



201 Yorkland Street, Richmond Hill, Ontario, Canada – L4S 1A2 – 905 - 884 - 2131

### MCF3M Functions and Applications, Grade 11 (University College)

**Value:** 1.0 Credits      **Prerequisite:** MPM2D or MFM2P

#### **Course Description:**

This course enables students to broaden their understanding of mathematics as a problem-solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students consolidate their mathematical skills as they solve problems and communicate their thinking.

**Overall Expectations:** By the end of the course, students will:

1. Simplify and evaluate numerical expressions involving exponents, and make connections between the numeric, graphical, and algebraic representations of exponential functions;
2. Identify and represent exponential functions, and solve problems involving exponential functions, including problems arising from real world applications;
3. Demonstrate an understanding of compound interest and annuities, and solve related problems;
4. Simplify and evaluate numerical expressions involving exponents, and make connections between numeric, graphical, and algebraic representations of exponential functions;
5. Identify and represent exponential functions, and solve problems involving exponential functions, including problems arising from real-world applications;
6. Demonstrate an understanding of compound interest and annuities, and solve related problems;
7. Solve problems involving trigonometry in acute triangles using the sine law and the cosine law, including problems arising from real-world applications;
8. Demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions;
9. Identify and represent sine functions, and solve problems involving sine functions, including problems arising from real-world applications.

#### **Course Content:**

UNIT	TOPIC
1	<b>Quadratic Functions</b> Simplify and factor expressions; graph and solve problems involving quadratic functions.
2	<b>Application of Quadratic Functions</b> Simplify rational expressions; represent functions graphically and algebraically; apply transformations.
3	<b>Trigonometric Ratios</b> Determine trigonometric ratios for angles up to 360°; solve problems using trig tools;
4	<b>Trigonometric Functions</b> Identify periodic behaviour; represent sinusoidal functions graphically and algebraically.
5	<b>Exponential Functions</b> Simplify algebraic expressions with powers; graph and solve problems involving exponential functions.
6	<b>Financial Applications</b> Solve problems involving simple interest, compound interest, present/future value, and annuities.

### **Assessment and Evaluation:**

The primary purpose of assessment and evaluation is to improve student learning. The Achievement Chart for Mathematics will guide all assessment and evaluation.

Assessment and evaluation is divided into two important parts. The grade the student receives on a mid-term or final report indicates achievement/proficiency in Curriculum Expectations (see box), based on a variety of products, including tests, quizzes and assignments. A level of competence (*Needs Improvement, Satisfactory, Good or Excellent*) will be assessed and reported in the area of Learning Skills and Work Habits: Independent Work, Collaboration, Responsibility, Initiative, Self-Regulation and Organization.

The **final grade** is determined as follows:

Term work (70%) based on Achievement Chart categories:	
Knowledge	25%
Application	30%
Communication	5%
Thinking	10%
Final Exam	30%

### **Program Considerations:**

Assessment, instructional and environmental accommodations are provided to individual students as per their IEP. Similarly, adaptations for English Language Learners are provided based upon the student's level of language development, strengths and needs.

### **Homework and Attendance:**

Students must be prepared to devote regular daily time on home study and review. It is the student's responsibility to catch up on lessons and homework that have been missed. Students should ask classmates for lessons and homework and the teacher can provide any handouts.

### **Tests and Quizzes:**

Tests and Quizzes are based on a unit of work and are always announced in advance. A student who will be missing a quiz or test must make arrangements with the teacher prior to the day of the absence. Failure to do so may result in a mark of zero. Any student who is away due to unforeseen illness must bring a note, signed by a parent or guardian, indicating that they are aware that the student has missed a math test, and the reason for the absence. Failure to do so may result in a mark of zero.

### **Extra Help:**

Teachers will inform students of their availability for extra help. In addition to help from the teacher, students are invited to drop in to the extra help room 2026. This room is open Monday to Thursday from 3:40pm to 4:20pm for extra help, and is supervised each day by a math teacher.

### **Contact information for Students:**

Teacher: S. Tsimicalis  
Email: [stan.tsimicalis@yrdsb.ca](mailto:stan.tsimicalis@yrdsb.ca)  
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Webpage: <http://rhsmath.ca/teachers/tsimicalis/MCF3M-Semester1.htm>