

**St. Clair Catholic District School Board**  
**Student Information Sheet/ Outline of Course Study**

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School	Ursuline College Chatham
Department	Mathematics
Course Title	Principles of Mathematics: Functions (MCR3U0)
Grade and Level	Grade 11, University Preparation
Credit	One full
Prerequisite	Grade 10 Academic
Textbook	Functions and Relations 11 (Addison-Wesley)
Teacher(s)	Mr. Parent; Mrs. L. Nicholson, Ms. K. Kearns
Department Head	Mrs. M. Taylor-Joyes
Ministry Document	Mathematics Grade 11 (Revised 2006)
Date	September 2009/February 2010

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**Course Description**

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

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**How this course supports the Ontario Catholic Graduate Expectations:**

The following expectations from the Ontario Catholic Graduate Expectations will be stressed throughout the course: The graduate is expected to be: - An effective communicator who reads, understands and uses written materials effectively; - A reflective, creative and holistic thinker who thinks reflectively and creatively to evaluate situations and solve problems ; - A self-directed , responsible, lifelong learner who sets appropriate goals and priorities in school , work and personal life; - A collaborative contributor who works effectively as an independent team member; - A responsible citizen who accepts accountability for one's one actions.

**How this course supports the competencies of Choices Into Action:**

Career exploration activities through classroom experience (page 19, Choices into Action)

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**1) Expectations regarding Learning Skills**

It is expected that students will demonstrate the following:

(this is not intended to be an exhaustive list)

- Independent learning ability
- Team work ability
- Organizational skills on a daily basis
- Strong work habits during class time
- Completed homework and assignments
- Initiative in all areas of the course

Learning skills will be assessed according to criteria, which have been clearly communicated to students and will be reported separately from student achievement of the curriculum

expectations. The student's demonstrated learning skills in each course will be evaluated using the four-point scale, E- Excellent, G- Good, S- Satisfactory, N – Needs Improvement.

## 2) Overall expectations for student learning

Through this course, the student will be expected to demonstrate knowledge, skills and values related to the following strands:

<p><b>Strand 1: Characteristics of Functions</b></p> <ul style="list-style-type: none"> <li>• Demonstrate an understanding of functions, their representations and their inverses, and make connections between the algebraic and graphical representations of functions using transformations</li> <li>• Determine the zeros and optimal value of a quadratic function, and solve real-world problems involving quadratic functions</li> <li>• Demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical and rational expressions</li> </ul>	<p><b>Strand 2: Discrete Functions</b></p> <ul style="list-style-type: none"> <li>• Demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle</li> <li>• Demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems</li> <li>• Make connections between sequences, series and financial applications and solve problems involving compound interest and ordinary annuities</li> </ul>
<p><b>Strand 2: Exponential Functions</b></p> <ul style="list-style-type: none"> <li>• Evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions in a variety of ways</li> <li>• Make connections between the numerical, graphical and algebraic representations of exponential functions</li> <li>• Identify and represent exponential functions, and solve real-world problems involving exponential functions</li> </ul>	<p><b>Strand 4: Trigonometric Functions</b></p> <ul style="list-style-type: none"> <li>• Determine the values of the trigonometric ratios for angles less than 360 degrees; prove simple trigonometric identities; and problems involving the primary trig ratios, the sine and cosine laws in acute and obtuse triangles</li> <li>• Demonstrate an understanding of periodic relationships and sinusoidal functions and to make connections between the numeric, graphical and algebraic representations of sinusoidal functions</li> <li>• Identify and represent sinusoidal functions and solve real-world problems involving such functions</li> </ul>

## 3) Individual Education Plan

Whenever accommodations are made to address student learning needs, or alternative or modified expectations are identified for a student, these accommodations, modifications, or alternative expectations will be outlined in an IEP and will be communicated to parents.

## 4) Course breakdown & assessment and evaluation strategies

Unit title/Description	Suggested Timing
Characteristics of Functions	15 periods

Exponential Functions	15 periods
Discrete Functions	25 periods
Trigonometric Functions	30 periods
Summary	5 periods

### 5) Teaching/Learning Strategies

Instruction in this course will be evaluated according to the following breakdowns:

Group work, pairs activities, individual work, computers and graphical calculators.

### 6) Assessment and Evaluation

Student achievement of the learning expectations will be evaluated according to the following breakdowns:

Categories of Knowledge, Skills and Values	Weighting (%)	
	Term Evaluation (100%) Evaluation	Final
Knowledge & Understanding	45	Culminating
Thinking, Inquiry, Problem Solving	20	Assessment
Communication	15	And
Applications	20	Final Exam
<b>BREAKDOWN OF FINAL MARK</b>	70% of term mark	30%

### 7) School, department and classroom policies

a) See student handbook for school rules

b) **HOMEWORK** will be assigned almost every day. Depending on the topic, the time required to complete the assignment will vary, but at the grade eleven level the homework should require 30-45 minutes per night. To ensure success, any suggested homework assignments are to be completed for the beginning of the next class. The completion of assignments, neat and orderly notes, and routine correction of problems are essential for success.

c) **REGULAR** and **PROMPT** attendance is required in order to be successful. If a student is absent it is their responsibility to make up for missed work. Notes should be copied from a reliable student, and homework exercises attempted. Extra help is available and can be arranged with the teacher.

c) **TESTS AND ASSIGNMENTS MISSED OR LATE.** The reasons for the absence or late will be taken into account, but a mark of zero can be assigned to the student for circumstances that seem to warrant such a mark. Assignments not submitted within the stated time frame may be cause for the student's overall grade to fall to a lower level.

Every effort should be made to write the test at the scheduled time period. Below are some test and assignment procedures:

i) If you know that you will be away for a scheduled test and/or assignment due date for some legitimate reason, inform your teacher and make alternate arrangements before you leave.

- ii) If a test is missed due to a legitimate or sudden absence, it will be written at a time determined by the teacher after consultation with the student. The usual date for writing the test would be the first day back after the absence. A note signed by the parent/guardian must support such legitimate absences.
- iii) As a general rule, there will be no make-up tests or assignments. If special circumstances warrant, make-up tests or assignments may be provided to students who have demonstrated that earlier difficulties have been corrected.

To the student, Parent(s) or Guardian(s):

We have read and understand this Students Information Sheet/Outline of Course of Study

Course Code: MCR3U0 (Grade 11 Functions )

Student: \_\_\_\_\_

Date: \_\_\_\_\_

Parent/Guardian: \_\_\_\_\_

Date:

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