



Functions – Grade 11 MCR3U

Course Profile Outline

Course Description/Rationale/Overview

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. Students will also refine their use of the mathematical processes necessary for success in senior mathematics.

Class Requirements

Student Responsibility

Students must seek assistance from the teacher for all work missed due to attendance issue and must make arrangements to complete missed work.

Course Requirements/Department Policies

Attendance requirement

Students are required to log in at least once per week on course activity. Students are expected to spend approximately 7 hours per week for both online and offline learning activities. Students are required to keep a Student Learning Log for each course documenting online and offline activities.

What is considered an Absence

1. Students failed to login in 2 consecutive weeks will be counted as one absence;
 2. By mid-term, if students failed to complete 40% of course work;
- When a student has 3 or more absences, the school will issue a warning letter.

Evaluation

Assignments, quizzes, tests, and final examination

Curriculum Strands

1. Characteristics of Functions
2. Exponential Functions
3. Discrete Functions
4. Trigonometric Functions

Achievement Categories

- Knowledge & Understanding
- Application
- Problem Solving & Inquiry
- Communication

Learning Skills

- Initiative
- Work Habits/Homework
- Organization
- Works Independently
- Teamwork

Term Work Evaluation

Assignments	20 %
Quizzes	10 %
Midterm Exam	15%
Unit Tests	25 %

FINAL MARK

Term Work:	70%
Summative Evaluation Exam	30%



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Unit One – Characteristics of Functions

18 hours

Topics include: Defining a function, exploring properties of functions (domain, range, restrictions, max/min values), inverse functions, graphing functions, function notation, simplifying polynomial and rational expressions and verifying equivalence.

Unit Two – Quadratic Functions

16 hours

Topics include: representing linear and quadratic functions in a variety of forms, factoring and finding roots, equivalence of equations, graphing quadratic functions, transformations of quadratic functions, solving problems related to functions.

Unit Three – Exponential Functions

24 hours

Topics include: Graphing exponential functions, exploring powers with rational exponents, simplifying algebraic expressions, exploring key properties relating to domain and range, intercepts, increasing/decreasing intervals and asymptotes, transformations of exponential functions, investigating real-world applications through experimentation. **Midterm Exam.**

Unit Four – Trigonometric Functions

28 hours

Topics include: Exact values of sine, cosine and tangent and special angles, trigonometric ratios, proving trigonometric identities, exploring problems related to triangles, key properties of sinusoidal functions, sketching sinusoidal graphs, solving related problems.

Unit Five – Discrete Functions

24 hours

Topics include: Making connections between sequences and discrete functions, generating a sequence, representing a sequence algebraically, analyzing the Fibonacci sequence, analyzing Pascal's triangle, comparing arithmetic and geometric sequences, considering applications in finance. **Final Exam.**

Total Time

110 hours