

CLARKSON SECONDARY SCHOOL

Course Code: MCR 3U

Course Name: Functions
Grade 11 University

Prerequisite:MPM2DO (Grade 10 Academic)

Textbook Required: Functions 11 (McGraw-Hill Ryerson)

Textbook Replacement Cost: \$100

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; and develop facility in simplifying polynomial and rational expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

Overall Course Expectations By the end of this course, students will:

1. Demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations.
2. Determine the zeros and the maximum or minimum of a quadratic function, and solve problems involving quadratic functions, including those arising from real-world applications.
3. Demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical, and rational expressions.
4. Evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in a variety of ways.
5. Make connections between the numeric, graphical, and algebraic representations of exponential functions.
6. Identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications.
7. Demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's Triangle.
8. Demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series and solve related problems
9. Make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities.
10. Determine the values of the trigonometric ratios for angles less than 360° , prove simple trig. Identities; and solve problems using the primary trigonometric ratios, the sine law, and the cosine law.
11. Demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions.
12. Identify and represent sinusoidal functions, and solve problems involving sinusoidal functions, including those arising from real-world applications.

ASSESSMENT BREAKDOWN INCLUDING CATEGORIES AND WEIGHTINGS.

Formative assessments are learning practices that provide important feedback to student progress and include homework checks, exit tickets, self assessments to name a few.

Summative assessments form the foundation for final mark allocation at the end of a unit, term and exam.

CATEGORIES	% WEIGHT OF FINAL GRADE
Knowledge	25
Application	25
Thinking	10
Communication	10
Final Examination	30
TOTAL	100

Unit	Unit Breakdown	Assessments
Understanding Functions	Demonstrate an understanding of functions, their inverses, the impact of transformations and various ways of representing them; demonstrate facility with equivalent algebraic expressions involving polynomials, radicals and rational expressions; determine key features of quadratic functions, and solve linear-quadratic systems.	Textbook Ref: Chapters 1 & 2 Quizzes, Chapter Tests (2), Graphing Calculator Activity, Mini-Tasks
Exponential Functions	Understand the nature of exponential growth and decay Analyse exponential and logarithmic function models Solve problems involving exponential growth and decay	Textbook Ref: Chapter 3 Quizzes, Chapter Test (1), Graphing Calculator Activity
Trigonometric Functions	Demonstrate the connection between the trigonometric ratios and the unit circle, and solve problems using the primary trigonometric ratios, the sine law and the cosine law; determine, through investigation, the relationships between the graphs and the equations of sinusoidal functions; solve problems involving models of sinusoidal functions drawn from a variety of applications.	Textbook Ref: Chapters 4 & 5 Quizzes, Chapter Tests (2), Graphing Calculator Activity, Mini-Tasks
Discrete Functions	Demonstrate an understanding of recursive sequences, including the connection to Pascal's triangle demonstrate an understanding of arithmetic and geometric sequences and series as discrete functions and determine the value of a term and the sum of a set of terms; demonstrate an understanding of the connection between sequences, series and financial applications and solve problems involving financial decision making, with and without technology;	Textbook Ref: Chapters 6 & 7 Quizzes, Chapter Test(1), Finance Graphing Calculator Activity, Mini-Tasks

LEARNING SKILLS Learning Skills will be reported on the student's report card. The following chart indicates the skills and look-fors for each student.

WORKS INDEPENDENTLY	TEAMWORK	ORGANIZATION	WORK HABITS/HOMEWORK	INITIATIVE	SELF-REGULATION
<p>The student:</p> <ul style="list-style-type: none"> ▪ accomplishes tasks independently ▪ accepts responsibility for accomplishing tasks ▪ follows instructions ▪ regularly completes assignments on time and with care ▪ uses time effectively 	<p>The student:</p> <ul style="list-style-type: none"> ▪ works willingly and cooperatively with others ▪ listens attentively, without interrupting ▪ takes responsibility for his/her share of the work to be done ▪ helps to motivate others, encouraging them to participate ▪ shows respect for the ideas and opinions of others 	<p>The student:</p> <ul style="list-style-type: none"> ▪ organizes work when faced with a number of tasks ▪ devises and follows a coherent plan to complete a task ▪ demonstrates ability to organize and manage information ▪ follows an effective process for inquiry and research 	<p>The student:</p> <ul style="list-style-type: none"> ▪ completes homework on time and with care ▪ follows directions ▪ shows attention to detail ▪ perseveres with complex projects that require sustained effort ▪ applies effective study practices 	<p>The student:</p> <ul style="list-style-type: none"> ▪ seeks out new opportunities for learning ▪ seeks necessary and additional information ▪ requires little prompting to complete a task, ▪ approaches new learning situations with confidence and a positive attitude ▪ seeks assistance when needed 	<p>The student:</p> <ul style="list-style-type: none"> ▪ sets individual goals and monitors own progress ▪ seeks clarification or assistance when needed ▪ reflects and assesses critically own strengths, needs and interests ▪ perseveres and makes an effort when responding to challenges

