Functions, Grade 11, University
MCR3U1 Course Overview

Academic Year	2017-2018	Teacher Name	Mrs. N. Kowalewski
Department	Mathematics	Curriculum Chair	Mr. D. Lamontagne

Curriculum Policy Document: Mathematics 2007 - The Ontario Curriculum Grades 11 and 12			
Course Title	Functions	Course Code	MCR3U1
Prerequisite	MPM2D1	Grade and Course Type	11 University
Program Developer	Ministry of Education	Credit Value	1.0
Course Outline Developed	September 2015	Course Outline Revised	2017

Course Description

This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential 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.

Course Content and Overall Expectations

Characteristics of Functions

- Demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations;
- Determine the zeros and the maximum or minimum of a quadratic function, and solve problems involving quadratic functions;
- Demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical, and rational expressions

Exponential Functions

- Evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in a variety of ways;
- Make connections between the numeric, graphical, and algebraic representations of exponential functions;
- Identify and represent exponential functions, and solve problems involving exponential functions

Discrete Functions

- Demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle;
- Demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems;
- Make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities.

Trigonometric Functions

- Determine the values of the trigonometric ratios for angles less than 360º; prove simple trigonometric identities; and solve problems using the primary trigonometric ratios, the sine law, and the cosine law;
- Demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions;
- Identify and represent sinusoidal functions, and solve problems involving sinusoidal functions

Class Guidelines and Program Considerations

Student Expectations:

Each student shall:
1. Be present for all lessons and tests (on time).
2. Be prepared with all necessary materials each class. (pencils, eraser, ruler, binder, lined + graph paper and scientific calculator).
3. Complete all homework and assignments to the best of his/her ability.
4. Contribute to classroom discussions.

Classroom Expectations:

Each student must:
1. Behave appropriately in class and work on task, giving full attention to the topic being studied.
2. Work cooperatively with other students and the teacher.
3. Maintain a positive attitude and display common courtesy to others in the classroom.
4. Treat computers, calculators and other classroom work tools with respect and closely follow teacher directives concerning such items.

Course Evaluation:

1. Homework is generally assigned each class. Homework difficulties will sometimes be discussed in class but it is the student's responsibility to seek extra help when necessary. Peer tutoring (Mon and Wed after school, room 1321), the Ontario Homework Help Online website, and extra help from the teacher are all resources available to help support students. Contact your teacher for more information.
2. Students need to be on time for class. If a student is persistently late, appropriate consequences will be determined by the teacher. If a student is legitimately late then they must present their teacher with a note explaining the lateness.
3. Student absence has a significant impact on student achievement. It is the student's responsibility to make up missed class work from illness, participation in school extracurricular activities or any other reason, so find a buddy! If a student must be absent, then it is the students' responsibility to complete the work missed and have the work completed upon the student's return. Please advise the teacher in advance if you know that you are going to be away.
4. Students must understand that there will be consequences for not completing assignments for evaluation or for submitting those assignments late. Late marks may be deducted in accordance with the Growing Success document. Failure to submit indicates that curriculum expectations are not being met; a zero may be recorded.
5. Most units/chapters will conclude with a Unit/Chapter Test. Students who are absent for a test have the responsibility of discussing their absence with the teacher. An undocumented absence for a test will result in an automatic mark of zero assigned. If, for a valid medical reason, a student is unable to write a Unit Test, the student must contact the teacher prior to the test. A note or phone call from a parent/guardian must confirm the reason for the student's absence day of/after the test.
6. Plagiarism is the act of passing off someone else's work as your own. Misuse of technological devices is considered cheating. Plagiarism or cheating will result in the student receiving a mark of zero on the assigned work.

Learning Strategies:

1. Assessment is an ongoing process that reflects how well a student is achieving the expectations. Based on the School Effectiveness Framework, assessment *as* and *for* learning involves goal setting for students and allows the teacher to gather evidence to determine where students are in their learning.
2. Strategies may include, but are not limited to: oral discussions, co-operative learning activities, differentiated instruction, homework checks, and individual consultations. These strategies are in place to help students clearly understand learning goals and success criteria.
3. Assessment *of* student learning involves assigning a value to judge the quality of student learning, for communication to parents and students. This may take place in the form of, but is not limited to: rich performance tasks, demonstrations, projects, essays, lab reports, problem solving tasks, written assignments, quizzes, tests, and presentations. All assessment of learning will count towards the student's grade and **no replacement** of these marks will be made.

Student Evaluation Criteria

Term Work (70% of final total)				
Category	**Knowledge**	**Thinking**	**Communication**	**Application**
Weighting	**30%**	**10%**	**10%**	**20%**

Final Culminating Activities (30% of final total)	
Culminating Task (5%)	**Final Examination (25%)**

Mark Reporting Periods

	Semester 1	Semester 2
Parent-Teacher Interviews	October 19, 2017	March 21, 2018
Midterm Report Cards	November 10, 2017	April 20, 2018

Resources

Textbook: Gr 11 Functions, Nelson	Replacement Cost: $100.00
Mrs.K's math website	http://www.mrsk.ca
Desmos Graphing Calculator Online	https://www.desmos.com/calculator
Ontario Homework Help	https://homeworkhelp.ilc.org/
Video solutions to selected textbook questions	https://prepanywhere.com
MOODLE	http://www.notredamecss.ca/moodle/