**Final Evaluation**	
Communication	**15**	• **ISP**	
Application	**35**	• **Exam**	**30**

Learning Skills and Work Habits Assessment:

The development of learning skills and work habits is an integral part of student learning. These skills are:

- **Responsibility**
- **Organization**
- **Independent Work**
- **Collaboration**
- **Initiative**
- **Self-Regulation**

Learning skills and work habits influence student achievement and are included as a formal part of the assessment and evaluation process. Learning skills and work habits will be assessed through a variety of teacher strategies. (e.g. observation, student /teacher conference, self-reflection, checklists, exit cards, etc.) These important learning skills and work habits will be formally reported on the Provincial Report Card according to the following scale: E - Excellent, G - Good,
S - Satisfactory, N - Needs Improvement.

Academic Dishonesty - Cheating and Plagiarism:

Learning tasks that students complete as well as the assignments, tests and exams that students submit for evaluation must be their own work. Cheating and plagiarism is a serious offence that will not be condoned. Academic consequences will result.

Test Policy:

According to the Growing Success Document (2010) a student MUST fulfill his/her responsibilities and commitments within the learning environment, including completing all types of assessments according to agreed-upon timelines.
It is the math department expectation that all students will write tests on the date set out by the classroom teacher. In the event of an illness, emergency, or other significant situation, an exception can be made, provided sufficient documentation is given to the classroom teacher. Please note that parental approval is not a legitimate reason for missing an evaluation. If an acceptable absence is known prior to the assessment date, alternate arrangements must be made with the classroom teacher in advance.
If this expectation is not met, the evaluation will be completed but may not contribute to the student's course marks.

Late and Missed Assignments - Student Roles and Responsibilities

Students are expected to:

- be responsible for providing evidence of their achievement of the overall expectations within the time frame specified by the teacher, and in a form approved by the teacher;
- understand that there will be consequences for not completing assignments for evaluation and/or for submitting those assignments late;
- use class time productively;
- in extenuating circumstances, request an extension from the teacher before the due date.

Mark deductions for late and missed assignments may apply to major assignments only.

References: ***TVDSB Assessment & Evaluation Policy*, September 2011; *Growing Success - Assessment and Evaluation, and Reporting in Ontario Schools*, 2010.**
Student Planner and School Web site