Additional Information:

- Students are reminded to have a scientific calculator, graphing paper and other appropriate materials for the course.
- Additional help is available through your teacher.
- Access to the Ontario Educational Resource Bank (OERB) is at <http://resources.elearningontario.ca/>
The login for use by the Peel District School Board's students is
Student Login: pdsbstudent
Student Password: oerbs
- Visit <http://www.khanacademy.org/> for mini lessons on topics covered in class.
- Mathematics Contests for students in Grade 11:
 - Fermat Contest: register during the first week in January; contest written in February
 - Hypatia Contest : register during the first week in March; contest written in April.
 Visit www.cemc.uwaterloo.ca for additional details.

Clarkson S.S. Assessment & Evaluation Policy

CHEATING:

Students are expected to demonstrate **HONESTY** and integrity and submit assessments that are reflective of their own work. Cheating is defined as completing an assessment in a dishonest way through improper access to the answers. Examples include, but are not limited to; using another student's work as your own, using an unauthorized reference sheet during an assessment, receiving / sending an electronic message to another student with test questions / answers, etc.

In order to ensure that all assessments are free from cheating,

Students will:

- review school policy with regards to academic honesty
- submit their own work for evaluation to show evidence of skill and knowledge
- use only teacher approved materials during an evaluation
- demonstrate the qualities of good character and good intention (honesty, caring, respectful, responsibility,) when preparing evidence of their learning.

If a student cheats on an assessment,

Students may be:

- required to complete an alternate evaluation under direct supervision in a timely manner
- required to write a reflective piece which demonstrates an understanding of the character attribute of honesty.
- assigned a mark deduction
- referred to a vice-principal
- assigned a zero.

Plagiarism:

Students are expected to demonstrate **HONESTY** and use proper citations and referencing when completing assessments. Plagiarism is defined as the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work. Examples include, but are not limited to; copying another's project (portions or whole) and paraphrasing parts of a book or article without reference or citation.

In order to ensure that all assessments are free from plagiarism,

Students will:

- Be required to complete a workshop in correct documentation
- produce their own work
- give credit through appropriate citations and referencing when quoting or paraphrasing the work of others
- be diligent in maintaining and protecting their own work
- seek clarification or assistance from teachers or other available resources

If an assessment is plagiarized,

Students may be:

- required to rewrite or resubmit all or parts of the assignment
- referred for remedial lessons on proper citation and references
- required to do a reflection on the character attribute of honesty
- referred to a vice-principal
- required to sign a contract with the administration and teacher about commitment to academic honesty
- assigned a zero.

LATE ASSIGNMENTS – assignments submitted after the due date and before the absolute deadline.

Students are expected to demonstrate **RESPONSIBILITY** and submit all assessments by the established due date. Students are responsible for providing evidence of their achievement of the overall course expectations within the time frame specified by the teacher and in a form approved by the teacher. There are consequences for not completing assignments for evaluation or for submitting those assignments late.

In order to ensure that all evaluations are submitted by the established due date,

Students will:

- record due dates in personal organizers
- consider other commitments including co-curricular activities in planning assignment completion
- negotiate alternate due date well before due date, not last minute (a minimum of 24 hours in advance or at teachers discretion)
- find out what they missed during absences
- use school support systems (i.e. special education, counselors, extra help, ...)

If an evaluation is submitted **after** the due date

Students :

- must notify the teacher and explain why the assignment was not submitted on the due date – in grades 9 & 10 a note from a parent/guardian may be required
- marks may be deducted for late assignments
- may be required to complete the assignment with supervision
- may be referred to a school based support team or a vice-principal
- may be placed on a contract for assignment completion

MISSED ASSIGNMENTS – assignments either not submitted or submitted after the absolute deadline

Excerpt from Policy 14.

In order to ensure that all evaluations are submitted,

Students will:

- be responsible for meeting and knowing absolute deadlines for missed assignments
- use personal organizers to manage time and meet deadlines
- be responsible for maintaining on- going communication with their teacher
- take responsibility for missed work during all absences

If an evaluation is submitted **after** the **absolute** deadline,

Students:

- must notify the teacher and explain why the assignment was not submitted
- students may be asked to provide a note from a parent/guardian
- may be required to complete the assignment or an alternate assignment under supervision
- may be referred to a school based support team or a vice-principal
- may be placed on a contract for assignment completion
- may be involved in an action plan to complete the required assignment within a given time frame
- may be assigned a zero.

Course Code: MCR 3U

Course Name: Functions
Grade 11 University

Parent/Guardian Signature

Student Signature

Date